

TEST REPORT

Product : Wireless Smart Audio Module
Trade mark : Linkplay
Model/Type reference : A98ML, A98L, A98L-12, A98L-22, A98L-55,
A98ML-12, A98ML-22, A98ML-55
Serial Number : N/A
Report Number : EED32L00168304
FCC ID : 2ANOG-A98XLXX
Date of Issue : Aug. 16, 2019
Test Standards : 47 CFR Part 15Subpart C
Test result : PASS

Prepared for:

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2 Version

Version No.	Date	Description
00	Aug. 16, 2019	Original

3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203/15.247 (c)	ANSI C63.10-2013	N/A
AC Power Line Conducted Emission	47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013	PASS
Conducted Peak Output Power	47 CFR Part 15 Subpart C Section 15.247 (b)(3)	ANSI C63.10-2013	PASS
6dB Occupied Bandwidth	47 CFR Part 15 Subpart C Section 15.247 (a)(2)	ANSI C63.10-2013	PASS
Power Spectral Density	47 CFR Part 15 Subpart C Section 15.247 (e)	ANSI C63.10-2013	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15 Subpart C Section 15.247(d)	ANSI C63.10-2013	PASS
RF Conducted Spurious Emissions	47 CFR Part 15 Subpart C Section 15.247(d)	ANSI C63.10-2013	PASS
Radiated Spurious Emissions	47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS

Remark:

Test according to ANSI C63.4-2014 & ANSI C63.10-2013.

The tested sample(s) and the sample information are provided by the client.

Model No:A98ML,A98L,A98L-12,A98L-22,A98L-55 A98ML-12,A98ML-22,A98ML-55

Only the model A98ML was tested, The difference is that ROM and RAM are different in size or customer.

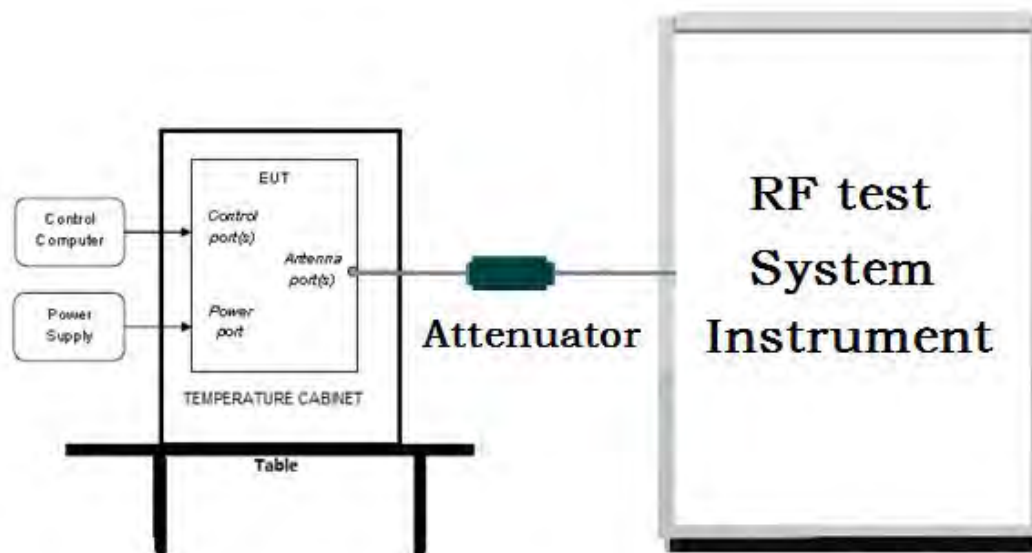
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5 Test Requirement

5.1 Test setup

5.1.1 For Conducted test setup



5.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

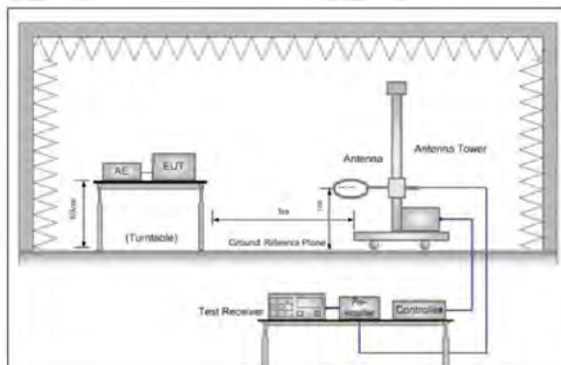


Figure 1. Below 30MHz

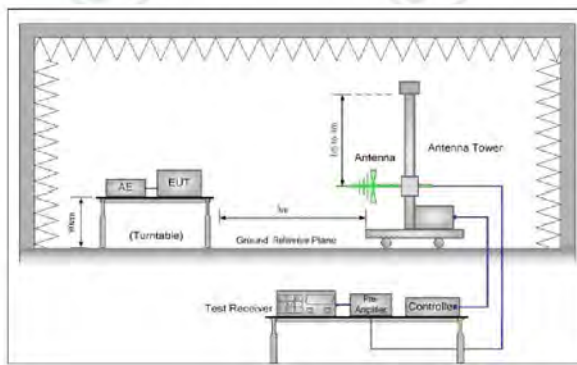


Figure 2. 30MHz to 1GHz

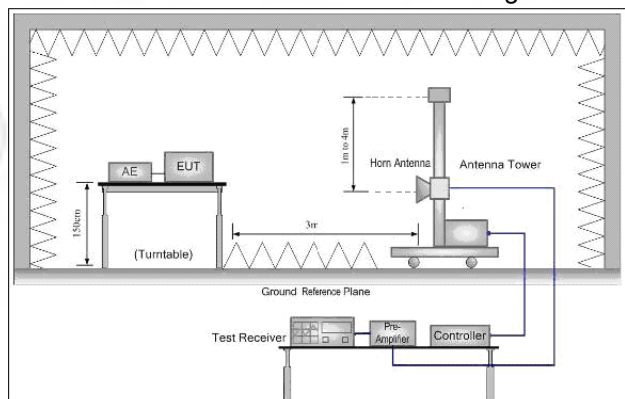
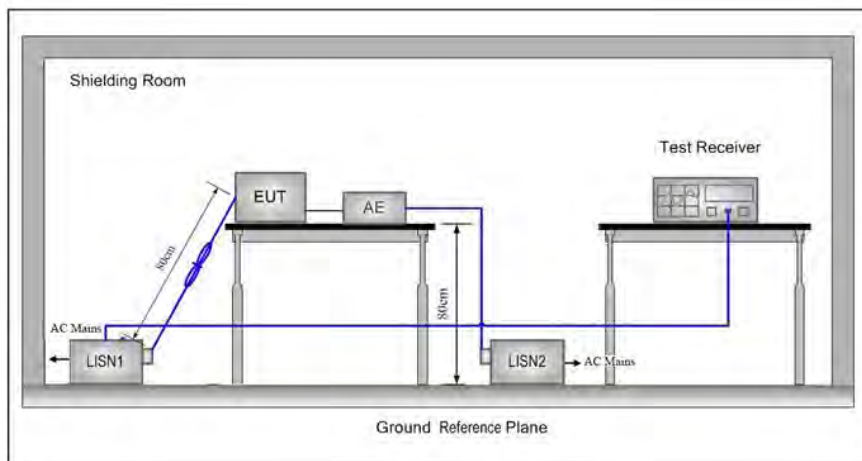


Figure 3. Above 1GHz

5.1.3 For Conducted Emissions test setup

Conducted Emissions setup



5.2 Test Environment

Operating Environment:

Temperature:	25.0 °C
Humidity:	58% RH
Atmospheric Pressure:	1010mbar

5.3 Test Condition

Test channel:

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11b/g/n(HT20)	2412MHz ~2462 MHz	Channel 1	Channel 6	Channel11
		2412MHz	2437MHz	2462MHz
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.			

6 General Information

6.1 Client Information

Applicant:	Linkplay Technology Inc
Address of Applicant:	8F-8036, Qianren Building, No. 7, Yingcui Road, Jiangning District, Nanjing, China
Manufacturer:	Linkplay Technology Inc
Address of Manufacturer:	8F-8036, Qianren Building, No. 7, Yingcui Road, Jiangning District, Nanjing, China
Factory:	Linkplay Technology Inc
Address of Factory:	8F-8036, Qianren Building, No. 7, Yingcui Road, Jiangning District, Nanjing, China

6.2 General Description of EUT

Product Name:	Wireless Smart Audio Module
Model No.(EUT):	A98ML, A98L, A98L-12, A98L-22, A98L-55, A98ML-12, A98ML-22, A98ML-55
Test model No.:	A98ML
Trade Mark:	Linkplay
EUT Supports Radios application:	802.11b/g/n(20MHz), 2412-2462MHz
Power Supply:	DC 5V
Sample Received Date:	Jun. 26, 2019
Sample tested Date:	Jun. 26, 2019 to Aug. 16, 2019

6.3 Product Specification subjective to this standard

Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz						
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels						
Channel Separation:	5MHz						
Type of Modulation:	OFDM,DSSS						
Test Power Grade:	Default Setting						
Test Software of EUT:	Linkplay Factory Tool For Custom (manufacturer declare)						
Antenna Type and Gain:	Type: PIFA antenna; Gain: 1.6 dBi						
Test Voltage:	DC 5V						
Operation Frequency each of channel(802.11b/g/n HT20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

6.4 Description of Support Units

The EUT has been tested independently

6.5 Test Location

All tests were performed at:

Centre Testing International Group Co., Ltd

Building C, Hongwei Industrial Park Block 70, Bao'an District, Shenzhen, China

Telephone: +86 (0) 755 33683668 Fax: +86 (0) 755 33683385

No tests were sub-contracted.

FCC Designation No.: CN1164

6.6 Deviation from Standards

None.

6.7 Abnormalities from Standard Conditions

None.

6.8 Other Information Requested by the Customer

None.

6.9 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9×10^{-8}
2	RF power, conducted	0.46dB (30MHz-1GHz)
		0.55dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.3dB (30MHz-1GHz)
		4.5dB (1GHz-12.75GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	3.8%
7	DC power voltages	0.026%

7 Equipment List

RF test system					
Equipment	Manufacturer	Model No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Signal Generator	Keysight	E8257D	MY53401106	03-01-2019	02-28-2020
Spectrum Analyzer	Keysight	N9010A	MY54510339	03-01-2019	02-28-2020
Signal Generator	Keysight	N5182B	MY53051549	03-01-2019	02-28-2020
High-pass filter	Sinoscite	FL3CX03WG1 8NM12-0398-002	---	01-09-2019	01-08-2020
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-09-2019	01-08-2020
DC Power	Keysight	E3642A	MY54426035	03-01-2019	02-28-2020
PC-1	Lenovo	R4960d	---	03-01-2019	02-28-2020
BT&WI-FI Automatic control	R&S	OSP120	101374	03-01-2019	02-28-2020
RF control unit	JS Tonscend	JS0806-2	15860006	03-01-2019	02-28-2020
RF control unit	JS Tonscend	JS0806-1	15860004	03-01-2019	02-28-2020
RF control unit	JS Tonscend	JS0806-4	158060007	03-01-2019	02-28-2020
BT&WI-FI Automatic test software	JS Tonscend	JS1120-2	---	03-01-2019	02-28-2020
Temperature/Humidity Indicator	biaozhi	HM10	1804186	10-12-2018	10-11-2019

Conducted disturbance Test					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Receiver	R&S	ESCI	100435	05-20-2019	05-18-2020
Temperature/ Humidity Indicator	Defu	TH128	/	06-14-2019	06-12-2020
Communication test set	Agilent	E5515C	GB47050 534	03-01-2019	02-28-2020
Communication test set	R&S	CMW500	102898	01-18-2019	01-17-2020
LISN	R&S	ENV216	100098	05-08-2019	05-06-2020
LISN	schwarzbeck	NNLK8121	8121-529	05-08-2019	05-06-2020
Voltage Probe	R&S	ESH2-Z3 0299.7810.5 6	100042	06-13-2017	06-11-2020
Current Probe	R&S	EZ-17 816.2063.03	100106	05-20-2019	05-18-2020
ISN	TESEQ	ISN T800	30297	01-06-2019	01-15-2020
Barometer	changchun	DYM3	1188	06-20-2019	06-18-2020

3M Semi/full-anechoic Chamber					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
3M Chamber & Accessory Equipment	TDK	SAC-3	---	05-24-2019	05-22-2020
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-401	12-21-2018	12-20-2019
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-618	07-26-2019	07-24-2020
Microwave Preamplifier	Agilent	8449B	3008A02425	08-21-2018	08-20-2019
Microwave Preamplifier	Tonscend	EMC051845 SE	980380	01-16-2019	01-15-2020
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1869	04-25-2018	04-23-2021
Horn Antenna	ETS-LINDGREN	3117	00057410	06-05-2018	06-03-2021
Double ridge horn antenna	A.H.SYSTEMS	SAS-574	374	06-05-2018	06-04-2021
Pre-amplifier	A.H.SYSTEMS	PAP-1840-60	6041.6041	07-26-2019	07-24-2020
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04-25-2018	04-25-2021
Spectrum Analyzer	R&S	FSP40	100416	04-28-2019	04-26-2020
Receiver	R&S	ESCI	100435	05-20-2019	05-18-2020
Receiver	R&S	ESCI7	100938-003	11-23-2018	11-22-2019
Multi device Controller	maturo	NCD/070/10711112	---	01-09-2019	01-08-2020
Signal Generator	Agilent	E4438C	MY45095744	03-01-2019	02-28-2020
Signal Generator	Keysight	E8257D	MY53401106	03-01-2019	02-28-2020
Temperature/Humidity Indicator	Shanghai qixiang	HM10	1804298	10-12-2018	10-11-2019
Communication test set	Agilent	E5515C	GB47050534	03-01-2019	02-28-2020
Cable line	Fulai(7M)	SF106	5219/6A	01-09-2019	01-08-2020
Cable line	Fulai(6M)	SF106	5220/6A	01-09-2019	01-08-2020
Cable line	Fulai(3M)	SF106	5216/6A	01-09-2019	01-08-2020
Cable line	Fulai(3M)	SF106	5217/6A	01-09-2019	01-08-2020
High-pass filter	Sinoscite	FL3CX03WG18NM12-0398-002	---	01-09-2019	01-08-2020
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX01CA09CL12-0395-001	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX01CA08CL12-0393-001	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX02CA04CL12-0396-002	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX02CA03CL12-0394-001	---	01-09-2019	01-08-2020

3M full-anechoic Chamber					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
RSE Automatic test software	JS Tonscend	JS36-RSE	10166	06-19-2019	06-17-2020
Receiver	Keysight	N9038A	MY57290136	03-27-2019	03-25-2020
Spectrum Analyzer	Keysight	N9020B	MY57111112	03-27-2019	03-25-2020
Spectrum Analyzer	Keysight	N9030B	MY57140871	03-27-2019	03-25-2020
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-075	04-25-2018	04-23-2021
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04-25-2018	04-23-2021
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	9163-1148	04-25-2018	04-23-2021
Horn Antenna	Schwarzbeck	BBHA 9170	9170-832	04-25-2018	04-23-2021
Horn Antenna	Schwarzbeck	BBHA 9170	9170-829	04-25-2018	04-23-2021
Communication Antenna	Schwarzbeck	CLSA 0110L	1014	02-14-2019	02-13-2020
Biconical antenna	Schwarzbeck	VUBA 9117	9117-381	04-25-2018	04-23-2021
Horn Antenna	ETS-LINDGREN	3117	00057407	07-10-2018	07-08-2021
Preamplifier	EMCI	EMC184055SE	980596	05-22-2019	5-20-2020
Communication test set	R&S	CMW500	102898	01-18-2019	01-17-2020
Preamplifier	EMCI	EMC001330	980563	05-08-2019	05-06-2020
Preamplifier	Agilent	8449B	3008A02425	08-21-2018	08-20-2019
Temperature/Humidity Indicator	biaozhi	GM1360	EE1186631	05-01-2019	04-30-2020
Signal Generator	KEYSIGHT	E8257D	MY53401106	03-01-2019	02-28-2020
Fully Anechoic Chamber	TDK	FAC-3	---	01-17-2018	01-15-2021
Filter bank	JS Tonscend	JS0806-F	188060094	04-10-2018	04-08-2021
Cable line	Times	SFT205-NMSM-2.50M	394812-0001	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMSM-2.50M	394812-0002	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMSM-2.50M	394812-0003	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMSM-2.50M	393495-0001	01-09-2019	01-08-2020
Cable line	Times	EMC104-NMNM-1000	SN160710	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMSM-3.00M	394813-0001	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMNM-1.50M	381964-0001	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMSM-7.00M	394815-0001	01-09-2019	01-08-2020
Cable line	Times	HF160-KMKM-3.00M	393493-0001	01-09-2019	01-08-2020

8 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC Part15C	Subpart C-Intentional Radiators
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

Test Results List:

Test Requirement	Test method	Test item	Verdict	Note
Part15C Section 15.247 (b)(3)	ANSI C63.10	Conducted Peak Output Power	PASS	Appendix A)
Part15C Section 15.247 (a)(2)	ANSI C63.10	6dB Occupied Bandwidth	PASS	Appendix B)
Part15C Section 15.247(d)	ANSI C63.10	Band-edge for RF Conducted Emissions	PASS	Appendix C)
Part15C Section 15.247(d)	ANSI C63.10	RF Conducted Spurious Emissions	PASS	Appendix D)
Part15C Section 15.247 (e)	ANSI C63.10	Power Spectral Density	PASS	Appendix E)
Part15C Section 15.203/15.247 (c)	ANSI C63.10	Antenna Requirement	PASS	Appendix F)
Part15C Section 15.207	ANSI C63.10	AC Power Line Conducted Emission	PASS	Appendix G)
Part15C Section 15.205/15.209	ANSI C63.10	Restricted bands around fundamental frequency	PASS	Appendix H)
Part15C Section 15.205/15.209	ANSI C63.10	Radiated Spurious Emissions	PASS	Appendix I)

Appendix A): Conducted Peak Output Power

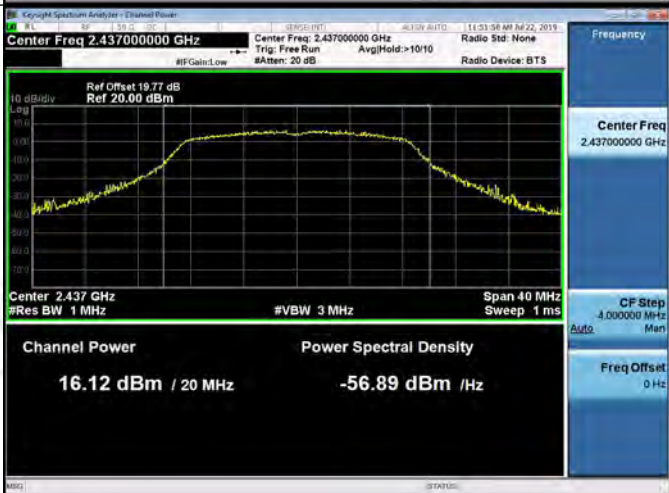
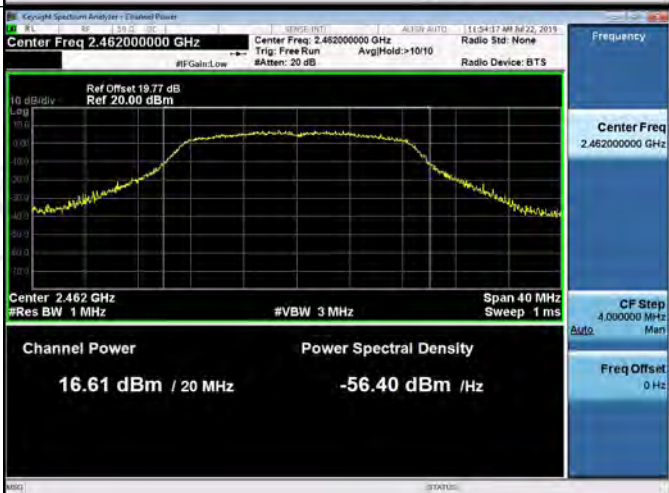
Result Table

Mode	Channel	Conducted Peak Output Power [dBm]	Verdict
11B	LCH	17.93	PASS
11B	MCH	18.38	PASS
11B	HCH	18.87	PASS
11G	LCH	17.59	PASS
11G	MCH	17.28	PASS
11G	HCH	17.85	PASS
11N20SISO	LCH	16.48	PASS
11N20SISO	MCH	16.12	PASS
11N20SISO	HCH	16.61	PASS

Test Graph

Graphs	
11B/LCH	 Center Freq 2.412000000 GHz Center Freq: 2.412000000 GHz Trig: Free Run Ave/Hold: 10/10 Radio Std: None Radio Device: BTS Ref Offset 19.5 dB Ref 30.00 dBm Center 2.412 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1 ms Channel Power 17.93 dBm / 20 MHz Power Spectral Density -55.08 dBm / Hz
11B/MCH	 Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Trig: Free Run Ave/Hold: 10/10 Radio Std: None Radio Device: BTS Ref Offset 19.77 dB Ref 30.00 dBm Center 2.437 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1 ms Channel Power 18.38 dBm / 20 MHz Power Spectral Density -54.63 dBm / Hz
11B/HCH	 Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz Trig: Free Run Ave/Hold: 10/10 Radio Std: None Radio Device: BTS Ref Offset 19.77 dB Ref 30.00 dBm Center 2.462 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1 ms Channel Power 18.87 dBm / 20 MHz Power Spectral Density -54.14 dBm / Hz

11G/LCH	 Center Freq 2.412000000 GHz Ref Offset 19.5 dB Ref 30.00 dBm Center 2.412 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1 ms Channel Power 17.59 dBm / 20 MHz Power Spectral Density -55.42 dBm /Hz
11G/MCH	 Center Freq 2.437000000 GHz Ref Offset 19.77 dB Ref 20.00 dBm Center 2.437 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1 ms Channel Power 17.28 dBm / 20 MHz Power Spectral Density -55.73 dBm /Hz
11G/HCH	 Center Freq 2.462000000 GHz Ref Offset 19.77 dB Ref 30.00 dBm Center 2.462 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1 ms Channel Power 17.85 dBm / 20 MHz Power Spectral Density -55.16 dBm /Hz

11N20SISO/LCH	 Center Freq 2.412000000 GHz Ref Offset 19.5 dB Ref 20.00 dBm Center 2.412 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1 ms Channel Power 16.48 dBm / 20 MHz Power Spectral Density -56.53 dBm / Hz
11N20SISO/MCH	 Center Freq 2.437000000 GHz Ref Offset 19.77 dB Ref 20.00 dBm Center 2.437 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1 ms Channel Power 16.12 dBm / 20 MHz Power Spectral Density -56.89 dBm / Hz
11N20SISO/HCH	 Center Freq 2.462000000 GHz Ref Offset 19.77 dB Ref 20.00 dBm Center 2.462 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1 ms Channel Power 16.61 dBm / 20 MHz Power Spectral Density -56.40 dBm / Hz

Appendix B): 6dB Occupied Bandwidth

Result Table

Mode	Channel	6dB Bandwidth [MHz]	99% OBW [MHz]	Verdict
11B	LCH	9.766	14.050	PASS
11B	MCH	9.215	14.027	PASS
11B	HCH	9.886	14.066	PASS
11G	LCH	15.66	17.215	PASS
11G	MCH	15.33	17.194	PASS
11G	HCH	15.62	17.187	PASS
11N20SISO	LCH	16.83	18.147	PASS
11N20SISO	MCH	16.59	18.126	PASS
11N20SISO	HCH	16.75	18.169	PASS

Test Graph

Graphs	
11B/LCH	 Center Freq 2.412000000 GHz Center Freq: 2.412000000 GHz Trig: Free Run Avg/Hold: >10/10 Radio Std: None Radio Device: BTS Ref Offset 19.5 dB Ref 30.00 dBm Center 2.412 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1.067 ms Occupied Bandwidth 14.050 MHz Total Power 17.5 dBm Transmit Freq Error 30.206 kHz OBW Power 99.00 % x dB Bandwidth 9.766 MHz x dB -6.00 dB
11B/MCH	 Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Trig: Free Run Avg/Hold: >10/10 Radio Std: None Radio Device: BTS Ref Offset 19.77 dB Ref 30.00 dBm Center 2.437 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1.067 ms Occupied Bandwidth 14.027 MHz Total Power 18.0 dBm Transmit Freq Error 26.866 kHz OBW Power 99.00 % x dB Bandwidth 9.215 MHz x dB -6.00 dB
11B/HCH	 Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS Ref Offset 19.77 dB Ref 30.00 dBm Center 2.462 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1.067 ms Occupied Bandwidth 14.066 MHz Total Power 18.6 dBm Transmit Freq Error -7.652 kHz OBW Power 99.00 % x dB Bandwidth 9.886 MHz x dB -6.00 dB

11G/LCH	 Keygraph Spectrum Analyzer - Occupied BW Center Freq 2.412000000 GHz Ref Offset 19.5 dB Ref 30.00 dBm Center 2.412 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1.067 ms Occupied Bandwidth 17.215 MHz Total Power 16.8 dBm Transmit Freq Error 17.815 kHz OBW Power 99.00 % x dB Bandwidth 15.66 MHz x dB -6.00 dB
11G/MCH	 Keygraph Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Ref Offset 19.77 dB Ref 30.00 dBm Center 2.437 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1.067 ms Occupied Bandwidth 17.194 MHz Total Power 16.5 dBm Transmit Freq Error 16.738 kHz OBW Power 99.00 % x dB Bandwidth 15.33 MHz x dB -6.00 dB
11G/HCH	 Keygraph Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Ref Offset 19.77 dB Ref 30.00 dBm Center 2.462 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1.067 ms Occupied Bandwidth 17.187 MHz Total Power 17.0 dBm Transmit Freq Error -23.211 kHz OBW Power 99.00 % x dB Bandwidth 15.62 MHz x dB -6.00 dB

11N20SISO/LCH	 Keygraph Spectrum Analyzer - Occupied BW Center Freq 2.412000000 GHz Ref Offset 19.5 dB Ref 30.00 dBm Center 2.412 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1.067 ms Occupied Bandwidth 18.147 MHz Total Power 15.7 dBm Transmit Freq Error 51.648 kHz OBW Power 99.00 % x dB Bandwidth 16.83 MHz x dB -6.00 dB
11N20SISO/MCH	 Keygraph Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Ref Offset 19.77 dB Ref 30.00 dBm Center 2.437 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1.067 ms Occupied Bandwidth 18.126 MHz Total Power 15.4 dBm Transmit Freq Error 25.690 kHz OBW Power 99.00 % x dB Bandwidth 16.59 MHz x dB -6.00 dB
11N20SISO/HCH	 Keygraph Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Ref Offset 19.77 dB Ref 30.00 dBm Center 2.462 GHz #Res BW 1 MHz #VBW 3 MHz Span 40 MHz Sweep 1.067 ms Occupied Bandwidth 18.169 MHz Total Power 15.8 dBm Transmit Freq Error -20.090 kHz OBW Power 99.00 % x dB Bandwidth 16.75 MHz x dB -6.00 dB

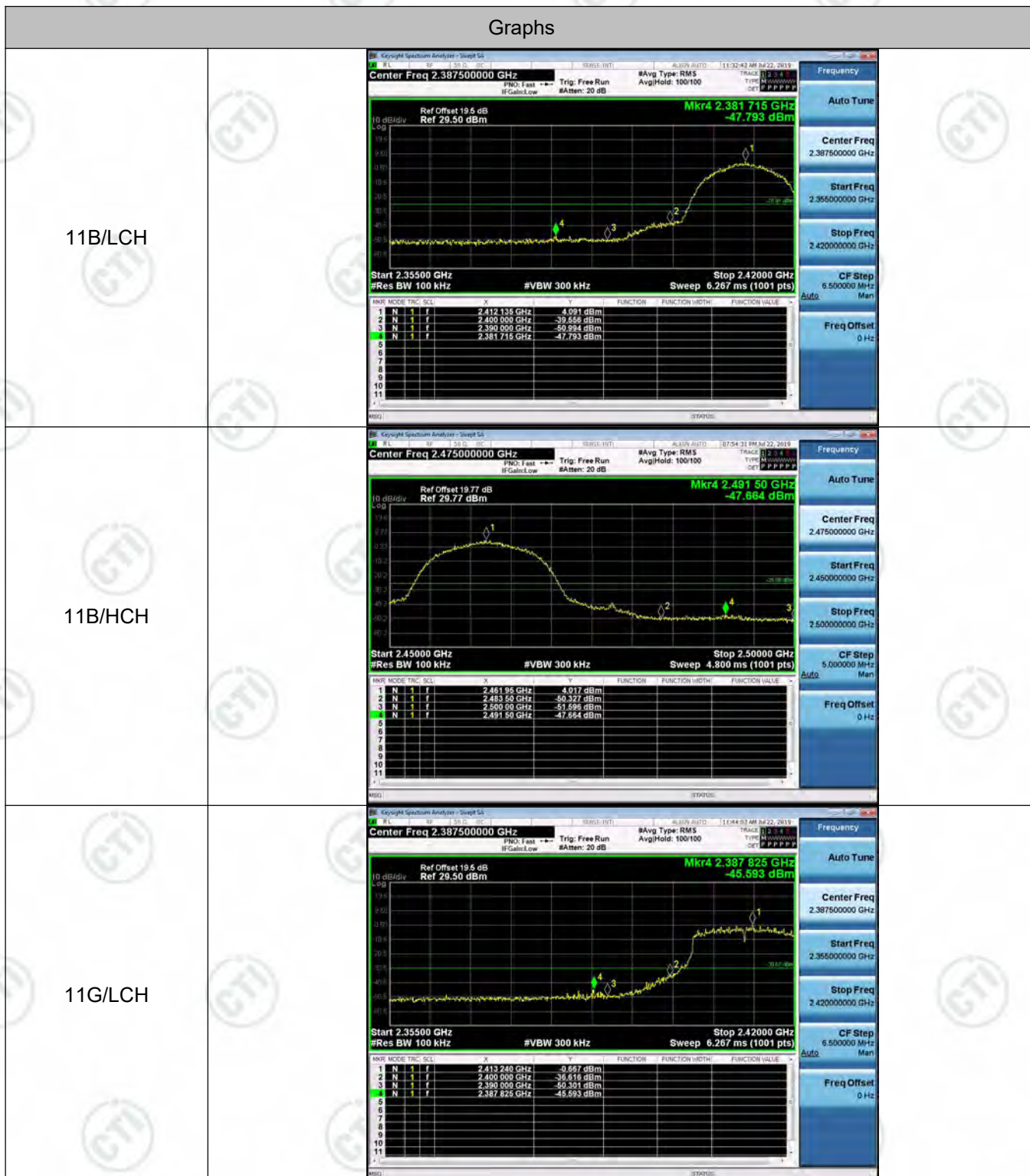
Appendix C): Band-edge for RF Conducted Emissions

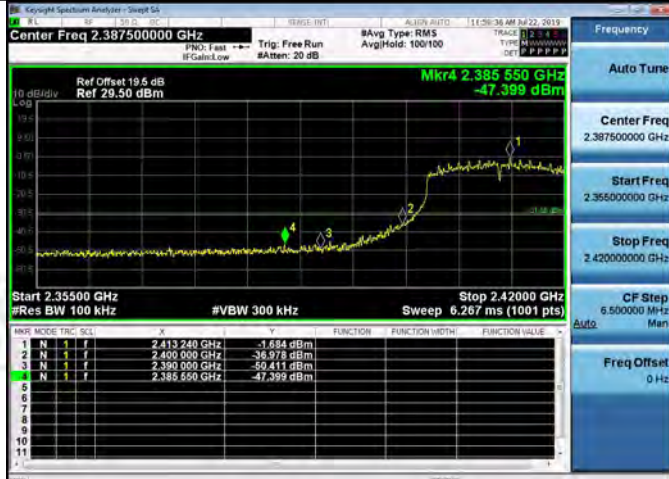
Result Table

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	4.091	-47.793	-25.91	PASS
11B	HCH	4.017	-47.664	-25.98	PASS
11G	LCH	-0.667	-45.593	-30.67	PASS
11G	HCH	-0.081	-47.168	-30.08	PASS
11N20SISO	LCH	-1.684	-47.399	-31.68	PASS
11N20SISO	HCH	-1.691	-46.828	-31.69	PASS

Test Graph

Graphs



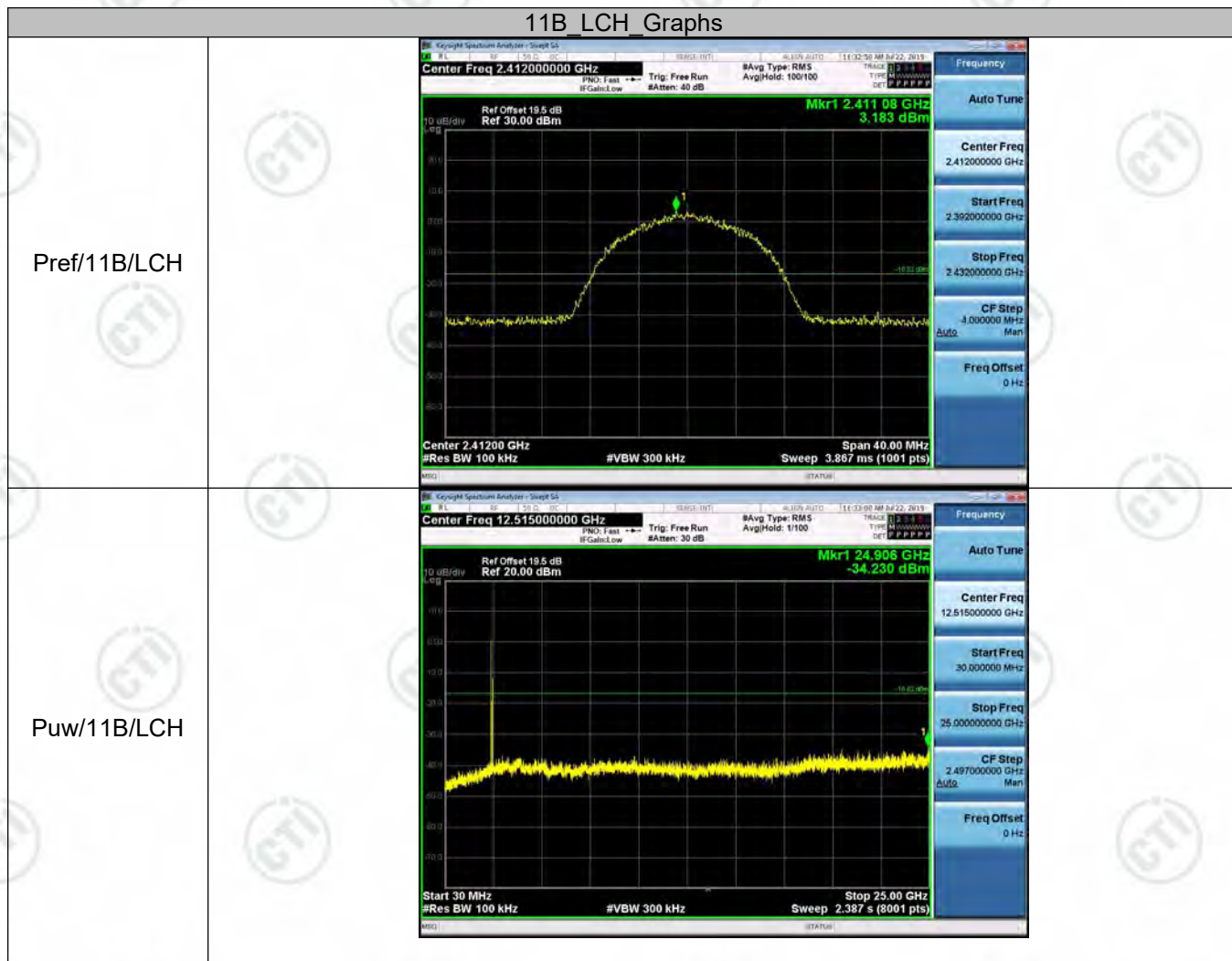
11G/HCH	 Center Freq 2.47500000 GHz Ref Offset 19.77 dB Ref 29.77 dBm Mkr4 2.485 75 GHz -47.168 dBm Start 2.45000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 4.800 ms (1001 pts) <table><tr><th>NR</th><th>MODE</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION METH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.463 25 GHz</td><td>-0.081 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.483 50 GHz</td><td>-49.843 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.500 00 GHz</td><td>-50.897 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.485 75 GHz</td><td>-47.168 dBm</td><td></td><td></td><td></td></tr></table>	NR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION METH	FUNCTION VALUE	1	N	1	f	2.463 25 GHz	-0.081 dBm				2	N	1	f	2.483 50 GHz	-49.843 dBm				3	N	1	f	2.500 00 GHz	-50.897 dBm				4	N	1	f	2.485 75 GHz	-47.168 dBm			
NR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION METH	FUNCTION VALUE																																						
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3	N	1	f	2.500 00 GHz	-50.897 dBm																																									
4	N	1	f	2.485 75 GHz	-47.168 dBm																																									
11N20SISO/LCH	 Center Freq 2.38750000 GHz Ref Offset 19.6 dB Ref 29.50 dBm Mkr4 2.385 550 GHz -47.399 dBm Start 2.35500 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 6.267 ms (1001 pts) <table><tr><th>NR</th><th>MODE</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION METH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.413 240 GHz</td><td>-1.684 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.400 000 GHz</td><td>-35.973 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.390 000 GHz</td><td>-50.411 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.385 550 GHz</td><td>-47.399 dBm</td><td></td><td></td><td></td></tr></table>	NR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION METH	FUNCTION VALUE	1	N	1	f	2.413 240 GHz	-1.684 dBm				2	N	1	f	2.400 000 GHz	-35.973 dBm				3	N	1	f	2.390 000 GHz	-50.411 dBm				4	N	1	f	2.385 550 GHz	-47.399 dBm			
NR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION METH	FUNCTION VALUE																																						
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4	N	1	f	2.385 550 GHz	-47.399 dBm																																									
11N20SISO/HCH	 Center Freq 2.47500000 GHz Ref Offset 19.77 dB Ref 29.77 dBm Mkr4 2.486 80 GHz -46.828 dBm Start 2.45000 GHz #Res BW 100 kHz #VBW 300 kHz Sweep 4.800 ms (1001 pts) <table><tr><th>NR</th><th>MODE</th><th>TRC</th><th>SCL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION METH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.463 25 GHz</td><td>-1.691 dBm</td><td></td><td></td><td></td></tr><tr><td>2</td><td>N</td><td>1</td><td>f</td><td>2.483 50 GHz</td><td>-49.846 dBm</td><td></td><td></td><td></td></tr><tr><td>3</td><td>N</td><td>1</td><td>f</td><td>2.500 00 GHz</td><td>-51.075 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.486 80 GHz</td><td>-46.828 dBm</td><td></td><td></td><td></td></tr></table>	NR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION METH	FUNCTION VALUE	1	N	1	f	2.463 25 GHz	-1.691 dBm				2	N	1	f	2.483 50 GHz	-49.846 dBm				3	N	1	f	2.500 00 GHz	-51.075 dBm				4	N	1	f	2.486 80 GHz	-46.828 dBm			
NR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION METH	FUNCTION VALUE																																						
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3	N	1	f	2.500 00 GHz	-51.075 dBm																																									
4	N	1	f	2.486 80 GHz	-46.828 dBm																																									

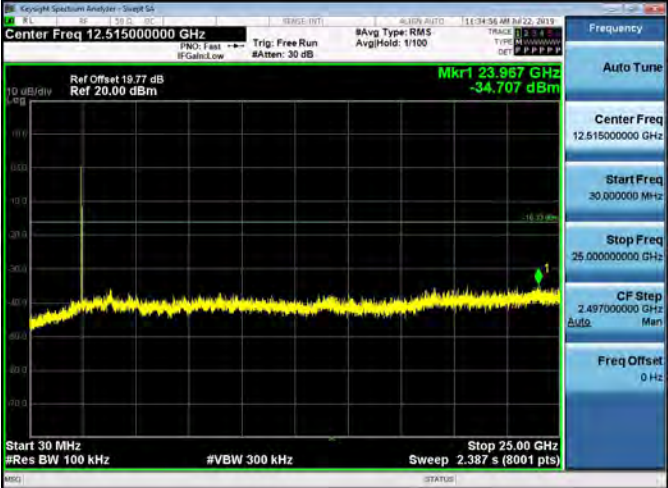
Appendix D): RF Conducted Spurious Emissions

Result Table

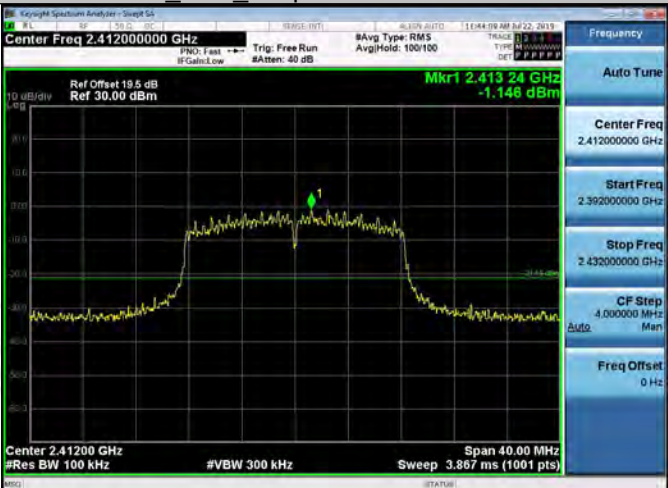
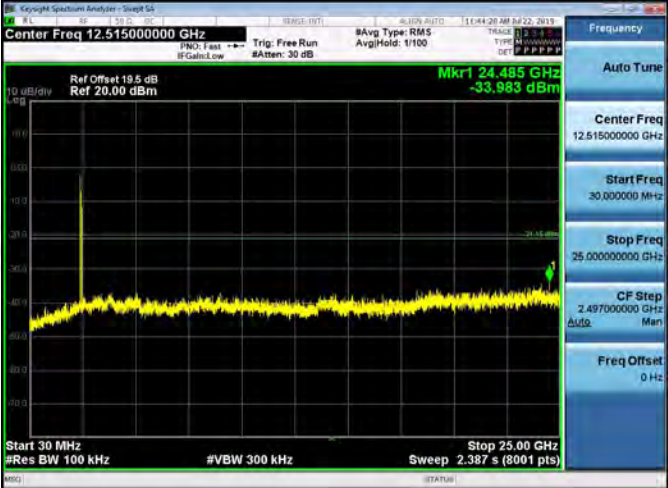
Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
11B	LCH	3.183	<Limit	PASS
11B	MCH	3.673	<Limit	PASS
11B	HCH	3.723	<Limit	PASS
11G	LCH	-1.146	<Limit	PASS
11G	MCH	-0.981	<Limit	PASS
11G	HCH	-0.807	<Limit	PASS
11N20SISO	LCH	-1.456	<Limit	PASS
11N20SISO	MCH	-1.716	<Limit	PASS
11N20SISO	HCH	-1.638	<Limit	PASS

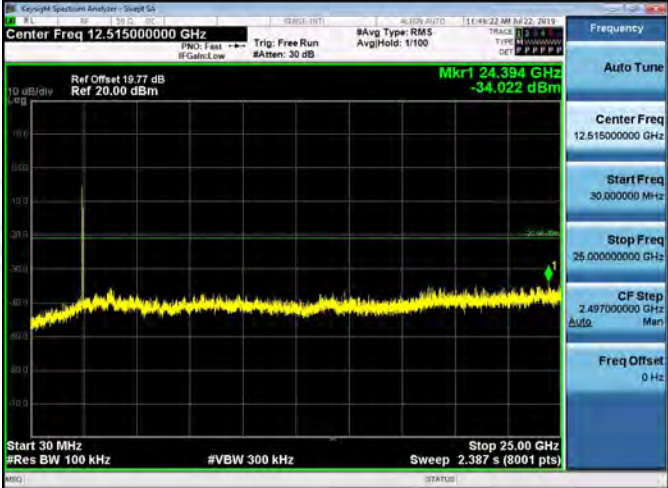
Test Graph



11B MCH Graphs	
Pref/11B/MCH	
Puw/11B/MCH	

11B HCH Graphs	
Pref/11B/HCH	
Puw/11B/HCH	

11G LCH Graphs	
Pref/11G/LCH	
Puw/11G/LCH	

11G MCH Graphs	
Pref/11G/MCH	
Puw/11G/MCH	

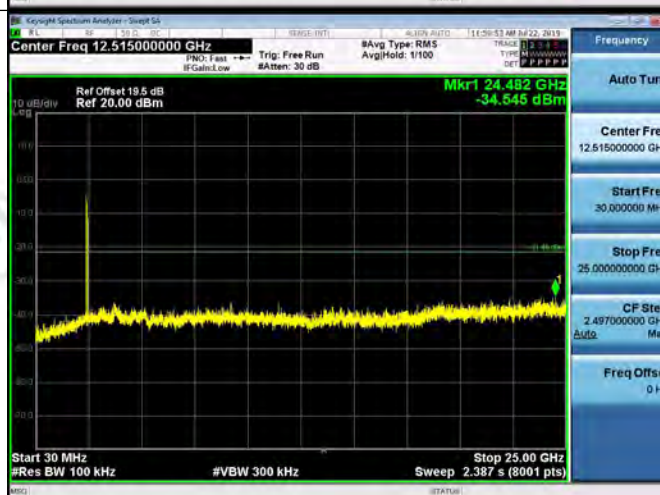


11N20SISO LCH Graphs

Pref/11N20SISO/LCH

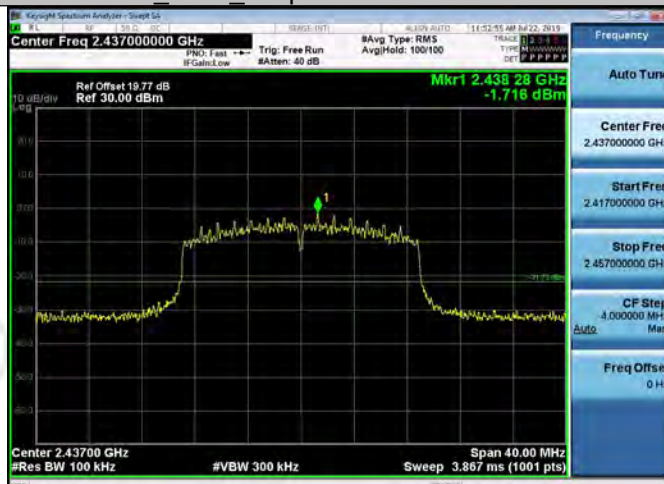


/11N20SISO/LCH

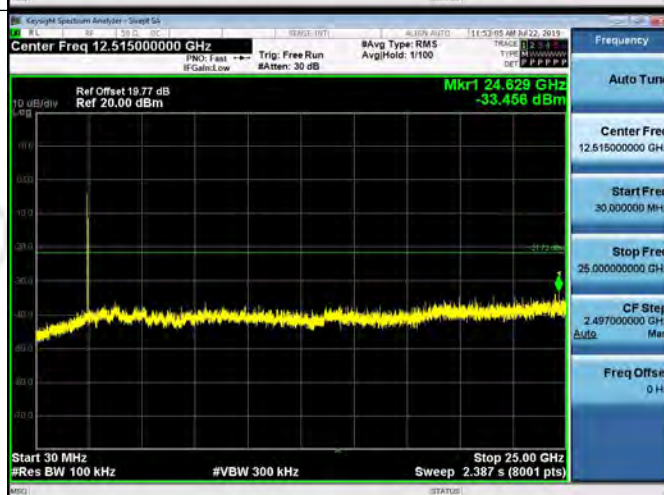


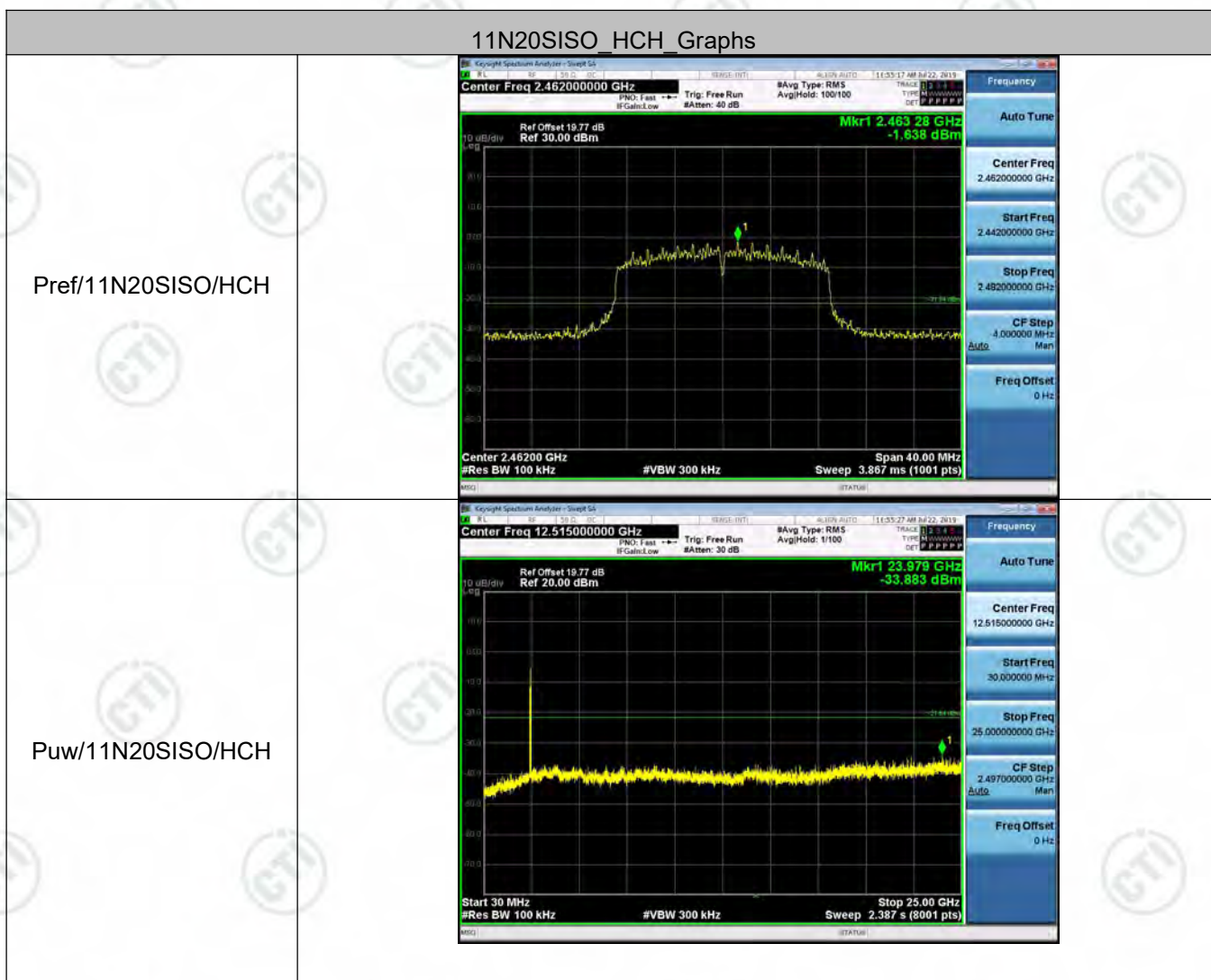
11N20SISO MCH Graphs

Pref/11N20SISO/MCH



Puw/11N20SISO/MCH



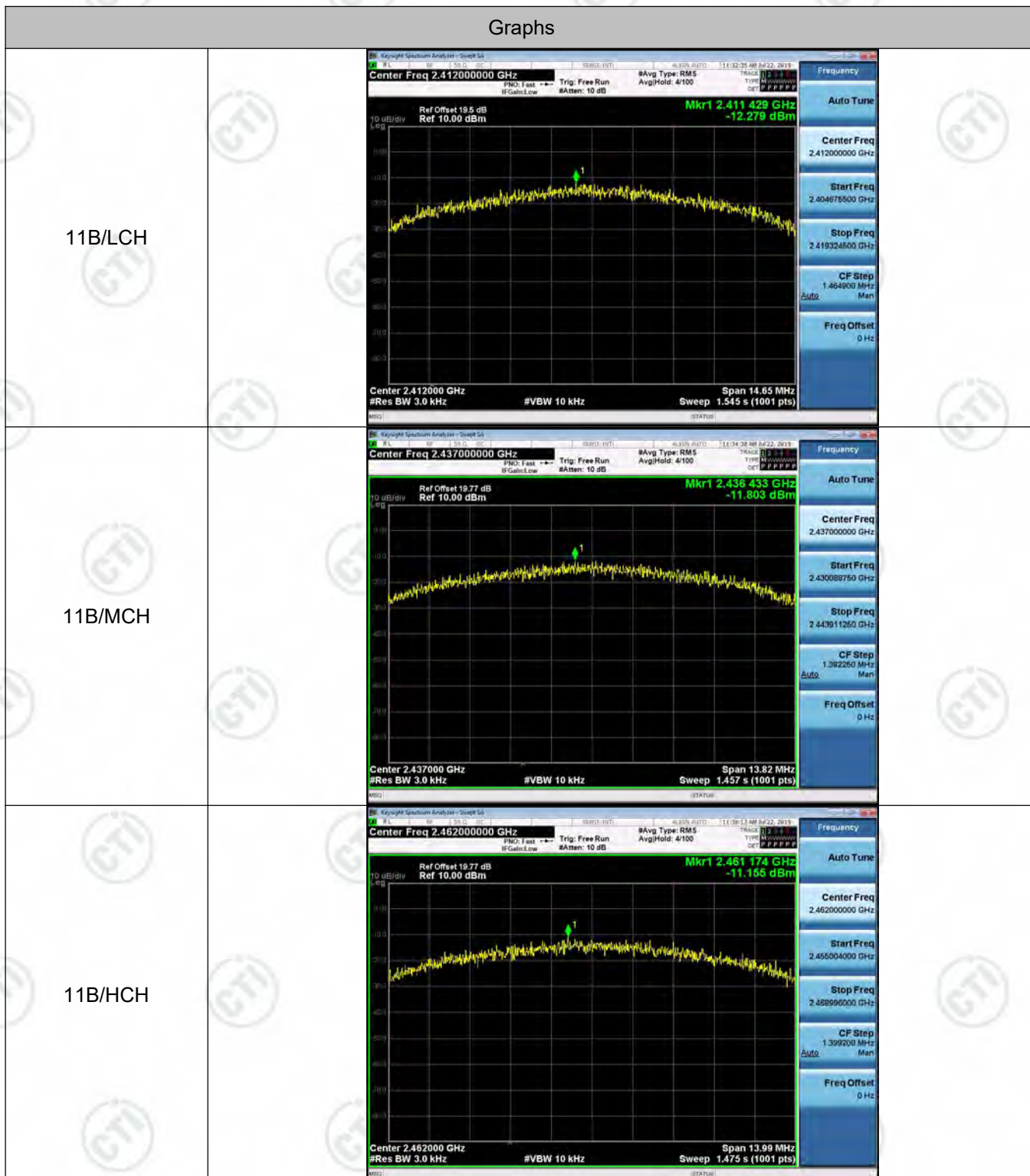


Appendix E): Power Spectral Density

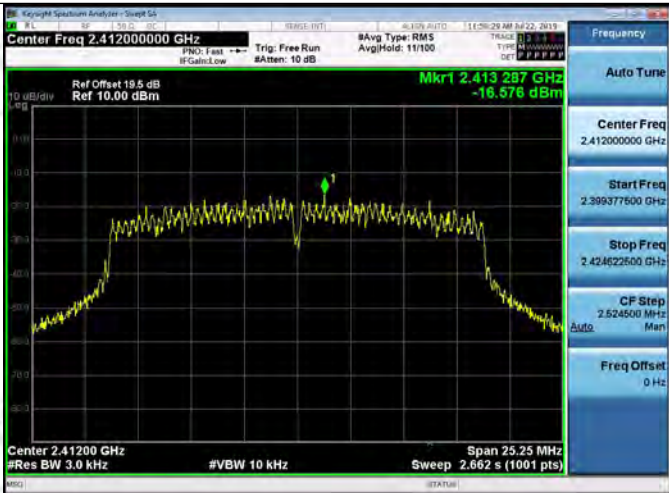
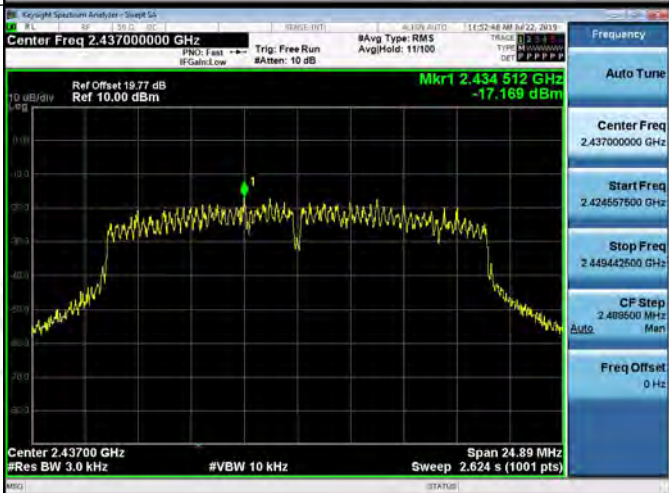
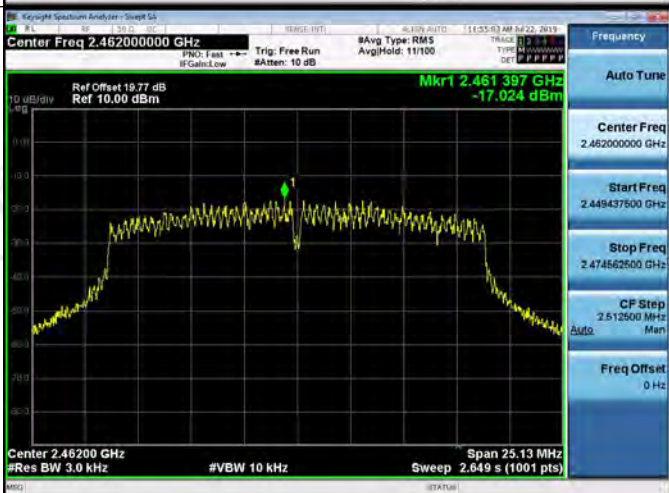
Result Table

Mode	Channel	Power Spectral Density [dBm]	Verdict
11B	LCH	-12.279	PASS
11B	MCH	-11.803	PASS
11B	HCH	-11.155	PASS
11G	LCH	-15.485	PASS
11G	MCH	-15.753	PASS
11G	HCH	-15.140	PASS
11N20SISO	LCH	-16.576	PASS
11N20SISO	MCH	-17.169	PASS
11N20SISO	HCH	-17.024	PASS

Test Graph





11N20SISO/LCH	
11N20SISO/MCH	
11N20SISO/HCH	

Appendix F): Antenna Requirement

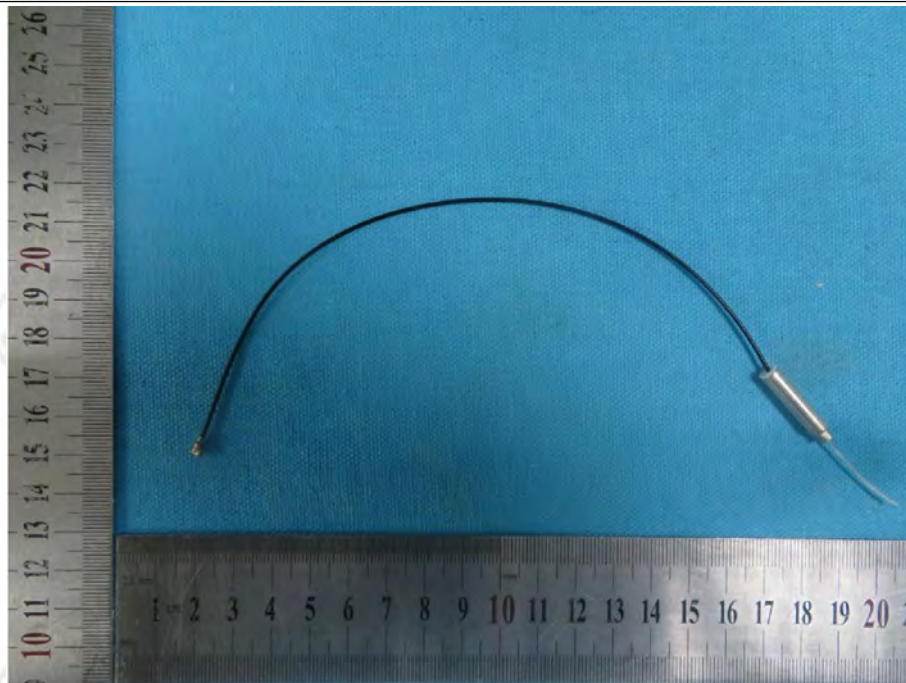
15.203 requirement:

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

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:



The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 1.6 dBi

Appendix G): AC Power Line Conducted Emission

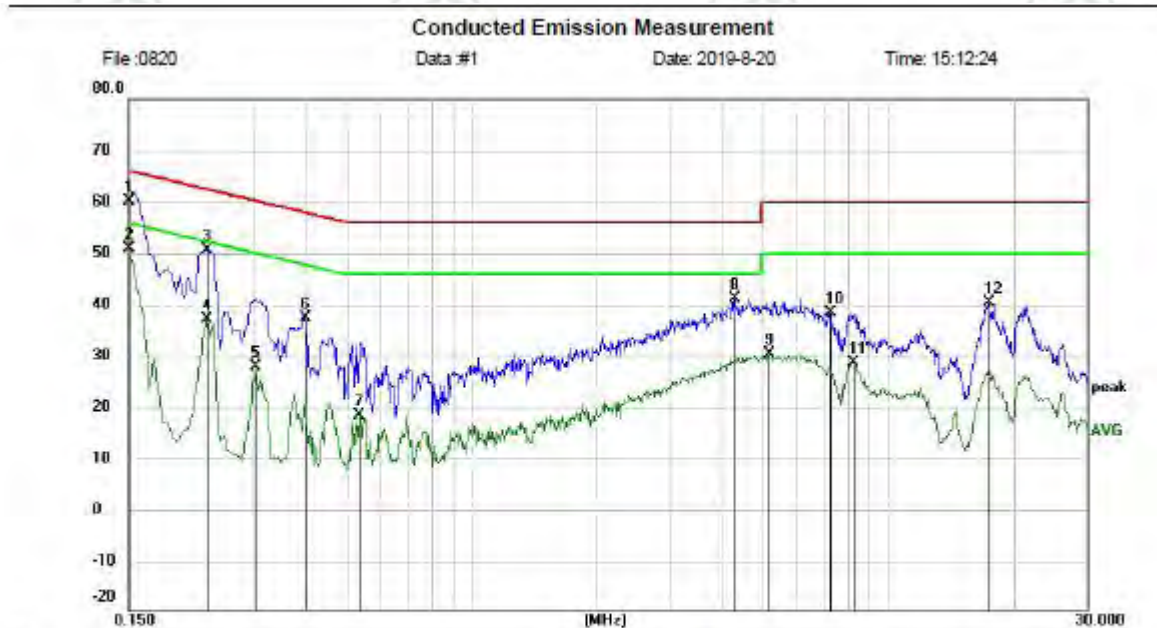
Test Procedure:	Test frequency range :150KHz-30MHz 1)The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a $50\Omega/50\mu\text{H} + 5\Omega$ linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3)The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.															
Limit:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBμV)</th></tr> <tr> <th>Quasi-peak</th><th>Average</th></tr> </thead> <tbody> <tr> <td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr> <tr> <td>0.5-5</td><td>56</td><td>46</td></tr> <tr> <td>5-30</td><td>60</td><td>50</td></tr> </tbody> </table> * The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz. NOTE : The lower limit is applicable at the transition frequency		Frequency range (MHz)	Limit (dB μ V)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dB μ V)															
	Quasi-peak	Average														
0.15-0.5	66 to 56*	56 to 46*														
0.5-5	56	46														
5-30	60	50														

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live line:



Site LAB Phase: *L1* Temperature: 21
Limit: FCC Class B CE(QP) Power: AC120/60Hz Humidity: 51 %
EUT:
M/N:
Mode: ON
Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1500	50.05	9.97	60.02	66.00	-5.98	QP	
2	*	0.1500	40.82	9.97	50.79	56.00	-5.21	AVG	
3		0.2310	40.64	10.04	50.68	62.41	-11.73	peak	
4		0.2310	27.18	10.04	37.22	52.41	-15.19	AVG	
5		0.3030	17.88	10.10	27.98	50.16	-22.18	AVG	
6		0.3975	27.32	10.00	37.32	57.91	-20.59	peak	
7		0.5378	8.45	10.05	18.50	46.00	-27.50	AVG	
8		4.2540	31.37	9.83	41.20	56.00	-14.80	peak	
9		5.1855	20.52	9.83	30.35	50.00	-19.65	AVG	
10		7.2240	28.42	9.86	38.28	60.00	-21.72	peak	
11		8.1960	18.81	9.89	28.70	50.00	-21.30	AVG	
12		17.3895	30.31	9.96	40.27	60.00	-19.73	peak	

*:Maximum data x:Over limit !:over margin

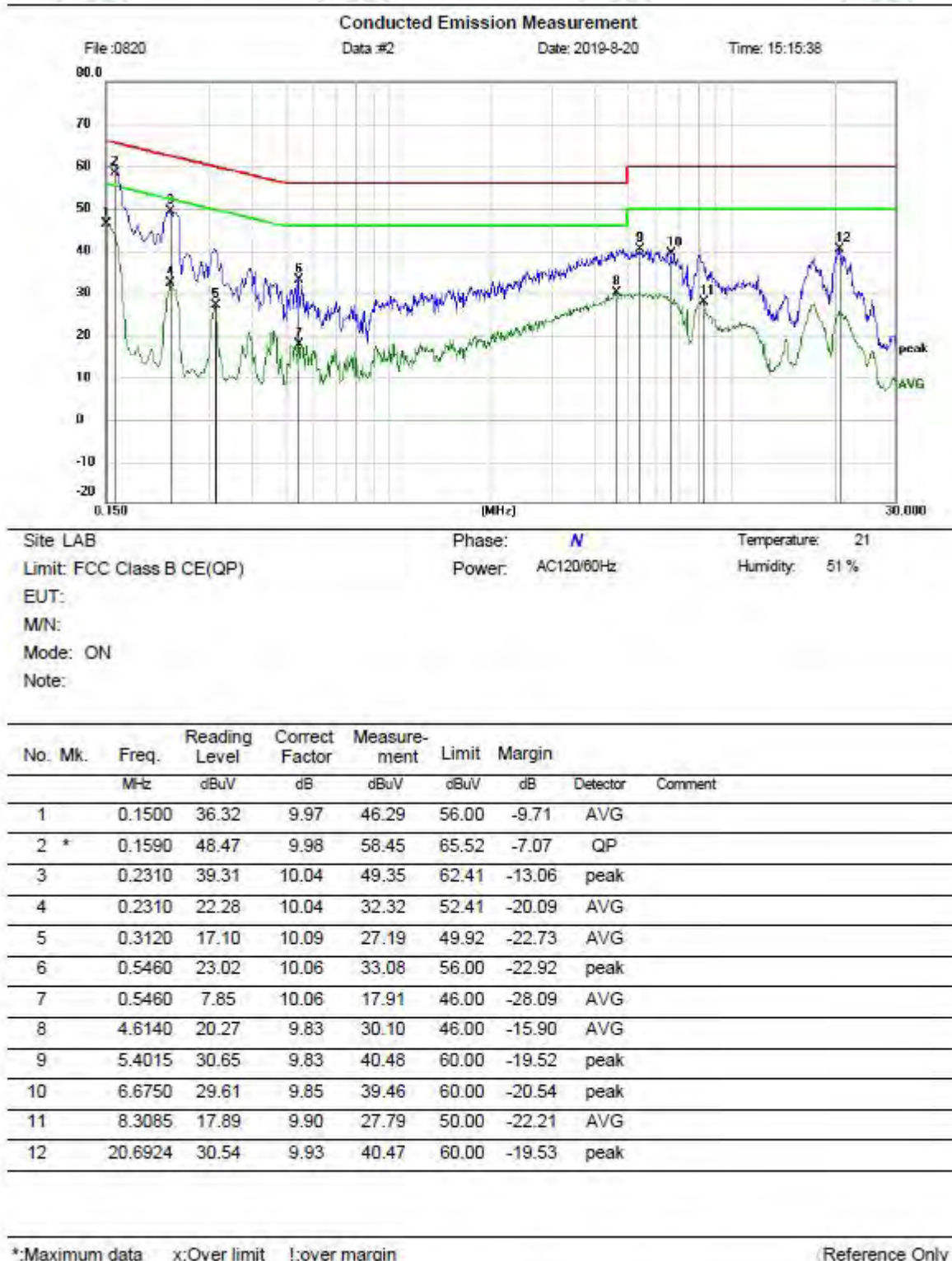
Reference Only

File :0820\Data :#1

Page: 1

Engineer Signature:

Neutral line:



File :0820\Data :#2

Page: 1

Engineer Signature:

Notes:1. The following Quasi-Peak and Average measurements were performed on the EUT:

2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

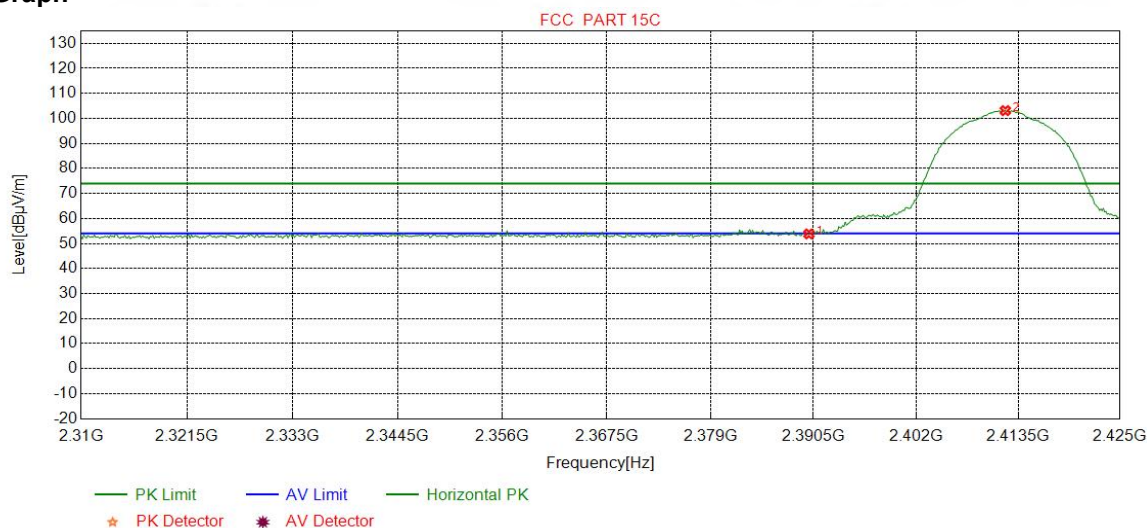
Appendix H): Restricted bands around fundamental frequency (Radiated)

Receiver Setup:	<table><tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Remark</th></tr><tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120kHz</td><td>300kHz</td><td>Quasi-peak</td></tr><tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr><tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average</td></tr></table>	Frequency	Detector	RBW	VBW	Remark	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak	Above 1GHz	Peak	1MHz	3MHz	Peak	Peak	1MHz	10Hz	Average	
Frequency	Detector	RBW	VBW	Remark																	
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak																	
Above 1GHz	Peak	1MHz	3MHz	Peak																	
	Peak	1MHz	10Hz	Average																	
Test Procedure:	Below 1GHz test procedure as below: a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel Above 1GHz test procedure as below: g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter). h. Test the EUT in the lowest channel , the Highest channel i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. j. Repeat above procedures until all frequencies measured was complete.																				
Limit:	<table><tr><th>Frequency</th><th>Limit (dBμV/m @3m)</th><th>Remark</th></tr><tr><td>30MHz-88MHz</td><td>40.0</td><td>Quasi-peak Value</td></tr><tr><td>88MHz-216MHz</td><td>43.5</td><td>Quasi-peak Value</td></tr><tr><td>216MHz-960MHz</td><td>46.0</td><td>Quasi-peak Value</td></tr><tr><td>960MHz-1GHz</td><td>54.0</td><td>Quasi-peak Value</td></tr><tr><td rowspan="2">Above 1GHz</td><td>54.0</td><td>Average Value</td></tr><tr><td>74.0</td><td>Peak Value</td></tr></table>	Frequency	Limit (dBμV/m @3m)	Remark	30MHz-88MHz	40.0	Quasi-peak Value	88MHz-216MHz	43.5	Quasi-peak Value	216MHz-960MHz	46.0	Quasi-peak Value	960MHz-1GHz	54.0	Quasi-peak Value	Above 1GHz	54.0	Average Value	74.0	Peak Value
Frequency	Limit (dBμV/m @3m)	Remark																			
30MHz-88MHz	40.0	Quasi-peak Value																			
88MHz-216MHz	43.5	Quasi-peak Value																			
216MHz-960MHz	46.0	Quasi-peak Value																			
960MHz-1GHz	54.0	Quasi-peak Value																			
Above 1GHz	54.0	Average Value																			
	74.0	Peak Value																			

Test plot as follows:

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2412
Remark:	PK		

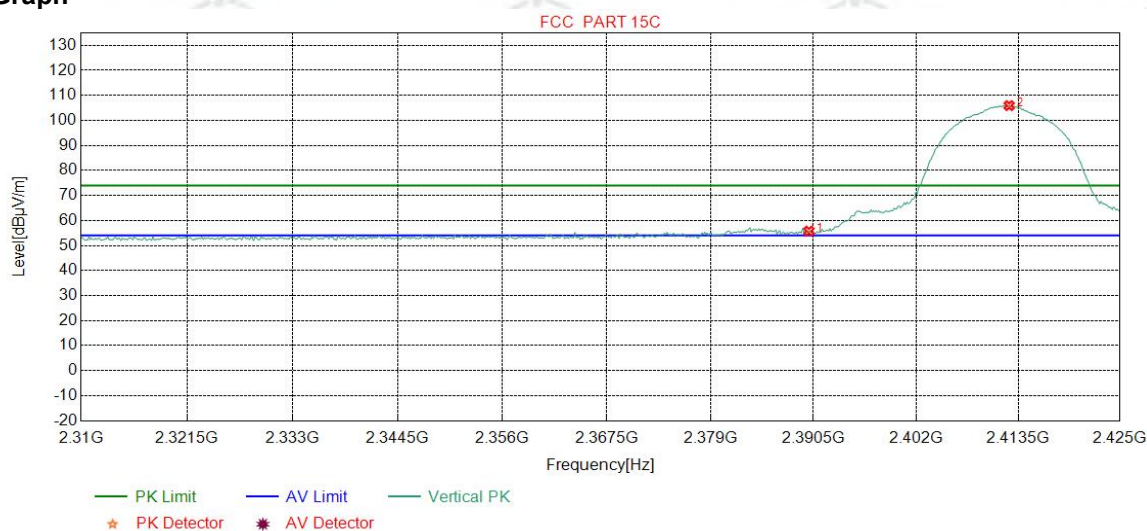
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	50.64	53.82	74.00	20.18	Pass	Horizontal
2	2412.0463	32.28	13.36	-42.44	99.91	103.11	74.00	-29.11	Pass	Horizontal

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2412
Remark:	PK		

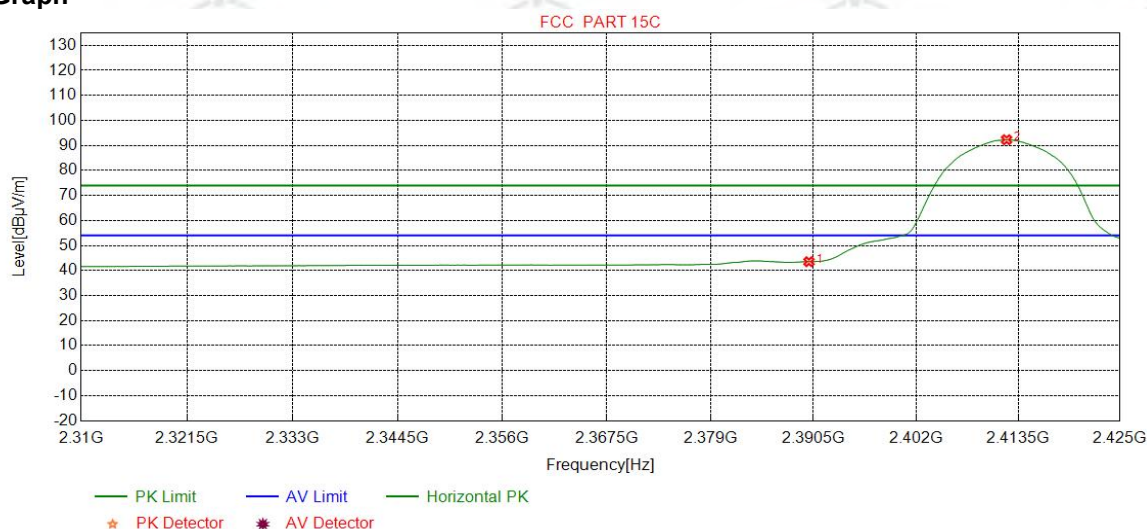
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	52.58	55.76	74.00	18.24	Pass	Vertical
2	2412.4781	32.28	13.36	-42.43	102.71	105.92	74.00	-31.92	Pass	Vertical

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2412
Remark:	AV		

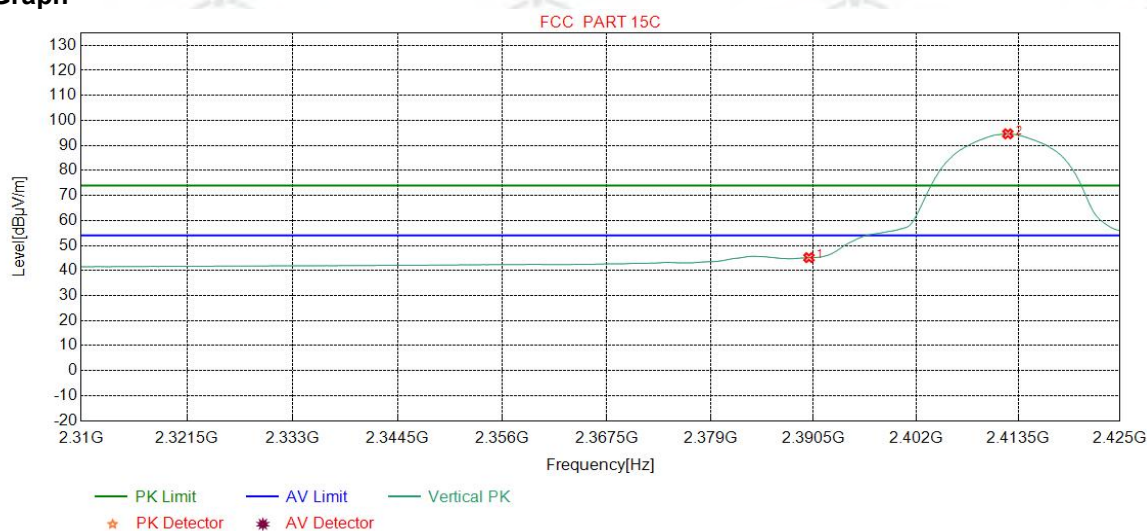
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	40.35	43.53	54.00	10.47	Pass	Horizontal
2	2412.1902	32.28	13.36	-42.44	89.08	92.28	54.00	-38.28	Pass	Horizontal

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2412
Remark:	AV		

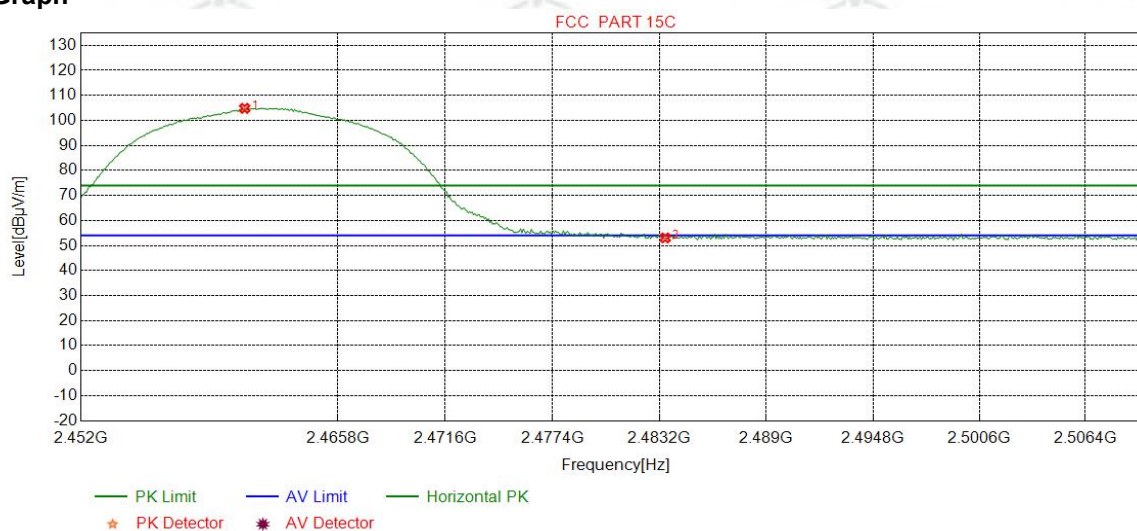
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	41.97	45.15	54.00	8.85	Pass	Vertical
2	2412.3342	32.28	13.36	-42.43	91.43	94.64	54.00	-40.64	Pass	Vertical

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2462
Remark:	PK		

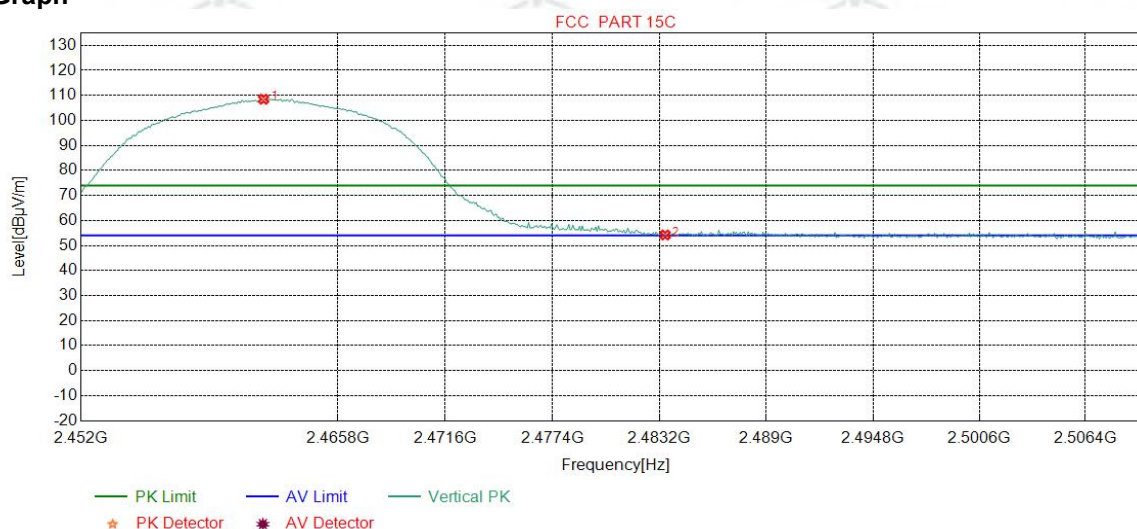
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2460.7835	32.35	13.48	-42.41	101.40	104.82	74.00	-30.82	Pass	Horizontal
2	2483.5000	32.38	13.38	-42.40	49.67	53.03	74.00	20.97	Pass	Horizontal

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2462
Remark:	PK		

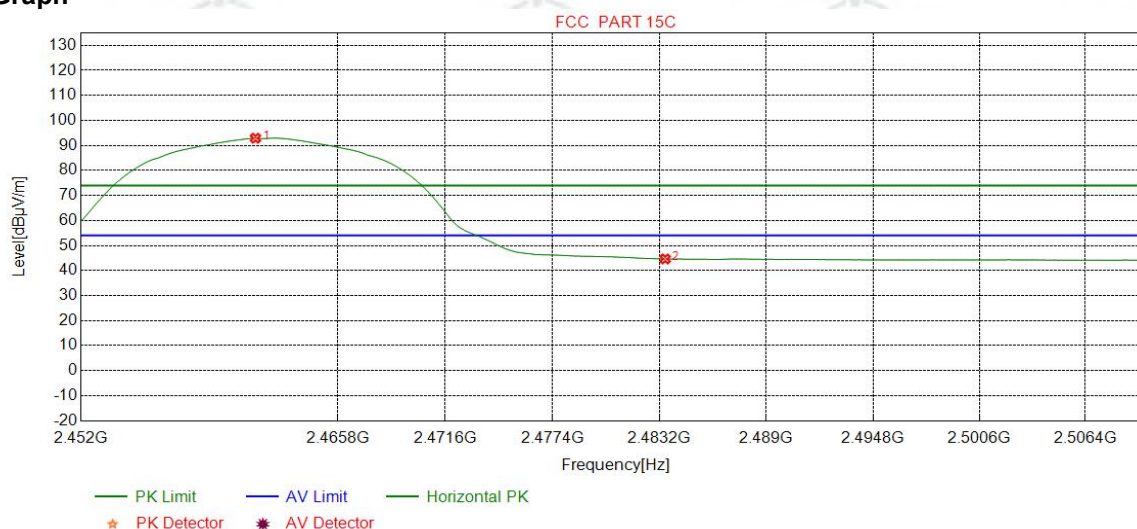
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2461.7998	32.35	13.48	-42.41	105.05	108.47	74.00	-34.47	Pass	Vertical
2	2483.5000	32.38	13.38	-42.40	50.85	54.21	74.00	19.79	Pass	Vertical

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2462
Remark:	AV		

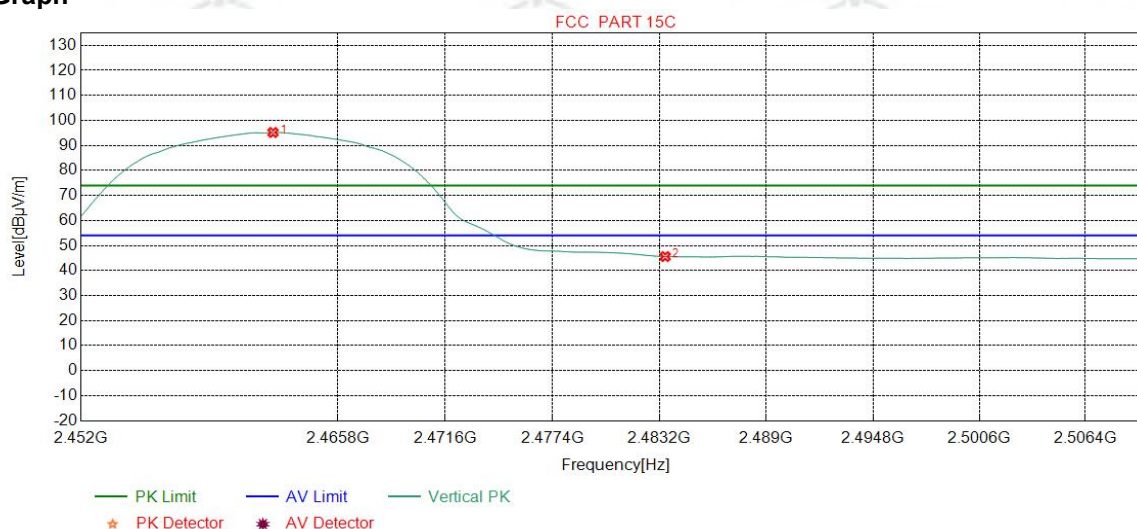
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2461.3642	32.35	13.48	-42.41	89.47	92.89	54.00	-38.89	Pass	Horizontal
2	2483.5000	32.38	13.38	-42.40	41.27	44.63	54.00	9.37	Pass	Horizontal

Mode:	802.11 b(11Mbps) Transmitting	Channel:	2462
Remark:	AV		

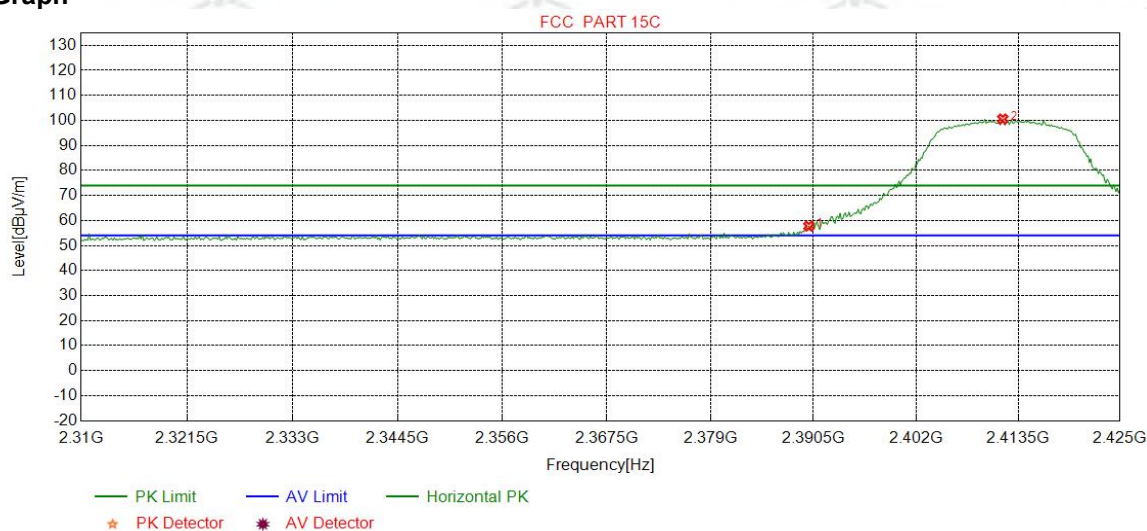
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2462.3079	32.35	13.47	-42.41	91.76	95.17	54.00	-41.17	Pass	Vertical
2	2483.5000	32.38	13.38	-42.40	42.22	45.58	54.00	8.42	Pass	Vertical

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2412
Remark:	PK		

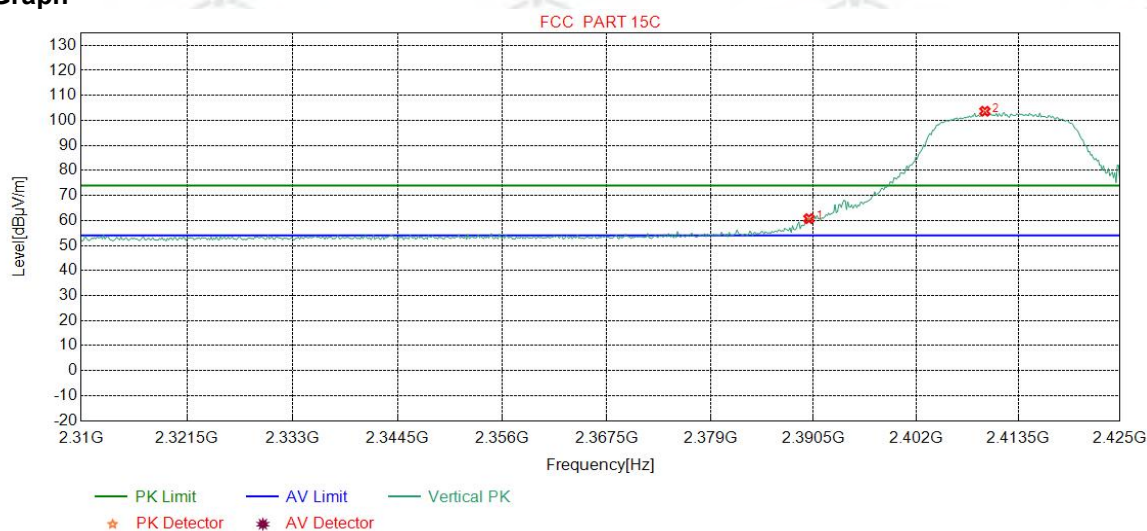
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	54.55	57.73	74.00	16.27	Pass	Horizontal
2	2411.7584	32.28	13.35	-42.43	97.38	100.58	74.00	-26.58	Pass	Horizontal

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2412
Remark:	PK		

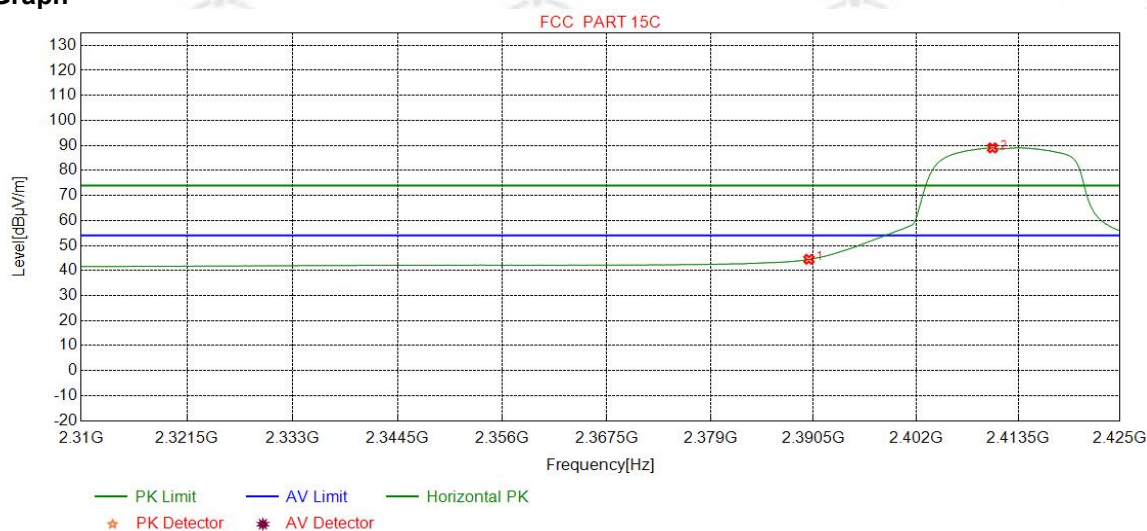
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	57.55	60.73	74.00	13.27	Pass	Vertical
2	2409.7434	32.27	13.34	-42.42	100.47	103.66	74.00	-29.66	Pass	Vertical

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2412
Remark:	AV		

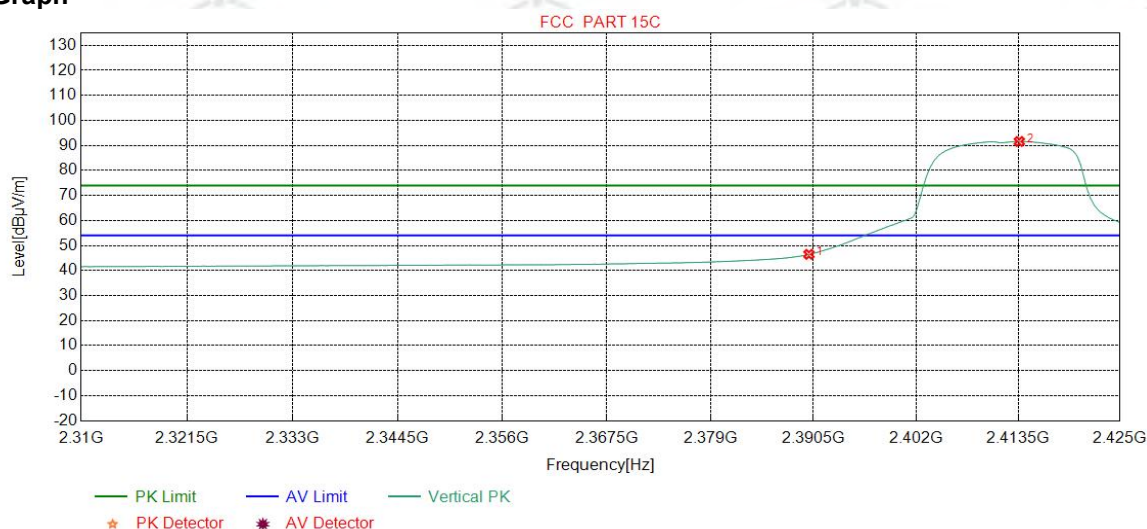
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	41.30	44.48	54.00	9.52	Pass	Horizontal
2	2410.6070	32.27	13.35	-42.43	85.82	89.01	54.00	-35.01	Pass	Horizontal

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2412
Remark:	AV		

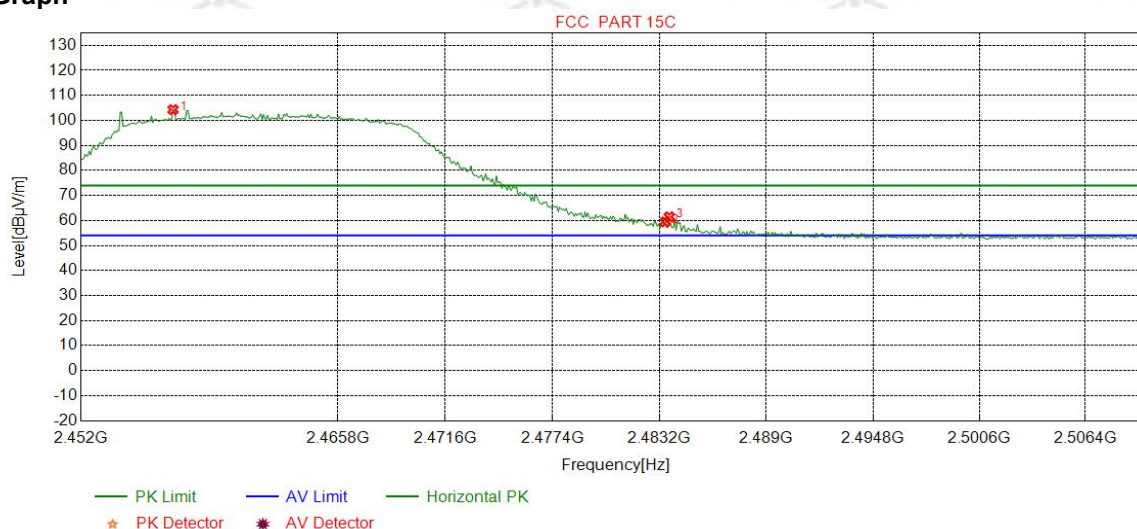
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	43.29	46.47	54.00	7.53	Pass	Vertical
2	2413.6295	32.28	13.36	-42.43	88.37	91.58	54.00	-37.58	Pass	Vertical

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2462
Remark:	PK		

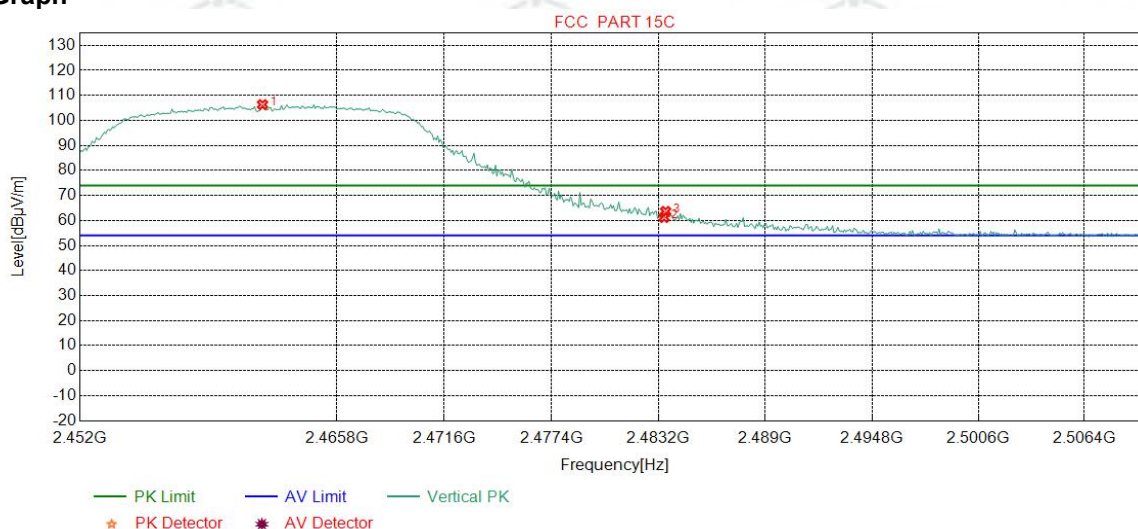
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2456.9362	32.34	13.50	-42.41	100.87	104.30	74.00	-30.30	Pass	Horizontal
2	2483.5000	32.38	13.38	-42.40	56.07	59.43	74.00	14.57	Pass	Horizontal
3	2483.7222	32.38	13.37	-42.40	58.13	61.48	74.00	12.52	Pass	Horizontal

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2462
Remark:	PK		

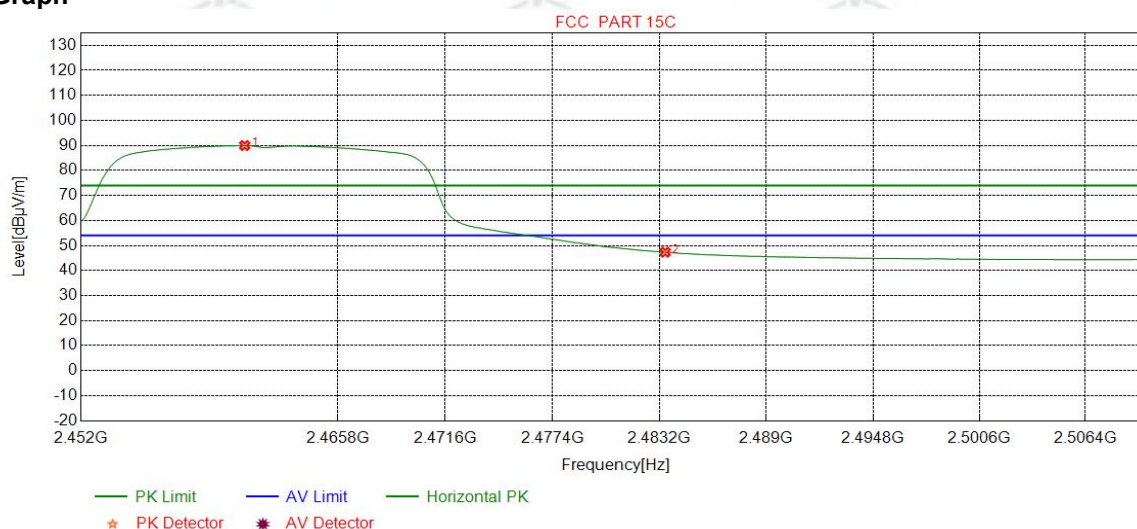
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2461.7998	32.35	13.48	-42.41	102.89	106.31	74.00	-32.31	Pass	Vertical
2	2483.5000	32.38	13.38	-42.40	57.83	61.19	74.00	12.81	Pass	Vertical
3	2483.5770	32.38	13.38	-42.40	60.27	63.63	74.00	10.37	Pass	Vertical

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2462
Remark:	AV		

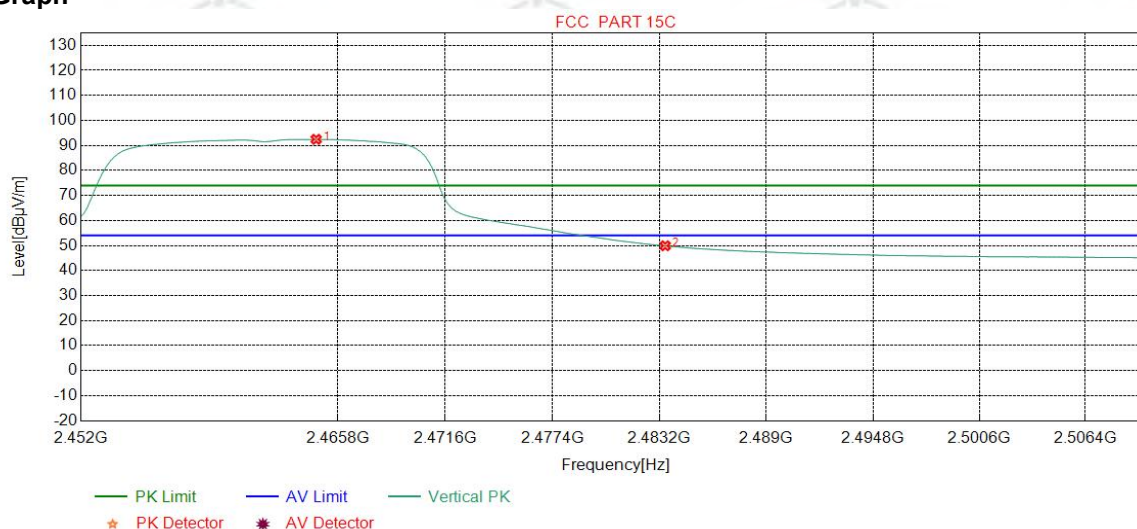
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2460.7835	32.35	13.48	-42.41	86.54	89.96	54.00	-35.96	Pass	Horizontal
2	2483.5000	32.38	13.38	-42.40	43.98	47.34	54.00	6.66	Pass	Horizontal

Mode:	802.11 g(6Mbps) Transmitting	Channel:	2462
Remark:	AV		

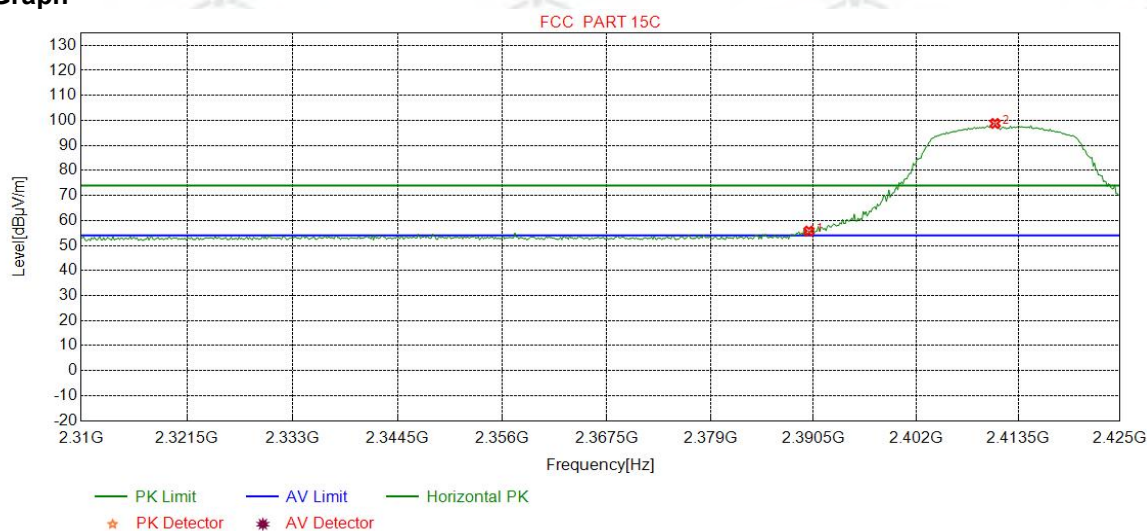
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2464.6308	32.35	13.46	-42.40	89.03	92.44	54.00	-38.44	Pass	Vertical
2	2483.5000	32.38	13.38	-42.40	46.53	49.89	54.00	4.11	Pass	Vertical

Mode:	802.11 n(HT20) (6.5Mbps) Transmitting	Channel:	2412
Remark:	PK		

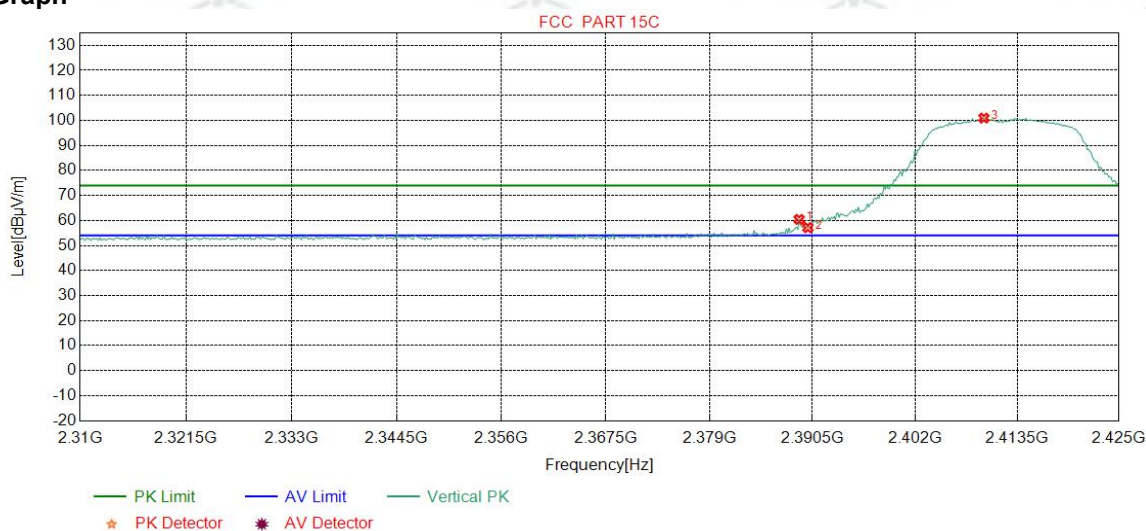
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	52.59	55.77	74.00	18.23	Pass	Horizontal
2	2410.8949	32.28	13.35	-42.43	95.57	98.77	74.00	-24.77	Pass	Horizontal

Mode:	802.11 n(HT20) (6.5Mbps) Transmitting	Channel:	2412
Remark:	PK		

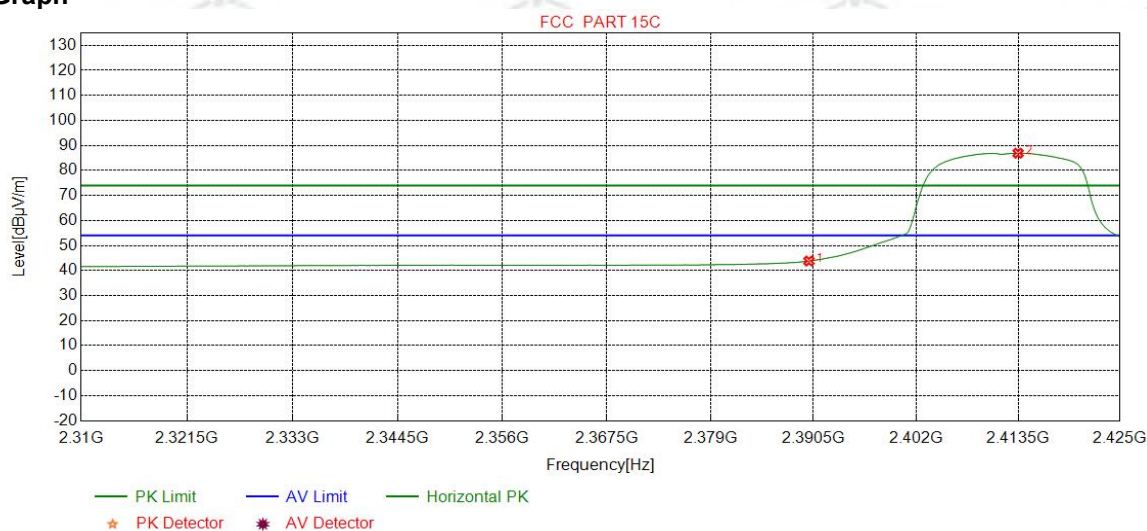
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2389.0175	32.24	13.38	-42.43	57.24	60.43	74.00	13.57	Pass	Vertical
2	2390.0000	32.25	13.37	-42.44	53.94	57.12	74.00	16.88	Pass	Vertical
3	2409.7434	32.27	13.34	-42.42	97.73	100.92	74.00	-26.92	Pass	Vertical

Mode:	802.11 n(HT20) (6.5Mbps) Transmitting	Channel:	2412
Remark:	AV		

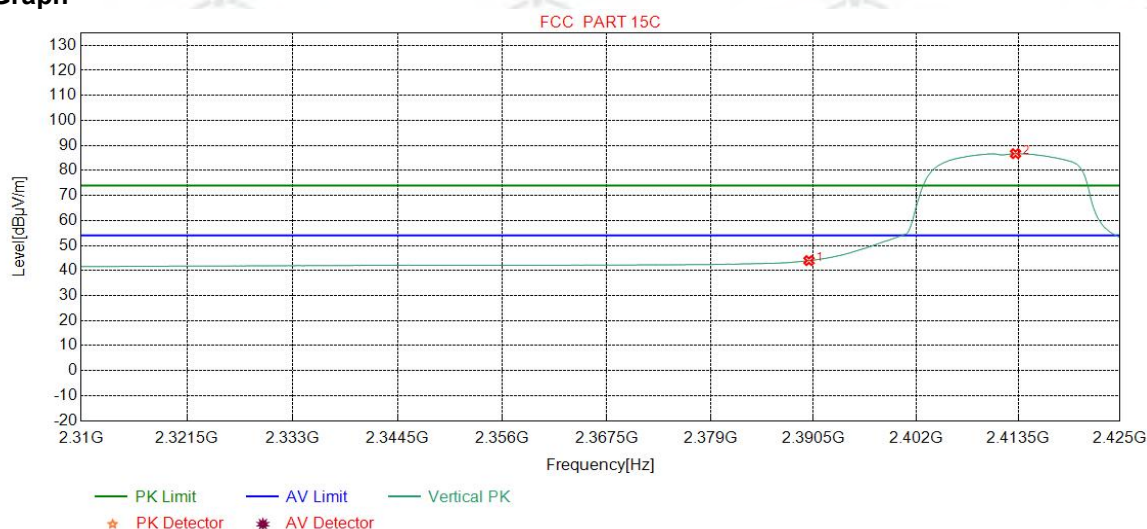
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	40.61	43.79	54.00	10.21	Pass	Horizontal
2	2413.4856	32.28	13.36	-42.43	83.69	86.90	54.00	-32.90	Pass	Horizontal

Mode:	802.11 n(HT20) (6.5Mbps) Transmitting	Channel:	2412
Remark:	AV		

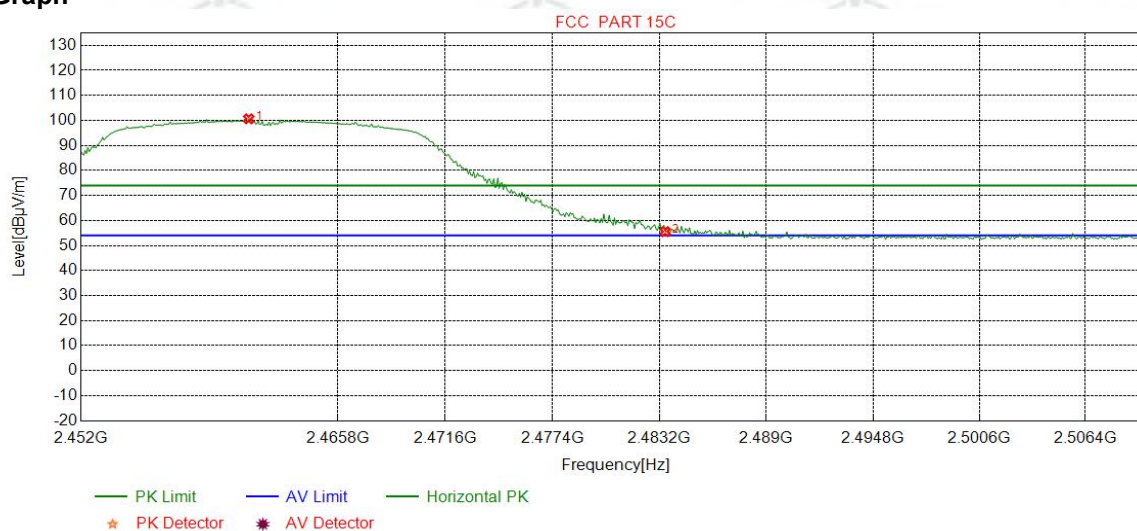
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2390.0000	32.25	13.37	-42.44	40.78	43.96	54.00	10.04	Pass	Vertical
2	2413.1977	32.28	13.36	-42.43	83.49	86.70	54.00	-32.70	Pass	Vertical

Mode:	802.11 n(HT20) (6.5Mbps) Transmitting	Channel:	2462
Remark:	PK		

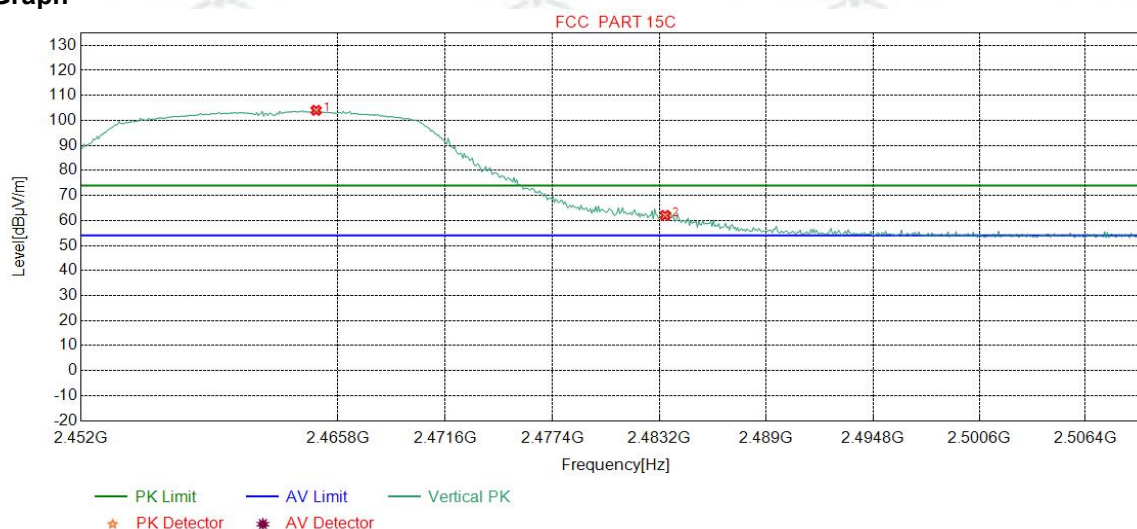
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2461.0013	32.35	13.48	-42.41	97.20	100.62	74.00	-26.62	Pass	Horizontal
2	2483.5000	32.38	13.38	-42.40	52.19	55.55	74.00	18.45	Pass	Horizontal

Mode:	802.11 n(HT20) (6.5Mbps) Transmitting	Channel:	2462
Remark:	PK		

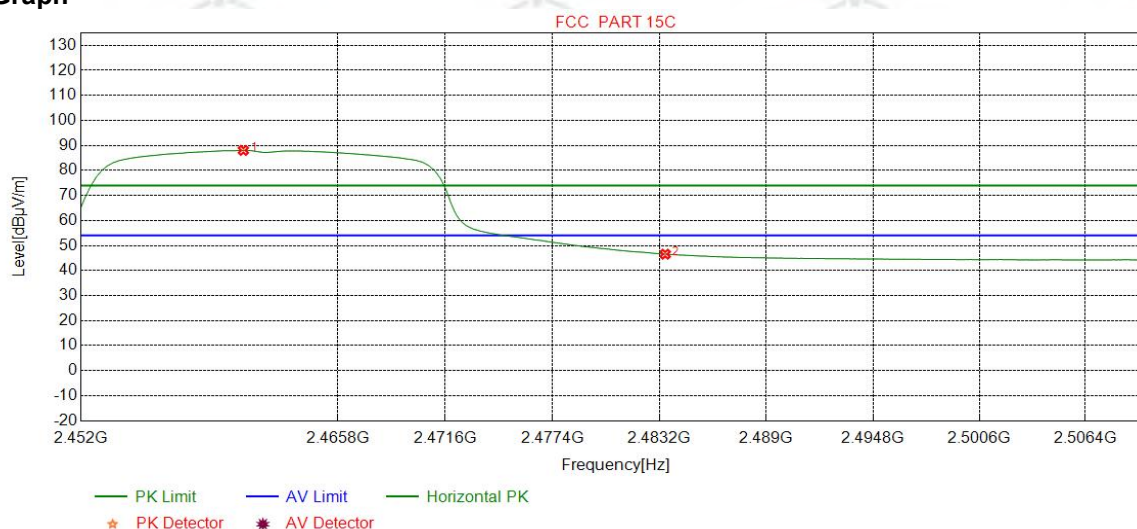
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2464.6308	32.35	13.46	-42.40	100.60	104.01	74.00	-30.01	Pass	Vertical
2	2483.5000	32.38	13.38	-42.40	58.69	62.05	74.00	11.95	Pass	Vertical

Mode:	802.11 n(HT20) (6.5Mbps) Transmitting	Channel:	2462
Remark:	AV		

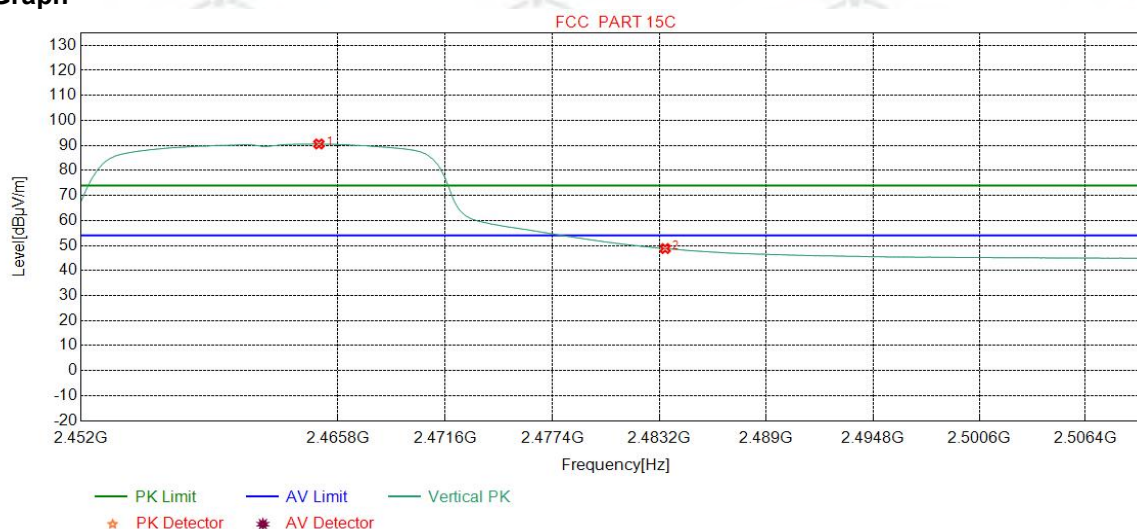
Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2460.7109	32.34	13.48	-42.40	84.61	88.03	54.00	-34.03	Pass	Horizontal
2	2483.5000	32.38	13.38	-42.40	43.18	46.54	54.00	7.46	Pass	Horizontal

Mode:	802.11 n(HT20) (6.5Mbps) Transmitting	Channel:	2462
Remark:	AV		

Test Graph



NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2464.7760	32.35	13.46	-42.40	87.15	90.56	54.00	-36.56	Pass	Vertical
2	2483.5000	32.38	13.38	-42.40	45.42	48.78	54.00	5.22	Pass	Vertical

Note:

1) Through Pre-scan transmitting mode and charge+transmitter mode with all kind of modulation and data rate, find the 11Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20) ; and then Only the worst case is recorded in the report.

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading - Correct Factor

Correct Factor = Preamplifier Factor - Antenna Factor - Cable Factor

Appendix I): Radiated Spurious Emissions

Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Test Procedure:					
Below 1GHz test procedure as below:					
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.					
Above 1GHz test procedure as below:					
g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).. h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. j. Repeat above procedures until all frequencies measured was complete.					
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBμV/m)	Remark	Measurement distance (m)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3
	Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.				

Radiated Spurious Emissions test Data:

Radiated Emission below 1GHz

Mode:		802.11 b(11Mbps) Transmitting				Channel:		2412		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	72.3932	8.55	0.98	-32.06	53.47	30.94	40.00	9.06	Pass	H
2	170.3730	8.47	1.53	-31.96	51.93	29.97	43.50	13.53	Pass	H
3	211.5052	11.20	1.73	-31.95	45.19	26.17	43.50	17.33	Pass	H
4	265.4425	12.51	1.94	-31.87	42.70	25.28	46.00	20.72	Pass	H
5	340.0430	14.08	2.20	-31.83	42.54	26.99	46.00	19.01	Pass	H
6	398.0548	15.36	2.37	-31.77	42.12	28.08	46.00	17.92	Pass	H
7	67.5428	9.64	0.94	-32.05	45.38	23.91	40.00	16.09	Pass	V
8	208.8859	11.13	1.71	-31.94	49.10	30.00	43.50	13.50	Pass	V
9	304.0524	13.29	2.07	-31.87	40.23	23.72	46.00	22.28	Pass	V
10	388.4508	15.15	2.35	-31.83	36.27	21.94	46.00	24.06	Pass	V
11	584.9925	18.70	2.91	-31.95	34.66	24.32	46.00	21.68	Pass	V
12	960.0320	22.46	3.71	-31.09	33.66	28.74	54.00	25.26	Pass	V

Mode:		802.11 b(11Mbps) Transmitting				Channel:		2437		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	171.3431	8.52	1.54	-31.96	50.44	28.54	43.50	14.96	Pass	H
2	204.6175	11.02	1.69	-31.94	45.81	26.58	43.50	16.92	Pass	H
3	354.4004	14.40	2.25	-31.86	43.08	27.87	46.00	18.13	Pass	H
4	396.7937	15.33	2.37	-31.78	42.68	28.60	46.00	17.40	Pass	H
5	490.2140	16.84	2.65	-31.89	34.44	22.04	46.00	23.96	Pass	H
6	974.9715	22.55	3.75	-30.95	33.35	28.70	54.00	25.30	Pass	H
7	73.7514	8.29	1.00	-32.07	48.34	25.56	40.00	14.44	Pass	V
8	208.8859	11.13	1.71	-31.94	49.11	30.01	43.50	13.49	Pass	V
9	287.1727	12.94	2.02	-31.89	39.97	23.04	46.00	22.96	Pass	V
10	399.4129	15.39	2.38	-31.77	37.02	23.02	46.00	22.98	Pass	V
11	584.9925	18.70	2.91	-31.95	33.69	23.35	46.00	22.65	Pass	V
12	912.0122	22.17	3.61	-31.46	34.87	29.19	46.00	16.81	Pass	V

Mode:		802.11 b(11Mbps) Transmitting				Channel:		2462		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	73.7514	8.29	1.00	-32.07	54.10	31.32	40.00	8.68	Pass	H
2	168.7239	8.38	1.52	-31.96	51.47	29.41	43.50	14.09	Pass	H
3	208.8859	11.13	1.71	-31.94	45.01	25.91	43.50	17.59	Pass	H
4	397.8608	15.35	2.37	-31.76	42.46	28.42	46.00	17.58	Pass	H
5	687.5318	19.70	3.14	-32.06	35.91	26.69	46.00	19.31	Pass	H
6	960.0320	22.46	3.71	-31.09	32.63	27.71	54.00	26.29	Pass	H
7	73.7514	8.29	1.00	-32.07	47.18	24.40	40.00	15.60	Pass	V
8	104.0184	10.96	1.20	-32.07	40.44	20.53	43.50	22.97	Pass	V
9	208.8859	11.13	1.71	-31.94	49.99	30.89	43.50	12.61	Pass	V
10	402.1292	15.43	2.39	-31.77	36.66	22.71	46.00	23.29	Pass	V
11	584.8955	18.70	2.91	-31.95	34.63	24.29	46.00	21.71	Pass	V
12	960.0320	22.46	3.71	-31.09	32.40	27.48	54.00	26.52	Pass	V

Mode:		802.11 g(6Mbps) Transmitting				Channel:		2412		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	75.3035	7.99	1.01	-32.06	54.10	31.04	40.00	8.96	Pass	H
2	170.5671	8.48	1.53	-31.96	50.15	28.20	43.50	15.30	Pass	H
3	208.8859	11.13	1.71	-31.94	46.65	27.55	43.50	15.95	Pass	H
4	329.9540	13.86	2.16	-31.76	43.60	27.86	46.00	18.14	Pass	H
5	399.8010	15.40	2.38	-31.77	43.00	29.01	46.00	16.99	Pass	H
6	687.5318	19.70	3.14	-32.06	34.84	25.62	46.00	20.38	Pass	H
7	73.7514	8.29	1.00	-32.07	47.47	24.69	40.00	15.31	Pass	V
8	105.3765	10.95	1.21	-32.07	39.87	19.96	43.50	23.54	Pass	V
9	208.8859	11.13	1.71	-31.94	49.36	30.26	43.50	13.24	Pass	V
10	411.1511	15.58	2.42	-31.84	36.54	22.70	46.00	23.30	Pass	V
11	584.9925	18.70	2.91	-31.95	33.70	23.36	46.00	22.64	Pass	V
12	974.9715	22.55	3.75	-30.95	34.84	30.19	54.00	23.81	Pass	V

Mode:		802.11 g(6Mbps) Transmitting				Channel:		2437		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	73.7514	8.29	1.00	-32.07	54.25	31.47	40.00	8.53	Pass	H
2	171.3431	8.52	1.54	-31.96	51.37	29.47	43.50	14.03	Pass	H
3	201.7072	10.94	1.68	-31.94	45.63	26.31	43.50	17.19	Pass	H
4	256.9057	12.34	1.91	-31.88	42.07	24.44	46.00	21.56	Pass	H
5	400.7711	15.41	2.38	-31.76	41.80	27.83	46.00	18.17	Pass	H
6	974.9715	22.55	3.75	-30.95	33.94	29.29	54.00	24.71	Pass	H
7	73.7514	8.29	1.00	-32.07	48.03	25.25	40.00	14.75	Pass	V
8	106.7347	10.93	1.22	-32.07	42.35	22.43	43.50	21.07	Pass	V
9	208.8859	11.13	1.71	-31.94	50.02	30.92	43.50	12.58	Pass	V
10	306.3806	13.34	2.08	-31.88	40.86	24.40	46.00	21.60	Pass	V
11	600.0290	19.00	2.96	-31.99	33.46	23.43	46.00	22.57	Pass	V
12	960.0320	22.46	3.71	-31.09	32.90	27.98	54.00	26.02	Pass	V

Mode:		802.11 g(6Mbps) Transmitting				Channel:		2462		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	73.7514	8.29	1.00	-32.07	54.37	31.59	40.00	8.41	Pass	H
2	171.0521	8.51	1.54	-31.97	51.92	30.00	43.50	13.50	Pass	H
3	208.8859	11.13	1.71	-31.94	46.82	27.72	43.50	15.78	Pass	H
4	306.9627	13.35	2.08	-31.88	42.68	26.23	46.00	19.77	Pass	H
5	398.2488	15.36	2.37	-31.76	42.47	28.44	46.00	17.56	Pass	H
6	687.5318	19.70	3.14	-32.06	35.27	26.05	46.00	19.95	Pass	H
7	73.7514	8.29	1.00	-32.07	46.47	23.69	40.00	16.31	Pass	V
8	106.1526	10.94	1.21	-32.06	40.56	20.65	43.50	22.85	Pass	V
9	208.8859	11.13	1.71	-31.94	49.14	30.04	43.50	13.46	Pass	V
10	395.1445	15.29	2.37	-31.79	36.46	22.33	46.00	23.67	Pass	V
11	649.9890	19.40	3.10	-32.07	32.98	23.41	46.00	22.59	Pass	V
12	974.9715	22.55	3.75	-30.95	34.06	29.41	54.00	24.59	Pass	V

Mode:		802.11 n(HT20) (6.5Mbps) Transmitting				Channel:		2412		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	73.7514	8.29	1.00	-32.07	55.02	32.24	40.00	7.76	Pass	H
2	169.5970	8.43	1.53	-31.97	51.63	29.62	43.50	13.88	Pass	H
3	262.4352	12.45	1.93	-31.87	42.68	25.19	46.00	20.81	Pass	H
4	308.5149	13.39	2.09	-31.90	44.36	27.94	46.00	18.06	Pass	H
5	391.8462	15.22	2.36	-31.80	42.76	28.54	46.00	17.46	Pass	H
6	875.0515	21.80	3.55	-31.70	34.86	28.51	46.00	17.49	Pass	H
7	67.6398	9.61	0.94	-32.05	45.93	24.43	40.00	15.57	Pass	V
8	103.8244	10.96	1.20	-32.07	39.74	19.83	43.50	23.67	Pass	V
9	208.8859	11.13	1.71	-31.94	49.74	30.64	43.50	12.86	Pass	V
10	398.0548	15.36	2.37	-31.77	37.66	23.62	46.00	22.38	Pass	V
11	599.9320	19.00	2.96	-31.99	33.25	23.22	46.00	22.78	Pass	V
12	875.0515	21.80	3.55	-31.70	33.61	27.26	46.00	18.74	Pass	V

Mode:		802.11 n(HT20) (6.5Mbps) Transmitting				Channel:		2437		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	73.7514	8.29	1.00	-32.07	53.36	30.58	40.00	9.42	Pass	H
2	170.9551	8.50	1.53	-31.96	51.22	29.29	43.50	14.21	Pass	H
3	355.1765	14.41	2.25	-31.85	43.43	28.24	46.00	17.76	Pass	H
4	396.9877	15.33	2.37	-31.77	44.00	29.93	46.00	16.07	Pass	H
5	687.5318	19.70	3.14	-32.06	36.14	26.92	46.00	19.08	Pass	H
6	959.9350	22.46	3.71	-31.09	32.58	27.66	46.00	18.34	Pass	H
7	67.5428	9.64	0.94	-32.05	45.89	24.42	40.00	15.58	Pass	V
8	106.1526	10.94	1.21	-32.06	42.53	22.62	43.50	20.88	Pass	V
9	208.8859	11.13	1.71	-31.94	49.65	30.55	43.50	12.95	Pass	V
10	352.5573	14.36	2.24	-31.87	38.39	23.12	46.00	22.88	Pass	V
11	584.9925	18.70	2.91	-31.95	34.58	24.24	46.00	21.76	Pass	V
12	959.9350	22.46	3.71	-31.09	32.81	27.89	46.00	18.11	Pass	V

Mode:		802.11 n(HT20) (6.5Mbps) Transmitting				Channel:		2462		
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	73.7514	8.29	1.00	-32.07	53.95	31.17	40.00	8.83	Pass	H
2	82.6763	7.72	1.05	-32.08	51.61	28.30	40.00	11.70	Pass	H
3	169.4029	8.42	1.53	-31.97	49.79	27.77	43.50	15.73	Pass	H
4	349.8410	14.30	2.23	-31.87	42.99	27.65	46.00	18.35	Pass	H
5	398.4428	15.37	2.38	-31.78	40.98	26.95	46.00	19.05	Pass	H
6	960.0320	22.46	3.71	-31.09	32.48	27.56	54.00	26.44	Pass	H
7	73.7514	8.29	1.00	-32.07	50.07	27.29	40.00	12.71	Pass	V
8	106.4436	10.94	1.22	-32.08	40.10	20.18	43.50	23.32	Pass	V
9	184.3424	9.41	1.59	-31.98	42.80	21.82	43.50	21.68	Pass	V
10	208.8859	11.13	1.71	-31.94	50.01	30.91	43.50	12.59	Pass	V
11	399.9950	15.40	2.38	-31.76	38.11	24.13	46.00	21.87	Pass	V
12	879.7080	21.86	3.55	-31.66	34.44	28.19	46.00	17.81	Pass	V

Transmitter Emission above 1GHz

Mode:		802.11 b(11Mbps) Transmitting				Channel:		2412	Remark: Peak	
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	1920.2920	31.17	3.42	-42.65	53.10	45.04	74.00	28.96	1920.	H
2	3185.0123	33.27	4.63	-42.01	50.14	46.03	74.00	27.97	3185.	H
3	4824.0000	34.50	4.61	-40.65	42.60	41.06	74.00	32.94	4824.	H
4	7236.0000	36.34	5.79	-40.99	43.81	44.95	74.00	29.05	7236.	H
5	9648.0000	37.66	6.72	-40.73	42.53	46.18	74.00	27.82	9648.	H
6	13629.7086	39.48	8.14	-41.19	46.40	52.83	74.00	21.17	13629	H
7	2094.5095	31.83	3.58	-42.57	50.91	43.75	74.00	30.25	2094.	V
8	3099.0066	33.24	4.72	-42.06	49.99	45.89	74.00	28.11	3099.	V
9	4824.0000	34.50	4.61	-40.65	43.50	41.96	74.00	32.04	4824.	V
10	7236.0000	36.34	5.79	-40.99	44.58	45.72	74.00	28.28	7236.	V
11	9648.0000	37.66	6.72	-40.73	42.04	45.69	74.00	28.31	9648.	V
12	12588.6392	39.60	8.19	-41.21	45.75	52.33	74.00	21.67	12588	V

Mode:		802.11 b(11Mbps) Transmitting				Channel:		2437	Remark: Peak	
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	1918.0918	31.16	3.42	-42.65	52.82	44.75	74.00	29.25	Pass	H
2	2985.1985	33.18	4.51	-42.14	50.49	46.04	74.00	27.96	Pass	H
3	4874.0000	34.50	4.78	-40.61	42.84	41.51	74.00	32.49	Pass	H
4	7311.0000	36.41	5.85	-40.93	44.74	46.07	74.00	27.93	Pass	H
5	9748.0000	37.70	6.77	-40.63	42.29	46.13	74.00	27.87	Pass	H
6	12081.6054	39.35	7.62	-41.19	46.34	52.12	74.00	21.88	Pass	H
7	1955.4956	31.41	3.43	-42.64	50.38	42.58	74.00	31.42	Pass	V
8	3355.0237	33.34	4.52	-41.90	49.17	45.13	74.00	28.87	Pass	V
9	4874.0000	34.50	4.78	-40.61	44.04	42.71	74.00	31.29	Pass	V
10	7311.0000	36.41	5.85	-40.93	44.22	45.55	74.00	28.45	Pass	V
11	9748.0000	37.70	6.77	-40.63	42.27	46.11	74.00	27.89	Pass	V
12	12465.6310	39.58	7.65	-41.11	46.33	52.45	74.00	21.55	Pass	V

Mode:		802.11 b(11Mbps) Transmitting				Channel:		2462	Remark: Peak	
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2307.1307	32.13	3.81	-42.48	53.67	47.13	74.00	26.87	Pass	H
2	3065.0043	33.23	4.80	-42.09	49.96	45.90	74.00	28.10	Pass	H
3	4924.0000	34.50	4.85	-40.56	43.92	42.71	74.00	31.29	Pass	H
4	7386.0000	36.49	5.85	-40.87	43.65	45.12	74.00	28.88	Pass	H
5	9848.0000	37.74	6.83	-40.54	42.37	46.40	74.00	27.60	Pass	H
6	12890.6594	39.60	7.98	-41.60	46.91	52.89	74.00	21.11	Pass	H

Mode:		802.11 b(11Mbps) Transmitting				Channel:		2462	Remark: Peak	
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2173.7174	31.94	3.65	-42.53	51.31	44.37	74.00	29.63	Pass	V
2	3275.0183	33.31	4.52	-41.96	49.89	45.76	74.00	28.24	Pass	V
3	4924.0000	34.50	4.85	-40.56	43.72	42.51	74.00	31.49	Pass	V
4	7386.0000	36.49	5.85	-40.87	43.07	44.54	74.00	29.46	Pass	V
5	9848.0000	37.74	6.83	-40.54	42.30	46.33	74.00	27.67	Pass	V
6	12640.6427	39.60	8.19	-41.28	46.13	52.64	74.00	21.36	Pass	V

Mode:		802.11 g(6Mbps) Transmitting				Channel:		2412	Remark: Peak	
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	1917.8918	31.16	3.42	-42.65	52.83	44.76	74.00	29.24	Pass	H
2	3044.0029	33.22	4.84	-42.09	50.03	46.00	74.00	28.00	Pass	H
3	4824.0000	34.50	4.61	-40.65	43.50	41.96	74.00	32.04	Pass	H
4	7236.0000	36.34	5.79	-40.99	43.06	44.20	74.00	29.80	Pass	H
5	9648.0000	37.66	6.72	-40.73	42.44	46.09	74.00	27.91	Pass	H
6	14312.7542	40.01	8.62	-41.89	46.71	53.45	74.00	20.55	Pass	H
7	1952.8953	31.39	3.42	-42.63	50.99	43.17	74.00	30.83	Pass	V
8	3384.0256	33.35	4.55	-41.89	49.54	45.55	74.00	28.45	Pass	V
9	4824.0000	34.50	4.61	-40.65	42.31	40.77	74.00	33.23	Pass	V
10	7236.0000	36.34	5.79	-40.99	43.80	44.94	74.00	29.06	Pass	V
11	9648.0000	37.66	6.72	-40.73	44.06	47.71	74.00	26.29	Pass	V
12	12531.6354	39.60	7.72	-41.14	46.70	52.88	74.00	21.12	Pass	V

Mode:		802.11 g(6Mbps) Transmitting				Channel:		2437	Remark: Peak	
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	1919.6920	31.17	3.42	-42.65	53.15	45.09	74.00	28.91	Pass	H
2	3032.0021	33.21	4.87	-42.10	49.91	45.89	74.00	28.11	Pass	H
3	4874.0000	34.50	4.78	-40.61	42.43	41.10	74.00	32.90	Pass	H
4	7311.0000	36.41	5.85	-40.93	42.82	44.15	74.00	29.85	Pass	H
5	9748.0000	37.70	6.77	-40.63	42.59	46.43	74.00	27.57	Pass	H
6	12371.6248	39.52	7.74	-41.12	46.73	52.87	74.00	21.13	Pass	H

Mode:		802.11 g(6Mbps) Transmitting				Channel:		2437	Remark: Peak	
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2073.9074	31.80	3.57	-42.57	51.15	43.95	74.00	30.05	Pass	V
2	3193.0129	33.28	4.64	-42.01	49.88	45.79	74.00	28.21	Pass	V
3	4874.0000	34.50	4.78	-40.61	43.39	42.06	74.00	31.94	Pass	V
4	7311.0000	36.41	5.85	-40.93	44.72	46.05	74.00	27.95	Pass	V
5	9748.0000	37.70	6.77	-40.63	43.90	47.74	74.00	26.26	Pass	V
6	12838.6559	39.60	7.88	-41.53	46.37	52.32	74.00	21.68	Pass	V

Mode:		802.11 g(6Mbps) Transmitting				Channel:		2462	Remark: Peak	
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	1919.6920	31.17	3.42	-42.65	52.74	44.68	74.00	29.32	Pass	H
2	3363.0242	33.35	4.53	-41.91	50.10	46.07	74.00	27.93	Pass	H
3	4924.0000	34.50	4.85	-40.56	43.74	42.53	74.00	31.47	Pass	H
4	7386.0000	36.49	5.85	-40.87	44.09	45.56	74.00	28.44	Pass	H
5	9848.0000	37.74	6.83	-40.54	42.62	46.65	74.00	27.35	Pass	H
6	13058.6706	39.58	8.13	-41.68	46.44	52.47	74.00	21.53	Pass	H

Mode:		802.11 g(6Mbps) Transmitting				Channel:		2462	Remark: Peak	
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2062.7063	31.79	3.57	-42.59	50.61	43.38	74.00	30.62	Pass	V
2	3176.0117	33.27	4.61	-42.01	49.87	45.74	74.00	28.26	Pass	V
3	4924.0000	34.50	4.85	-40.56	42.93	41.72	74.00	32.28	Pass	V
4	7386.0000	36.49	5.85	-40.87	44.17	45.64	74.00	28.36	Pass	V
5	9848.0000	37.74	6.83	-40.54	42.44	46.47	74.00	27.53	Pass	V
6	13226.6818	39.51	7.97	-41.48	46.54	52.54	74.00	21.46	Pass	V

Mode:		802.11 n(HT20) (6.5Mbps) Transmitting				Channel:		2412	Remark: Peak	
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	1916.6917	31.15	3.42	-42.65	52.77	44.69	74.00	29.31	Pass	H
2	2983.9984	33.17	4.50	-42.12	50.57	46.12	74.00	27.88	Pass	H
3	4824.0000	34.50	4.61	-40.65	44.55	43.01	74.00	30.99	Pass	H
4	7236.0000	36.34	5.79	-40.99	44.46	45.60	74.00	28.40	Pass	H
5	9648.0000	37.66	6.72	-40.73	42.13	45.78	74.00	28.22	Pass	H
6	12988.6659	39.60	8.30	-41.72	46.19	52.37	74.00	21.63	Pass	H
7	1955.6956	31.41	3.43	-42.64	51.00	43.20	74.00	30.80	Pass	V
8	2904.3904	33.05	4.38	-42.17	50.65	45.91	74.00	28.09	Pass	V
9	4824.0000	34.50	4.61	-40.65	43.23	41.69	74.00	32.31	Pass	V
10	7236.0000	36.34	5.79	-40.99	43.40	44.54	74.00	29.46	Pass	V
11	9648.0000	37.66	6.72	-40.73	43.36	47.01	74.00	26.99	Pass	V
12	13669.7113	39.50	8.22	-41.20	46.74	53.26	74.00	20.74	Pass	V

Mode:		802.11 n(HT20) (6.5Mbps) Transmitting				Channel:		2437	Remark: Peak	
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	1918.8919	31.16	3.42	-42.65	52.58	44.51	74.00	29.49	Pass	H
2	2970.1970	33.15	4.46	-42.13	50.36	45.84	74.00	28.16	Pass	H
3	4874.0000	34.50	4.78	-40.61	43.18	41.85	74.00	32.15	Pass	H
4	7311.0000	36.41	5.85	-40.93	42.98	44.31	74.00	29.69	Pass	H
5	9748.0000	37.70	6.77	-40.63	43.24	47.08	74.00	26.92	Pass	H
6	13094.6730	39.56	7.96	-41.62	46.51	52.41	74.00	21.59	Pass	H
7	3182.0121	33.27	4.62	-42.01	50.33	46.21	74.00	27.79	Pass	V
8	4874.0000	34.50	4.78	-40.61	43.06	41.73	74.00	32.27	Pass	V
9	7311.0000	36.41	5.85	-40.93	44.02	45.35	74.00	28.65	Pass	V
10	9748.0000	37.70	6.77	-40.63	43.25	47.09	74.00	26.91	Pass	V
11	11708.5806	39.07	7.49	-41.32	46.63	51.87	74.00	22.13	Pass	V
12	12574.6383	39.60	8.03	-41.19	46.74	53.18	74.00	20.82	Pass	V

Mode:		802.11 n(HT20) (6.5Mbps) Transmitting				Channel:		2462	Remark: Peak	
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	1919.2919	31.17	3.42	-42.65	52.19	44.13	74.00	29.87	Pass	H
2	3051.0034	33.22	4.83	-42.09	50.13	46.09	74.00	27.91	Pass	H
3	4924.0000	34.50	4.85	-40.56	43.55	42.34	74.00	31.66	Pass	H
4	7386.0000	36.49	5.85	-40.87	43.99	45.46	74.00	28.54	Pass	H
5	9848.0000	37.74	6.83	-40.54	42.62	46.65	74.00	27.35	Pass	H
6	12890.6594	39.60	7.98	-41.60	46.99	52.97	74.00	21.03	Pass	H

Mode:		802.11 n(HT20)(6.5Mbps)Transmitting				Channel:		2462	Remark: Peak	
NO	Freq. [MHz]	Ant Factor [dB]	Cable loss [dB]	Pream gain [dB]	Reading [dBμV]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Result	Polarity
1	2123.3123	31.87	3.61	-42.55	51.15	44.08	74.00	29.92	Pass	V
2	3190.0127	33.28	4.63	-42.01	49.92	45.82	74.00	28.18	Pass	V
3	4924.0000	34.50	4.85	-40.56	44.21	43.00	74.00	31.00	Pass	V
4	7386.0000	36.49	5.85	-40.87	43.34	44.81	74.00	29.19	Pass	V
5	9848.0000	37.74	6.83	-40.54	42.62	46.65	74.00	27.35	Pass	V
6	12985.6657	39.60	8.29	-41.72	46.33	52.50	74.00	21.50	Pass	V

Note:

1) Through Pre-scan transmitting mode and charge+transmitter mode with all kind of modulation and data rate, find the 11Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20)

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading - Correct Factor

Correct Factor = Preamplifier Factor - Antenna Factor - Cable Factor

3) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.