

TEST REPORT

Product : 7"Tablet PC
Trade mark : DragonTouch, KINGPAD, KINGSLIM, AKASO
Model/Type reference : Y88X PLUS, Y88X Pro, X7, X7 PLUS, X7 Pro, V7, V7 PLUS, V7 Pro, X70, X70 PLUS, X70 Pro, V70, V70 PLUS, V70 Pro
Serial Number : N/A
Report Number : EED32I00276402
FCC ID : S5V-D107K4
Date of Issue : Dec. 07, 2016
Test Standards : 47 CFR Part 15 Subpart C (2015)
Test result : PASS

Prepared for:

Proexpress Distributor LLC
11011 Greenwood Ave N 11011 Greenwood Ave N, Seattle Washington
United States

Prepared by:

Centre Testing International Group Co., Ltd.
Hongwei Industrial Zone, Bao'an 70 District,
Shenzhen, Guangdong, China
TEL: +86-755-3368 3668
FAX: +86-755-3368 3385



Compiled by:

Ware Xin

Approved by:

Sheek Luo

Sheek Luo

Lab supervisor

Reviewed by:

Jon King

Date:

Dec. 07, 2016

Check No.: 2496597403

2 Version

Version No.	Date	Description
00	Dec. 07, 2016	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	PASS
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 and the sample information are provided by the client.

Model No.: Y88X PLUS, Y88X Pro, X7, X7 PLUS, X7 Pro, V7, V7 PLUS, V7 Pro, X70, X70 PLUS, X70 Pro, V70, V70 PLUS, V70 Pro

Only the model Y88X PLUS was tested, since the PCB, Schematic, Hardware etc were identical for the above models, Y88X PLUS, Y88X Pro, X7, X7 PLUS, X7 Pro, V7, V7 PLUS, V7 Pro, X70, X70 PLUS, X70 Pro, V70, V70 PLUS, V70 Pro are named differently due to difference agent and marketing purposes.

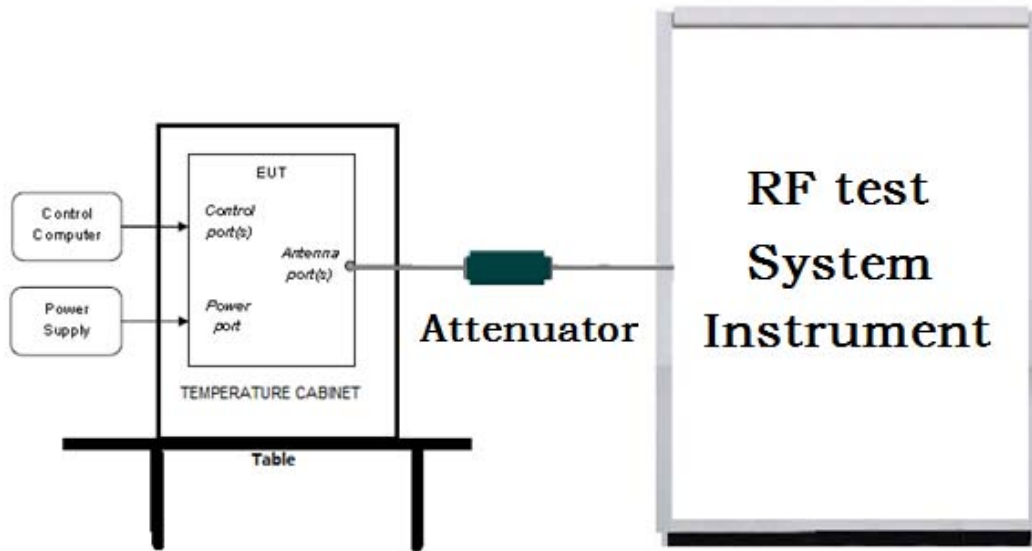
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5 Test Requirement

5.1 Test setup

5.1.1 For Conducted test setup



5.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

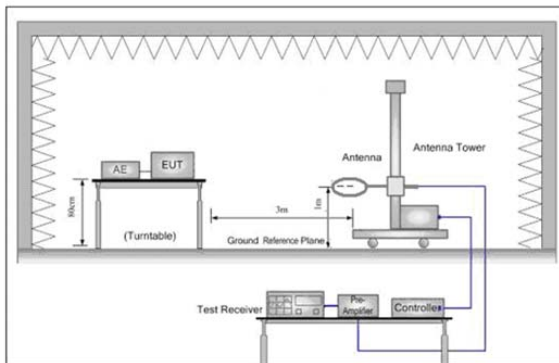


Figure 1. Below 30MHz

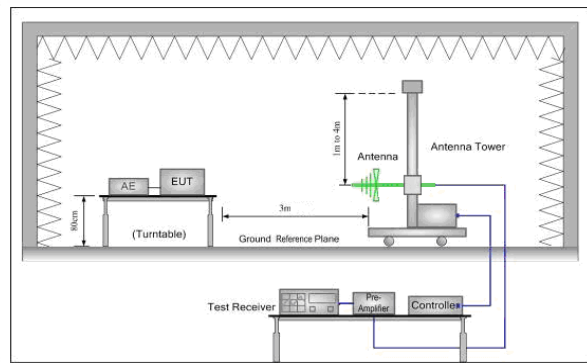


Figure 2. 30MHz to 1GHz

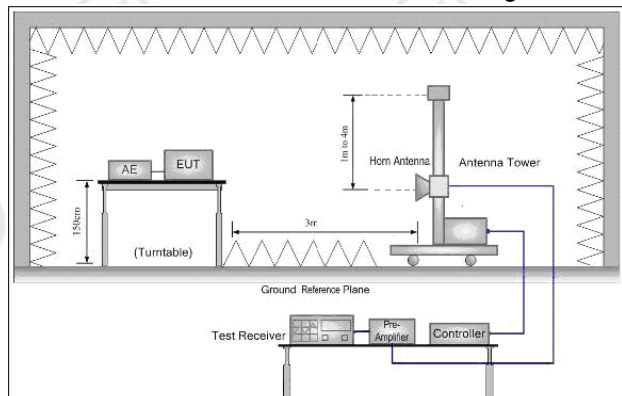
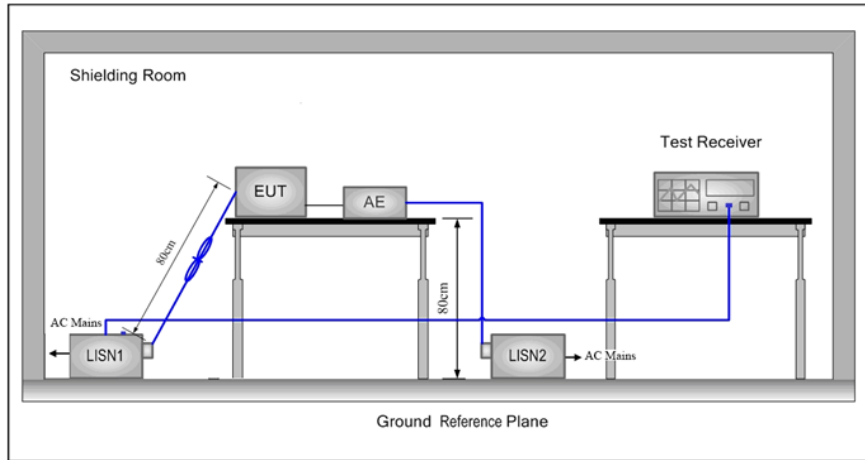


Figure 3. Above 1GHz

5.1.3 For Conducted Emissions test setup

Conducted Emissions setup



5.2 Test Environment

Operating Environment:	
Temperature:	23 °C
Humidity:	54% RH
Atmospheric Pressure:	1010mbar

5.3 Test Condition

Test channel:

Test Mode	Tx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11b/g/n(HT20)	2412MHz ~2462 MHz	Channel 1	Channel 6	Channel11
		2412MHz	2437MHz	2462MHz
802.11n(HT40)	2422MHz ~2452 MHz	Channel 1	Channel 4	Channel7
		2422MHz	2437MHz	2452MHz
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.			

Test mode:

Pre-scan under all rate at lowest channel 1

Mode	802.11b				X				
Data Rate	1Mbps	2Mbps	5.5Mbps	11Mbps					
Power(dBm)	8.04	8.05	8.09	8.11					
Mode	802.11g								
Data Rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps	
Power(dBm)	7.93	7.91	7.90	7.88	7.85	7.81	7.80	7.67	
Mode	802.11n (HT20)								
Data Rate	6.5Mbps	13Mbps	19.5Mbps	26Mbps	39Mbps	52Mbps	58.5Mbps	65Mbps	
Power(dBm)	7.67	7.66	7.63	7.61	7.54	7.51	7.50	7.32	
Mode	802.11n (HT40)								
Data Rate	13.5Mbps	27Mbps	40.5Mbps	54Mbps	81Mbps	108Mbps	121.5Mbps	135Mbps	
Power(dBm)	7.44	7.41	7.40	7.33	7.32	7.30	7.24	7.19	

Through Pre-scan, 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); 13.5Mbps of rate is the worst case of 802.11n(HT40).

6 General Information

6.1 Client Information

Applicant:	Proexpress Distributor LLC
Address of Applicant:	11011 Greenwood Ave N 11011 Greenwood Ave N, Seattle Washington United States
Manufacturer:	Proexpress Distributor LLC
Address of Manufacturer:	11011 Greenwood Ave N 11011 Greenwood Ave N, Seattle Washington United States
Factory:	Proexpress Distributor LLC
Address of Factory:	11011 Greenwood Ave N 11011 Greenwood Ave N, Seattle Washington United States

6.2 General Description of EUT

Product Name:	7"Tablet PC
Model No.:	Y88X PLUS, Y88X Pro, X7, X7 PLUS, X7 Pro, V7, V7 PLUS, V7 Pro, X70, X70 PLUS, X70 Pro, V70, V70 PLUS, V70 Pro
Test Model No.:	Y88X PLUS
Trade Mark:	DragonTouch, KINGPAD, KINGSLIM, AKASO
EUT Supports Radios application:	Wlan 2.4GHz 802.11b/g/n(HT20and HT40), Bluetooth V3.0+EDR
AC adapter:	Model: GS-0500200A Input: 100-240VAC 50/60Hz Output: DC5V $\overline{\text{---}}$ 2000mA
Sample Received Date:	Oct. 25, 2016
Sample tested Date:	Oct. 25, 2016 to Dec. 07, 2016

6.3 Product Specification subjective to this standard

Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz IEEE 802.11n(HT40): 2422MHz to 2452MHz
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels IEEE 802.11n HT40: 7 Channels
Channel Separation:	5MHz
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g :OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11n(HT20 and HT40) : OFDM (64QAM, 16QAM, QPSK,BPSK)
Sample Type:	Portable production
Test Power Grade:	802.11b: 10; 802.11g: 4; 802.11n(HT20&HT40): 3 (manufacturer declare)
Test Software of EUT:	SoFia RFTesTool V1.1 (manufacturer declare)
Antenna Type:	PIFA antenna
Antenna Gain:	0dBi
Test Voltage:	AC 120V/60Hz

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		

Operation Frequency each of channel(802.11n HT40)					
Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2422MHz	4	2437MHz	7	2452MHz
2	2427MHz	5	2442MHz		
3	2432MHz	6	2447MHz		

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.

Hongwei Industrial Zone, Bao'an 70 District, Shenzhen, Guangdong, China 518101

Telephone: +86 (0) 755 3368 3668 Fax: +86 (0) 755 3368 3385

No tests were sub-contracted.

6.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L1910

Centre Testing International Group Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories..

A2LA-Lab Cert. No. 3061.01

Centre Testing International Group Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

FCC-Registration No.: 886427

Centre Testing International Group Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 886427.

IC-Registration No.: 7408A-2

The 3m Alternate Test Site of Centre Testing International Group Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408A-2 .

IC-Registration No.: 7408B-1

The 10m Alternate Test Site of Centre Testing International Group Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 7408B-1.

NEMKO-Aut. No.: ELA503

Centre Testing International Group Co., Ltd. has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10.

VCCI

The Radiation 3 &10 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-4096.

Main Ports Conducted Interference Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-4563.

Telecommunication Ports Conducted Disturbance Measurement of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-2146.

The Radiation 3 meters site of Centre Testing International Group Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-758

6.7 Deviation from Standards

None.

6.8 Abnormalities from Standard Conditions

None.

6.9 Other Information Requested by the Customer

None.

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

No.	Item	Measurement Uncertainty
1	Radio Frequency	7.9 x 10 ⁻⁸
2	RF power, conducted	0.31dB (30MHz-1GHz)
		0.57dB (1GHz-18GHz)
3	Radiated Spurious emission test	4.5dB (30MHz-1GHz)
		4.8dB (1GHz-12.75GHz)
4	Conduction emission	3.6dB (9kHz to 150kHz)
		3.2dB (150kHz to 30MHz)
5	Temperature test	0.64°C
6	Humidity test	2.8%
7	DC power voltages	0.025%

7 Equipment List

RF test system					
Equipment	Manufacturer	Mode No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Signal Generator	Keysight	E8257D	MY53401106	04-01-2016	03-31-2017
Spectrum Analyzer	Keysight	N9010A	MY54510339	04-01-2016	03-31-2017
Signal Generator	Keysight	N5182B	MY53051549	04-01-2016	03-31-2017
DC Power	Keysight	E3642A	MY54436035	04-01-2016	03-31-2017
PC-1	Lenovo	R4960d	---	04-01-2016	03-31-2017
BT&WI-FI Automatic control	R&S	OSP120	101374	04-01-2016	03-31-2017
RF control unit	JS Tonscend	JS0806-2	158060006	04-01-2016	03-31-2017
BT&WI-FI Automatic test software	JS Tonscend	JS1120-2	---	04-01-2016	03-31-2017

Conducted disturbance Test					
Equipment	Manufacturer	Mode No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Receiver	R&S	ESCI	100009	06-16-2016	06-15-2017
Temperature/ Humidity Indicator	TAYLOR	1451	1905	04-27-2016	04-26-2017
LISN	R&S	ENV216	100098	06-16-2016	06-15-2017
LISN	schwarzbeck	NNLK8121	8121-529	06-16-2016	06-15-2017
Voltage Probe	R&S	ESH2-Z3	--	07-09-2014	07-07-2017
Current Probe	R&S	EZ17	100106	06-16-2016	06-15-2017
ISN	TESEQ GmbH	ISN T800	30297	01-29-2015	01-27-2017

3M Semi/full-anechoic Chamber					
Equipment	Manufacturer	Mode No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
3M Chamber & Accessory Equipment	TDK	SAC-3	---	06-05-2016	06-05-2019
TRILOG Broadband Antenna	SCHWARZBECK	VULB9163	9163-484	05-23-2016	05-22-2017
Microwave Preampfier	Agilent	8449B	3008A02425	02-04-2016	02-03-2017
Horn Antenna	ETS-LINDGREN	3117	00057407	07-20-2015	07-18-2018
Loop Antenna	ETS	6502	00071730	07-30-2015	07-28-2017
Spectrum Analyzer	R&S	FSP40	100416	06-16-2016	06-15-2017
Receiver	R&S	ESCI	100435	06-16-2016	06-15-2017
Multi device Controller	matur	NCD/070/10711 112	---	01-12-2016	01-11-2017
LISN	schwarzbeck	NNBM8125	81251547	06-16-2016	06-15-2017
LISN	schwarzbeck	NNBM8125	81251548	06-16-2016	06-15-2017
Signal Generator	Agilent	E4438C	MY45095744	04-01-2016	03-31-2017
Signal Generator	Keysight	E8257D	MY53401106	04-01-2016	03-31-2017
Temperature/ Humidity Indicator	TAYLOR	1451	1905	04-27-2016	04-26-2017
Cable line	Fulai(7M)	SF106	5219/6A	01-12-2016	01-11-2017
Cable line	Fulai(6M)	SF106	5220/6A	01-12-2016	01-11-2017
Cable line	Fulai(3M)	SF106	5216/6A	01-12-2016	01-11-2017
Cable line	Fulai(3M)	SF106	5217/6A	01-12-2016	01-11-2017
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	---	01-12-2016	01-11-2017
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA09 CL12-0395-001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX01CA08 CL12-0393-001	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX02CA04 CL12-0396-002	---	01-12-2016	01-11-2017
band rejection filter	Sinoscite	FL5CX02CA03 CL12-0394-001	---	01-12-2016	01-11-2017

8 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC Part15C (2015)	Subpart C-Intentional Radiators
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

Test Results List:

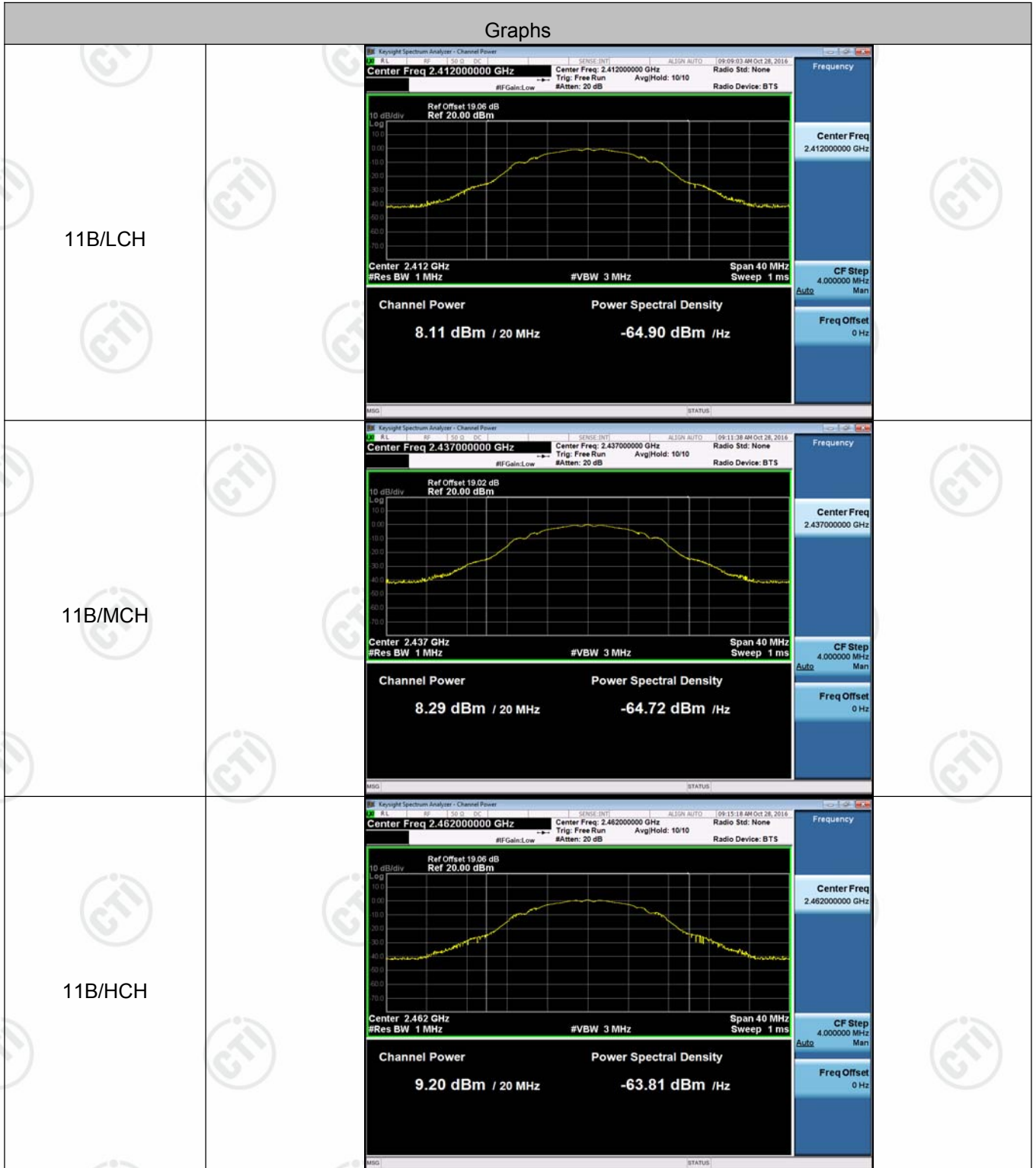
Test Requirement	Test method	Test item	Verdict	Note
Part15C Section 15.247 (b)(3)	ANSI C63.10	Conducted Peak Output Power	PASS	Appendix A)
Part15C Section 15.247 (a)(2)	ANSI C63.10	6dB Occupied Bandwidth	PASS	Appendix B)
Part15C Section 15.247(d)	ANSI C63.10	Band-edge for RF Conducted Emissions	PASS	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 (Radiated Emission)	PASS	Appendix H)
Part15C Section 15.205/15.209	ANSI C63.10	Radiated Spurious Emissions	PASS	Appendix I)

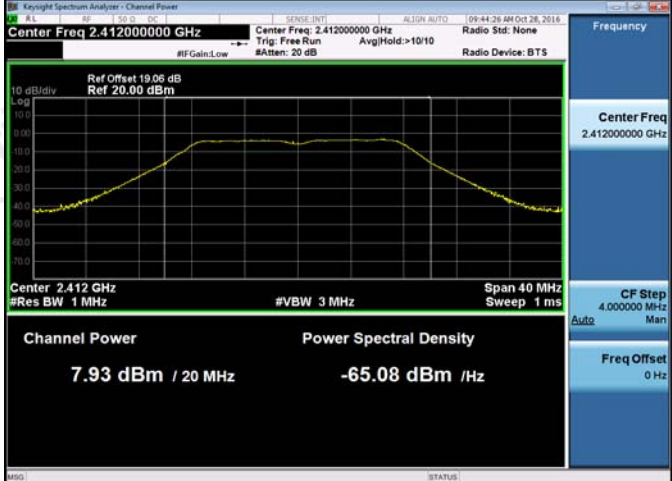
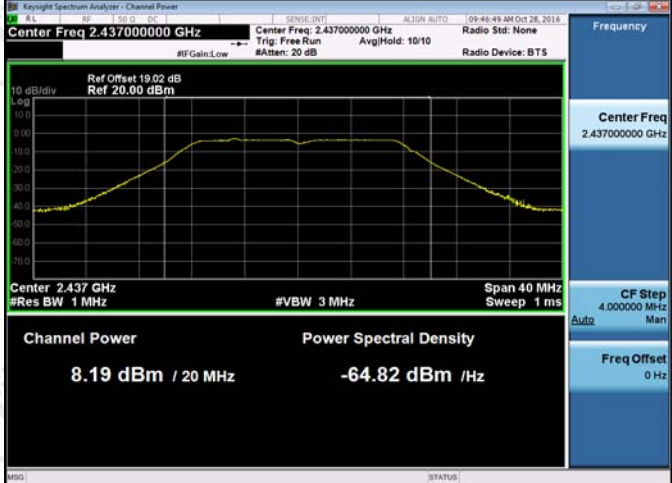
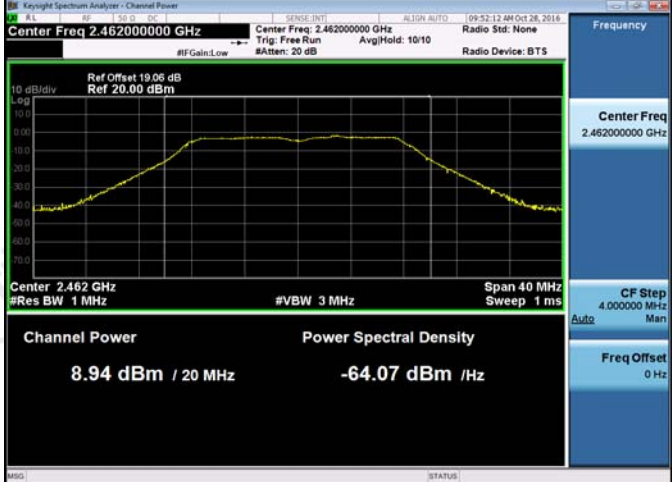
Appendix A): Conducted Output Power Result

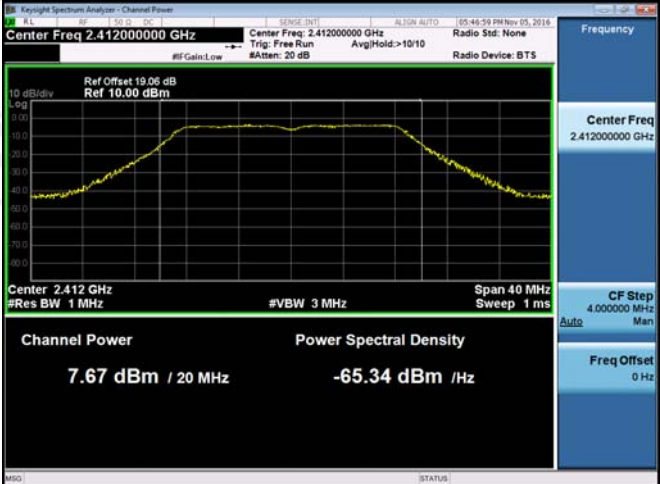
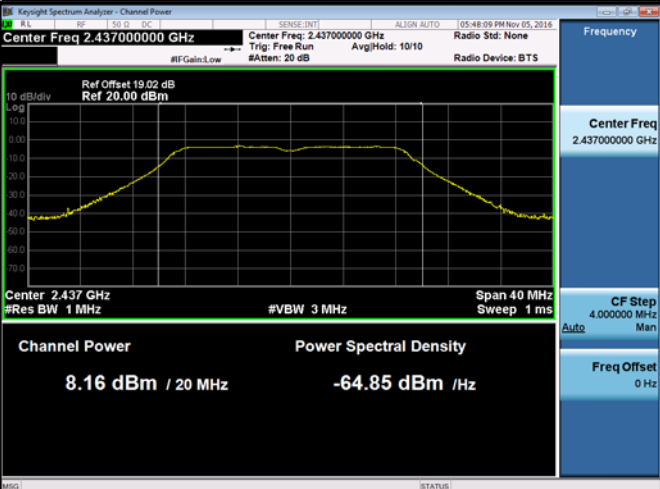
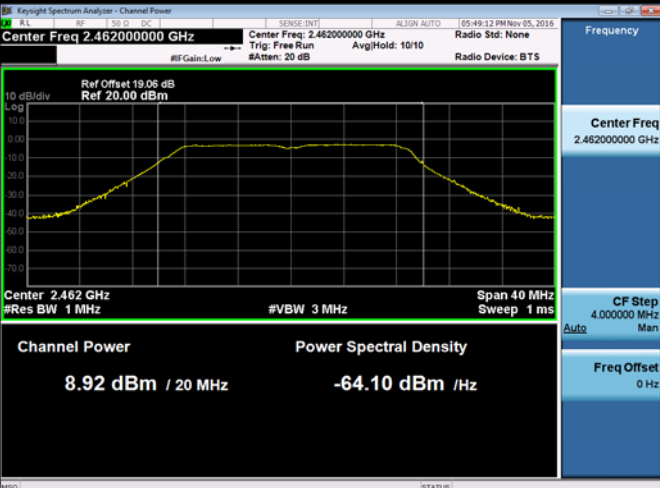
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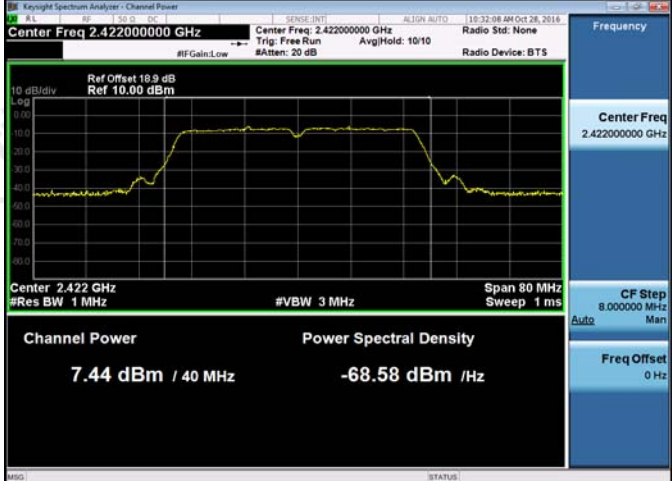
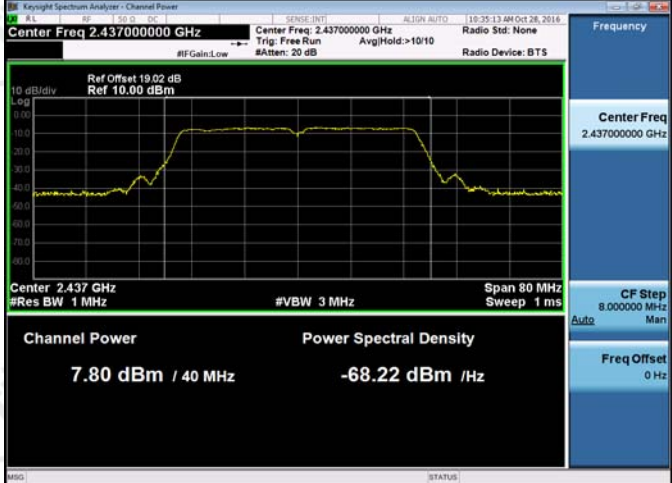
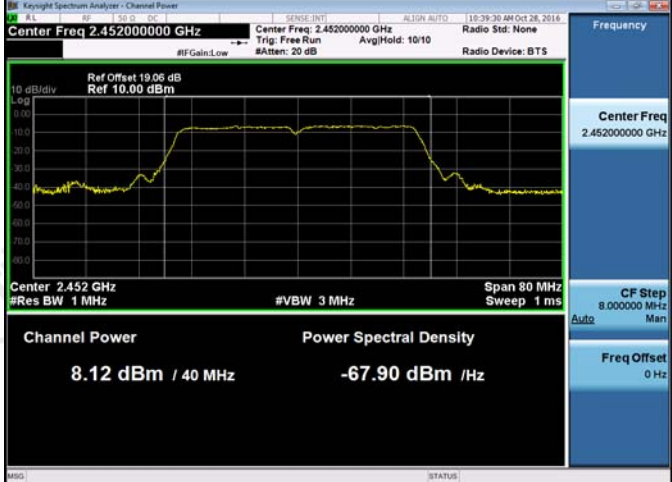
Mode	Channel	Conducted Output Power [dBm]	Verdict	Remark
11B	LCH	8.11	PASS	RMS detector
11B	MCH	8.29	PASS	
11B	HCH	9.2	PASS	
11G	LCH	7.93	PASS	
11G	MCH	8.19	PASS	
11G	HCH	8.94	PASS	
11N20SISO	LCH	7.67	PASS	
11N20SISO	MCH	8.16	PASS	
11N20SISO	HCH	8.92	PASS	
11N40SISO	LCH	7.44	PASS	
11N40SISO	MCH	7.8	PASS	
11N40SISO	HCH	8.12	PASS	

Test Graph



<p>11G/LCH</p>	 <p>Keysight Spectrum Analyzer - Channel Power</p> <p>Center Freq: 2.412000000 GHz</p> <p>Ref Offset: 19.06 dB, Ref: 20.00 dBm</p> <p>Channel Power: 7.93 dBm / 20 MHz</p> <p>Power Spectral Density: -65.08 dBm / Hz</p> <p>Center: 2.412 GHz, #Res BW: 1 MHz, #VBW: 3 MHz, Span: 40 MHz, Sweep: 1 ms</p>
<p>11G/MCH</p>	 <p>Keysight Spectrum Analyzer - Channel Power</p> <p>Center Freq: 2.437000000 GHz</p> <p>Ref Offset: 19.02 dB, Ref: 20.00 dBm</p> <p>Channel Power: 8.19 dBm / 20 MHz</p> <p>Power Spectral Density: -64.82 dBm / Hz</p> <p>Center: 2.437 GHz, #Res BW: 1 MHz, #VBW: 3 MHz, Span: 40 MHz, Sweep: 1 ms</p>
<p>11G/HCH</p>	 <p>Keysight Spectrum Analyzer - Channel Power</p> <p>Center Freq: 2.462000000 GHz</p> <p>Ref Offset: 19.06 dB, Ref: 20.00 dBm</p> <p>Channel Power: 8.94 dBm / 20 MHz</p> <p>Power Spectral Density: -64.07 dBm / Hz</p> <p>Center: 2.462 GHz, #Res BW: 1 MHz, #VBW: 3 MHz, Span: 40 MHz, Sweep: 1 ms</p>

<p>11N20SISO/LCH</p>	 <p>Keysight Spectrum Analyzer - Channel Power</p> <p>Center Freq 2.41200000 GHz</p> <p>Center Freq: 2.412000000 GHz</p> <p>Trig: Free Run Avg/Hold: >10/10</p> <p>#Gain: Low #Atten: 20 dB Radio Device: BTS</p> <p>Ref Offset 19.06 dB Ref 10.00 dBm</p> <p>Center 2.412 GHz #VBW 3 MHz Span 40 MHz #Res BW 1 MHz Sweep 1 ms</p> <p>Channel Power Power Spectral Density</p> <p>7.67 dBm / 20 MHz -65.34 dBm / Hz</p> <p>Frequency: Center Freq 2.41200000 GHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p>
<p>11N20SISO/MCH</p>	 <p>Keysight Spectrum Analyzer - Channel Power</p> <p>Center Freq 2.43700000 GHz</p> <p>Center Freq: 2.437000000 GHz</p> <p>Trig: Free Run Avg/Hold: 10/10</p> <p>#Gain: Low #Atten: 20 dB Radio Device: BTS</p> <p>Ref Offset 19.02 dB Ref 20.00 dBm</p> <p>Center 2.437 GHz #VBW 3 MHz Span 40 MHz #Res BW 1 MHz Sweep 1 ms</p> <p>Channel Power Power Spectral Density</p> <p>8.16 dBm / 20 MHz -64.85 dBm / Hz</p> <p>Frequency: Center Freq 2.43700000 GHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p>
<p>11N20SISO/HCH</p>	 <p>Keysight Spectrum Analyzer - Channel Power</p> <p>Center Freq 2.46200000 GHz</p> <p>Center Freq: 2.462000000 GHz</p> <p>Trig: Free Run Avg/Hold: 10/10</p> <p>#Gain: Low #Atten: 20 dB Radio Device: BTS</p> <p>Ref Offset 19.06 dB Ref 20.00 dBm</p> <p>Center 2.462 GHz #VBW 3 MHz Span 40 MHz #Res BW 1 MHz Sweep 1 ms</p> <p>Channel Power Power Spectral Density</p> <p>8.92 dBm / 20 MHz -64.10 dBm / Hz</p> <p>Frequency: Center Freq 2.46200000 GHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p>

<p>11N40SISO/LCH</p>	 <p>Key parameters from the screenshot:</p> <ul style="list-style-type: none"> Center Freq: 2.42200000 GHz Channel Power: 7.44 dBm / 40 MHz Power Spectral Density: -68.58 dBm / Hz Ref Offset: 19.9 dB Ref: 10.00 dBm
<p>11N40SISO/MCH</p>	 <p>Key parameters from the screenshot:</p> <ul style="list-style-type: none"> Center Freq: 2.43700000 GHz Channel Power: 7.80 dBm / 40 MHz Power Spectral Density: -68.22 dBm / Hz Ref Offset: 19.02 dB Ref: 10.00 dBm
<p>11N40SISO/HCH</p>	 <p>Key parameters from the screenshot:</p> <ul style="list-style-type: none"> Center Freq: 2.45200000 GHz Channel Power: 8.12 dBm / 40 MHz Power Spectral Density: -67.90 dBm / Hz Ref Offset: 19.06 dB Ref: 10.00 dBm

Appendix B): 6dB Occupied Bandwidth

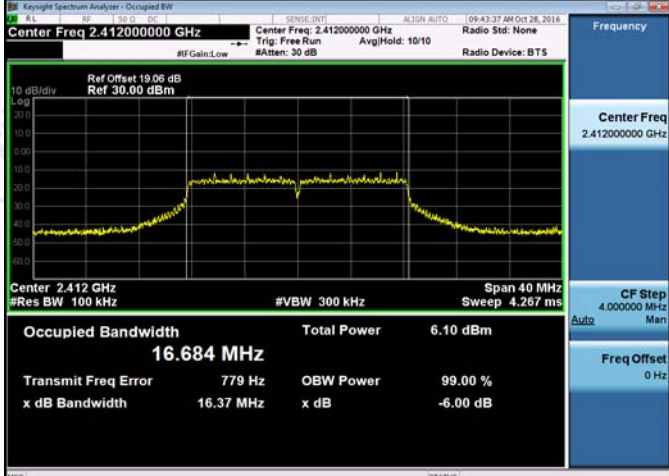
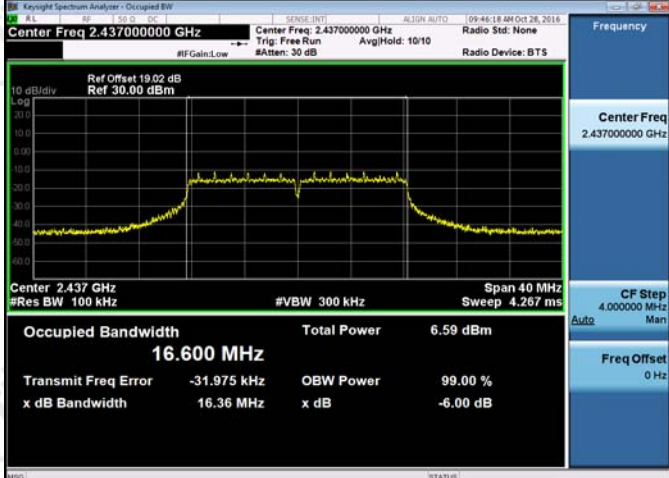
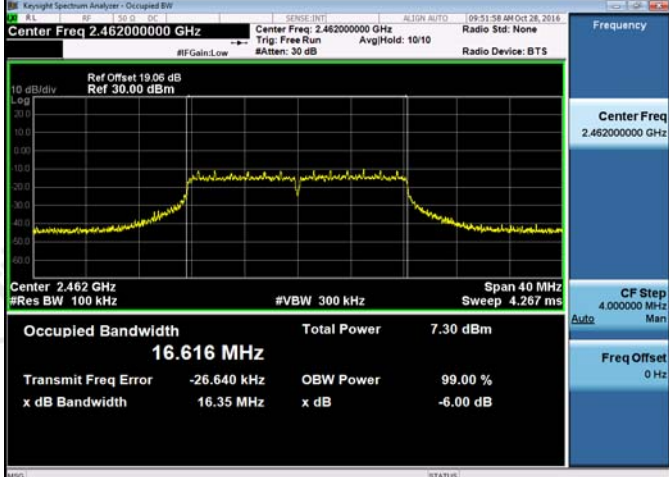
Result Table

Mode	Channel	6dB Bandwidth [MHz]	99% OBW [MHz]	Verdict	Remark
11B	LCH	10.06	15.150	PASS	Peak detector
11B	MCH	10.05	15.113	PASS	
11B	HCH	10.03	15.091	PASS	
11G	LCH	16.37	16.684	PASS	
11G	MCH	16.36	16.600	PASS	
11G	HCH	16.35	16.616	PASS	
11N20SISO	LCH	17.58	17.745	PASS	
11N20SISO	MCH	17.60	17.763	PASS	
11N20SISO	HCH	17.59	17.790	PASS	
11N40SISO	LCH	35.69	36.234	PASS	
11N40SISO	MCH	35.48	36.211	PASS	
11N40SISO	HCH	35.56	36.234	PASS	

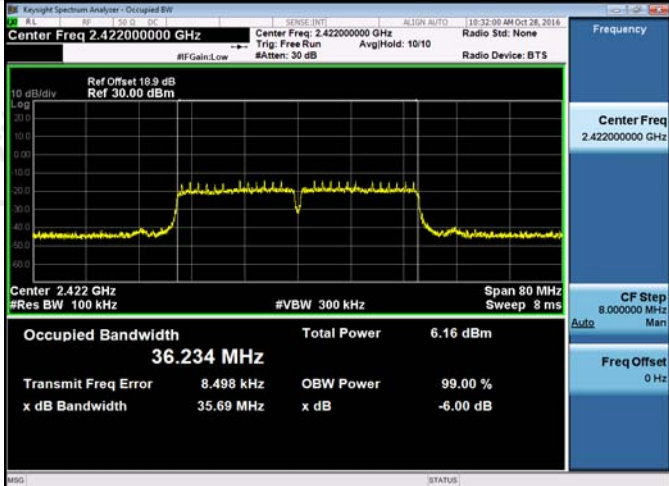
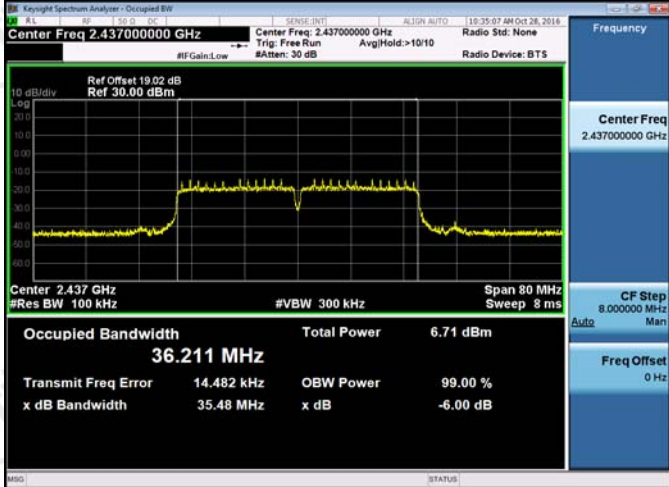
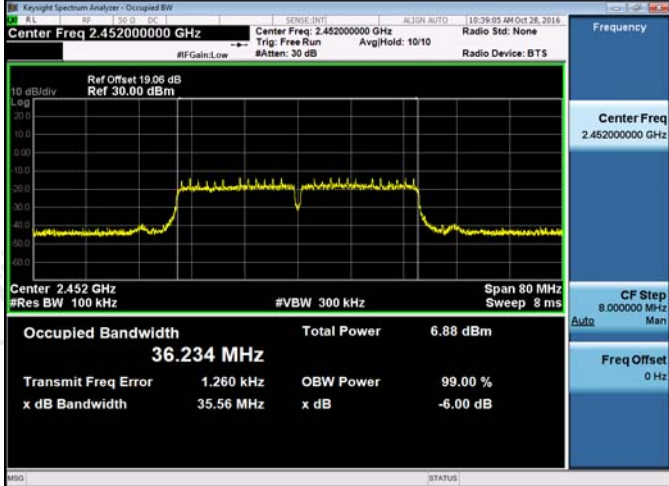
Test Graph

Graphs



<p>11G/LCH</p>	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.412000000 GHz</p> <p>Center Freq: 2.412000000 GHz</p> <p>Trig: Free Run Avg/Hold: 10/10</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref Offset 19.06 dB</p> <p>Ref 30.00 dBm</p> <p>Center 2.412 GHz</p> <p>#Res BW 100 kHz</p> <p>#VBW 300 kHz</p> <p>Span 40 MHz</p> <p>Sweep 4.267 ms</p> <p>Occupied Bandwidth 16.684 MHz</p> <p>Total Power 6.10 dBm</p> <p>Transmit Freq Error 779 Hz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 16.37 MHz</p> <p>x dB -6.00 dB</p> <p>Frequency 2.412000000 GHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p>
<p>11G/MCH</p>	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.437000000 GHz</p> <p>Center Freq: 2.437000000 GHz</p> <p>Trig: Free Run Avg/Hold: 10/10</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref Offset 19.02 dB</p> <p>Ref 30.00 dBm</p> <p>Center 2.437 GHz</p> <p>#Res BW 100 kHz</p> <p>#VBW 300 kHz</p> <p>Span 40 MHz</p> <p>Sweep 4.267 ms</p> <p>Occupied Bandwidth 16.600 MHz</p> <p>Total Power 6.59 dBm</p> <p>Transmit Freq Error -31.975 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 16.36 MHz</p> <p>x dB -6.00 dB</p> <p>Frequency 2.437000000 GHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p>
<p>11G/HCH</p>	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.462000000 GHz</p> <p>Center Freq: 2.462000000 GHz</p> <p>Trig: Free Run Avg/Hold: 10/10</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref Offset 19.06 dB</p> <p>Ref 30.00 dBm</p> <p>Center 2.462 GHz</p> <p>#Res BW 100 kHz</p> <p>#VBW 300 kHz</p> <p>Span 40 MHz</p> <p>Sweep 4.267 ms</p> <p>Occupied Bandwidth 16.616 MHz</p> <p>Total Power 7.30 dBm</p> <p>Transmit Freq Error -26.640 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB Bandwidth 16.35 MHz</p> <p>x dB -6.00 dB</p> <p>Frequency 2.462000000 GHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p>

<p>11N20SISO/LCH</p>	<p>Center Freq 2.412000000 GHz</p> <p>Center Freq: 2.412000000 GHz</p> <p>Trig: Free Run Avg/Hold: 10/10</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>Center 2.412 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth 17.745 MHz</p> <p>Total Power 7.53 dBm</p> <p>Transmit Freq Error -15.574 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 17.58 MHz x dB -6.00 dB</p>
<p>11N20SISO/MCH</p>	<p>Center Freq 2.437000000 GHz</p> <p>Center Freq: 2.437000000 GHz</p> <p>Trig: Free Run Avg/Hold: 10/10</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref Offset 19.02 dB Ref 30.00 dBm</p> <p>Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth 17.763 MHz</p> <p>Total Power 7.72 dBm</p> <p>Transmit Freq Error -26.245 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 17.60 MHz x dB -6.00 dB</p>
<p>11N20SISO/HCH</p>	<p>Center Freq 2.462000000 GHz</p> <p>Center Freq: 2.462000000 GHz</p> <p>Trig: Free Run Avg/Hold: 10/10</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth 17.790 MHz</p> <p>Total Power 7.56 dBm</p> <p>Transmit Freq Error -22.848 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 17.59 MHz x dB -6.00 dB</p>

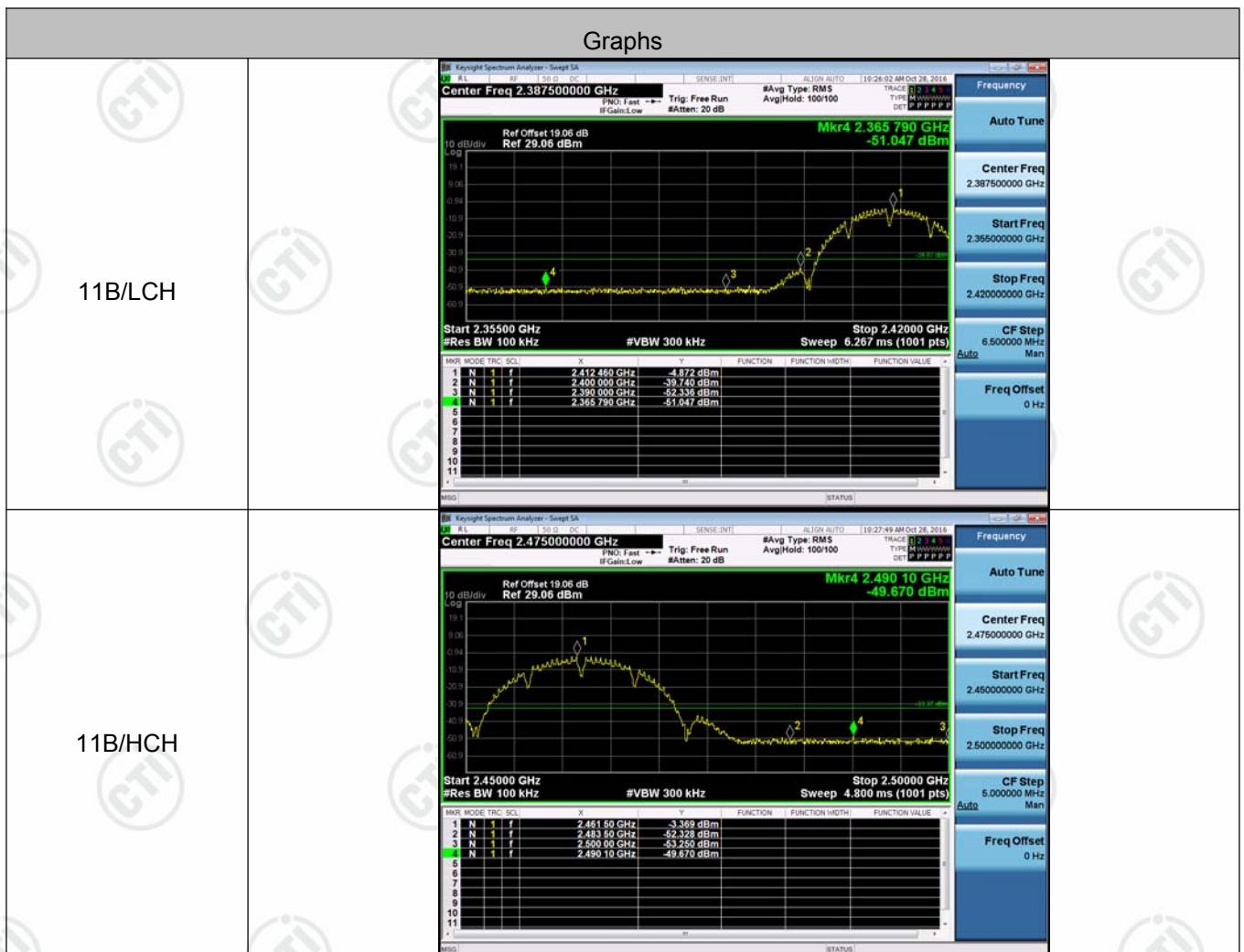
<p>11N40SISO/LCH</p>	 <p>Center Freq 2.422000000 GHz</p> <p>Center Freq: 2.422000000 GHz</p> <p>Trig: Free Run Avg/Hold: 10/10</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref Offset 19.9 dB Ref 30.00 dBm</p> <p>Center 2.422 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms</p> <p>Occupied Bandwidth 36.234 MHz Total Power 6.16 dBm</p> <p>Transmit Freq Error 8.498 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 35.69 MHz x dB -6.00 dB</p>
<p>11N40SISO/MCH</p>	 <p>Center Freq 2.437000000 GHz</p> <p>Center Freq: 2.437000000 GHz</p> <p>Trig: Free Run Avg/Hold: >10/10</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref Offset 19.02 dB Ref 30.00 dBm</p> <p>Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms</p> <p>Occupied Bandwidth 36.211 MHz Total Power 6.71 dBm</p> <p>Transmit Freq Error 14.482 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 35.48 MHz x dB -6.00 dB</p>
<p>11N40SISO/HCH</p>	 <p>Center Freq 2.452000000 GHz</p> <p>Center Freq: 2.452000000 GHz</p> <p>Trig: Free Run Avg/Hold: 10/10</p> <p>Radio Std: None</p> <p>Radio Device: BTS</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>Center 2.452 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms</p> <p>Occupied Bandwidth 36.234 MHz Total Power 6.88 dBm</p> <p>Transmit Freq Error 1.260 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 35.56 MHz x dB -6.00 dB</p>

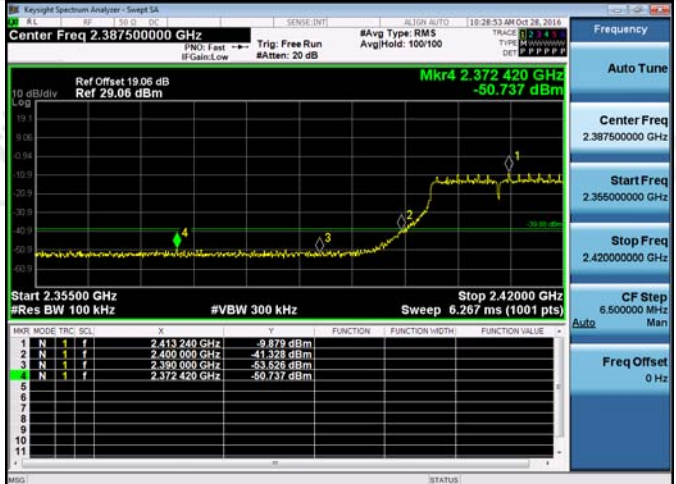
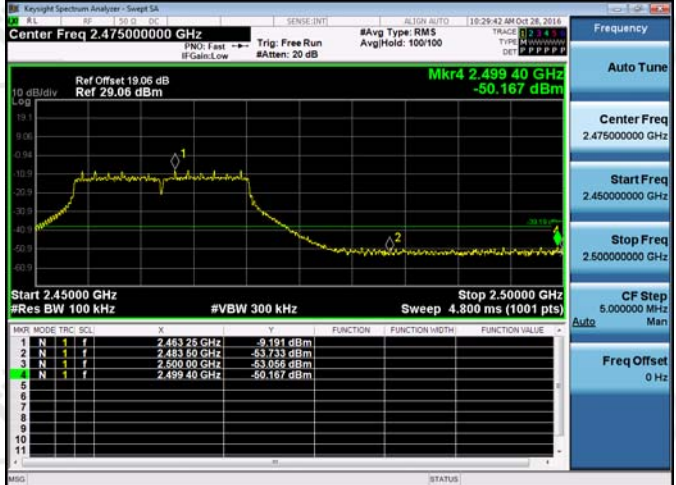
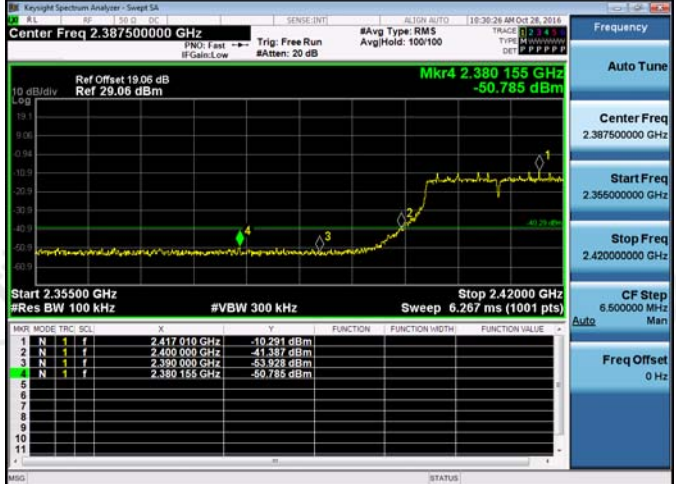
Appendix C): Band-edge for RF Conducted Emissions

Result Table

Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	-4.872	-51.047	-34.87	PASS
11B	HCH	-3.369	-49.670	-33.37	PASS
11G	LCH	-9.879	-50.737	-39.88	PASS
11G	HCH	-9.191	-50.167	-39.19	PASS
11N20SISO	LCH	-10.291	-50.785	-40.29	PASS
11N20SISO	HCH	-10.079	-49.447	-40.08	PASS
11N40SISO	LCH	-14.882	-50.887	-44.88	PASS
11N40SISO	HCH	-13.817	-47.614	-43.82	PASS

Test Graph



<p>11G/LCH</p>	
<p>11G/HCH</p>	
<p>11N20SISO/LCH</p>	

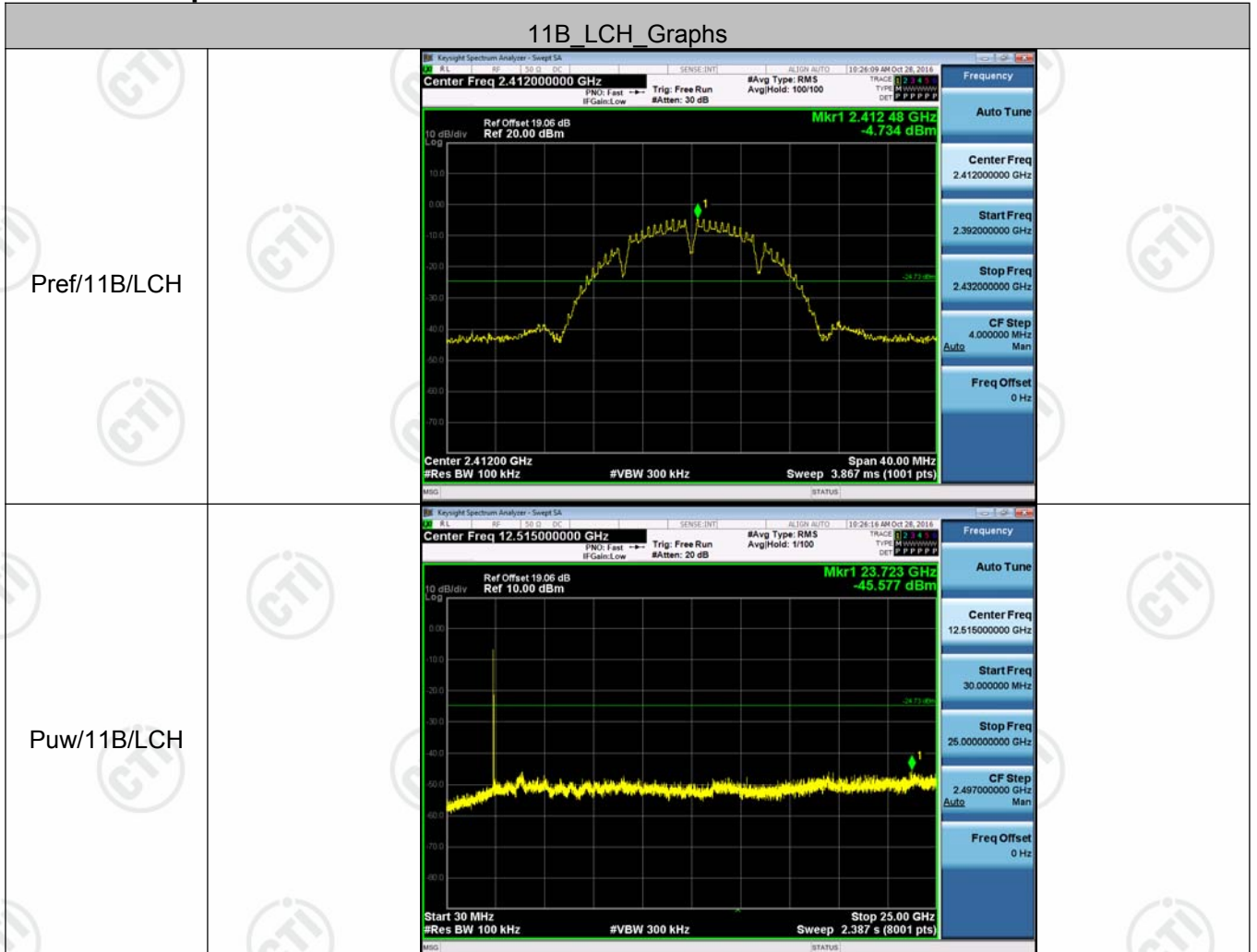
<p>11N20SISO/HCH</p>	<p>Keyight Spectrum Analyzer - Sweep SA</p> <p>Center Freq 2.47500000 GHz</p> <p>Ref Offset 19.06 dB Ref 29.06 dBm</p> <p>Mkr4 2.494 55 GHz -49.447 dBm</p> <p>Start 2.45000 GHz #Res BW 100 kHz</p> <p>#VBW 300 kHz</p> <p>Stop 2.50000 GHz Sweep 4.800 ms (1001 pts)</p> <table border="1"> <thead> <tr> <th>MNR</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> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.469 45 GHz</td> <td>-10.079 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>-53.266 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>-53.233 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>N</td> <td>1</td> <td>f</td> <td>2.494 55 GHz</td> <td>-49.447 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MNR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION METH	FUNCTION VALUE	1	N	1	f	2.469 45 GHz	-10.079 dBm				2	N	1	f	2.483 50 GHz	-53.266 dBm				3	N	1	f	2.500 00 GHz	-53.233 dBm				4	N	1	f	2.494 55 GHz	-49.447 dBm			
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4	N	1	f	2.494 55 GHz	-49.447 dBm																																									
<p>11N40SISO/LCH</p>	<p>Keyight Spectrum Analyzer - Sweep SA</p> <p>Center Freq 2.38750000 GHz</p> <p>Ref Offset 19.9 dB Ref 28.90 dBm</p> <p>Mkr4 2.373 850 GHz -50.887 dBm</p> <p>Start 2.35500 GHz #Res BW 100 kHz</p> <p>#VBW 300 kHz</p> <p>Stop 2.42000 GHz Sweep 6.267 ms (1001 pts)</p> <table border="1"> <thead> <tr> <th>MNR</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> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.416 945 GHz</td> <td>-14.882 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>-48.657 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>-54.092 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>N</td> <td>1</td> <td>f</td> <td>2.373 850 GHz</td> <td>-50.887 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MNR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION METH	FUNCTION VALUE	1	N	1	f	2.416 945 GHz	-14.882 dBm				2	N	1	f	2.400 000 GHz	-48.657 dBm				3	N	1	f	2.390 000 GHz	-54.092 dBm				4	N	1	f	2.373 850 GHz	-50.887 dBm			
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<p>11N40SISO/HCH</p>	<p>Keyight Spectrum Analyzer - Sweep SA</p> <p>Center Freq 2.47500000 GHz</p> <p>Ref Offset 19.06 dB Ref 29.06 dBm</p> <p>Mkr4 2.494 95 GHz -47.614 dBm</p> <p>Start 2.45000 GHz #Res BW 100 kHz</p> <p>#VBW 300 kHz</p> <p>Stop 2.50000 GHz Sweep 4.800 ms (1001 pts)</p> <table border="1"> <thead> <tr> <th>MNR</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> </thead> <tbody> <tr> <td>1</td> <td>N</td> <td>1</td> <td>f</td> <td>2.455 70 GHz</td> <td>-13.817 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>-51.275 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>-52.765 dBm</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>N</td> <td>1</td> <td>f</td> <td>2.494 95 GHz</td> <td>-47.614 dBm</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	MNR	MODE	TRC	SCL	X	Y	FUNCTION	FUNCTION METH	FUNCTION VALUE	1	N	1	f	2.455 70 GHz	-13.817 dBm				2	N	1	f	2.483 50 GHz	-51.275 dBm				3	N	1	f	2.500 00 GHz	-52.765 dBm				4	N	1	f	2.494 95 GHz	-47.614 dBm			
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4	N	1	f	2.494 95 GHz	-47.614 dBm																																									

Appendix D): RF Conducted Spurious Emissions

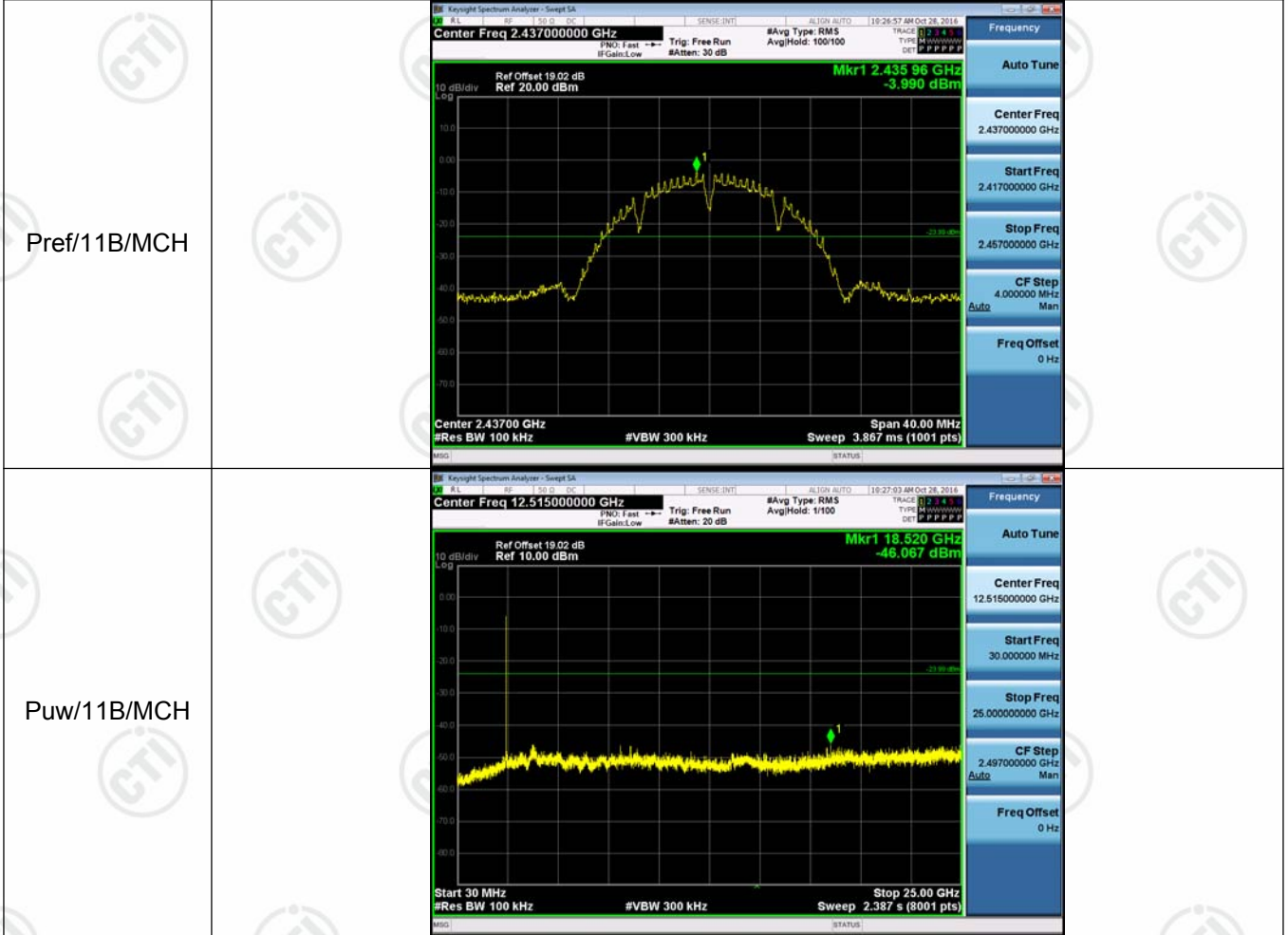
Result Table

Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
11B	LCH	-4.734	<Limit	PASS
11B	MCH	-3.99	<Limit	PASS
11B	HCH	-3.405	<Limit	PASS
11G	LCH	-11.592	<Limit	PASS
11G	MCH	-11.434	<Limit	PASS
11G	HCH	-10.013	<Limit	PASS
11N20SISO	LCH	-10.185	<Limit	PASS
11N20SISO	MCH	-10.169	<Limit	PASS
11N20SISO	HCH	-10.245	<Limit	PASS
11N40SISO	LCH	-14.381	<Limit	PASS
11N40SISO	MCH	-14.138	<Limit	PASS
11N40SISO	HCH	-13.587	<Limit	PASS

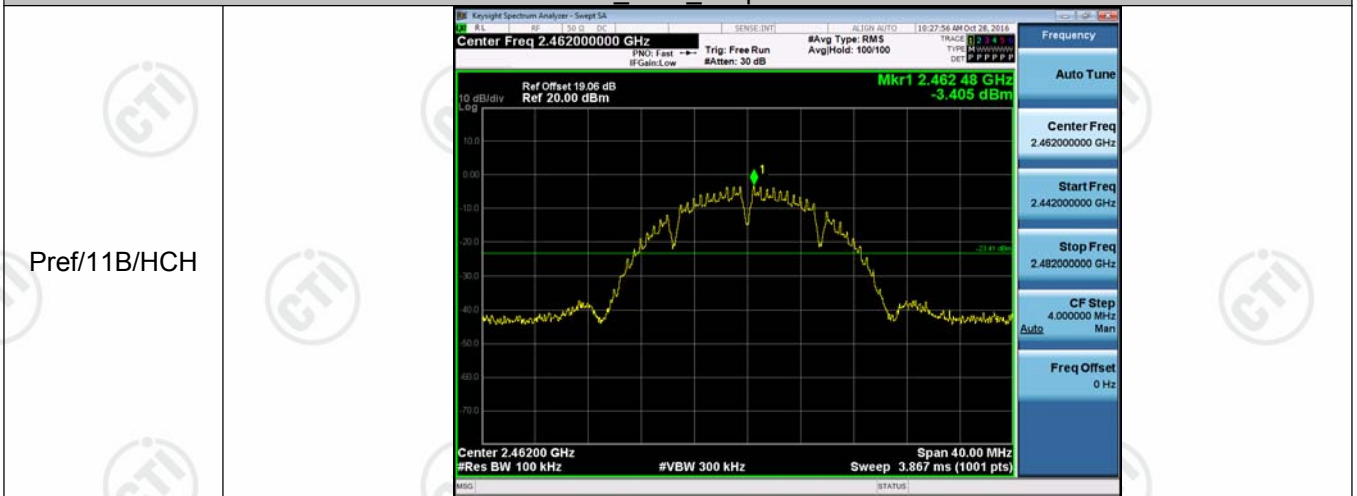
Test Graph

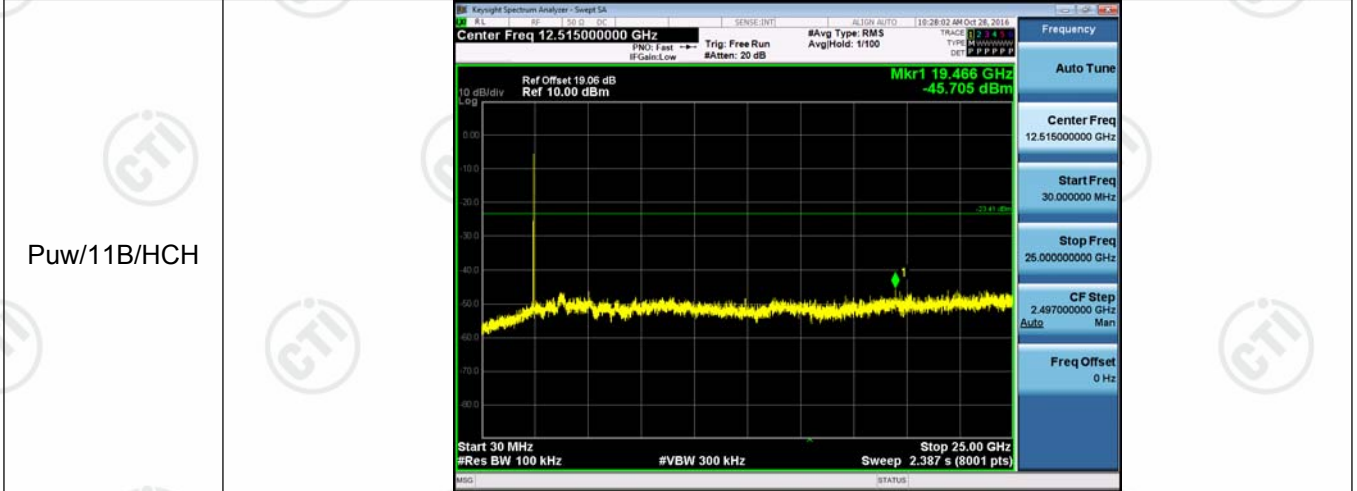


11B_MCH_Graphs

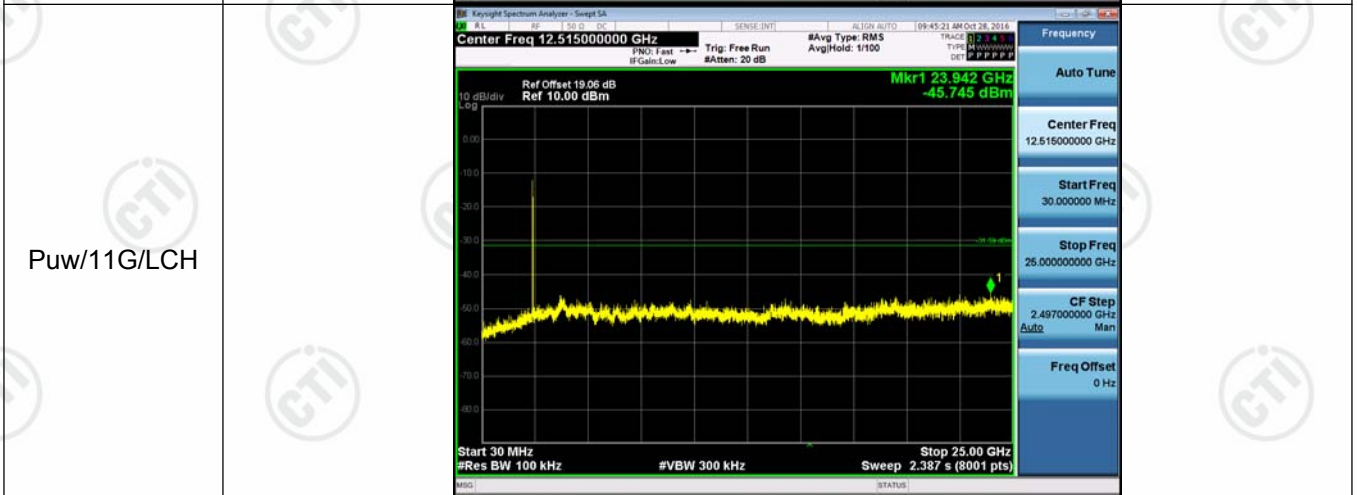
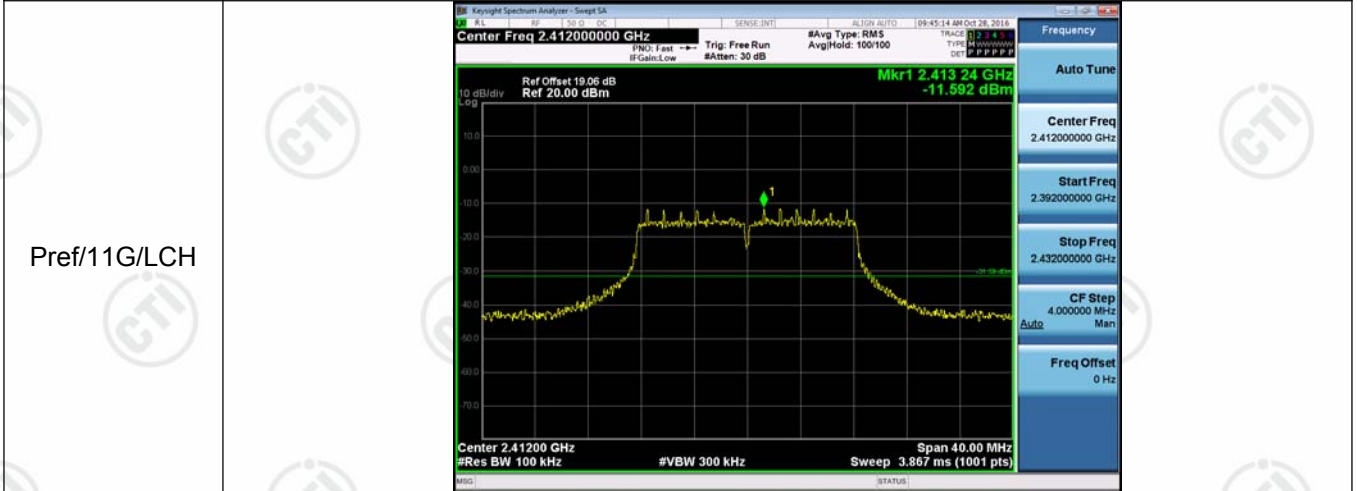


11B_HCH_Graphs



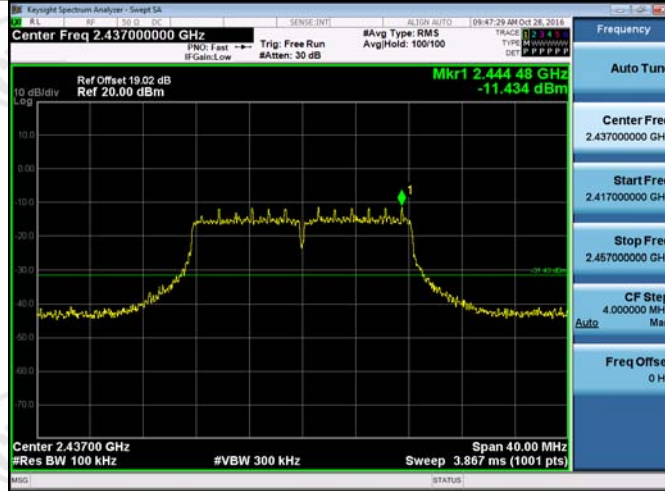


11G LCH Graphs

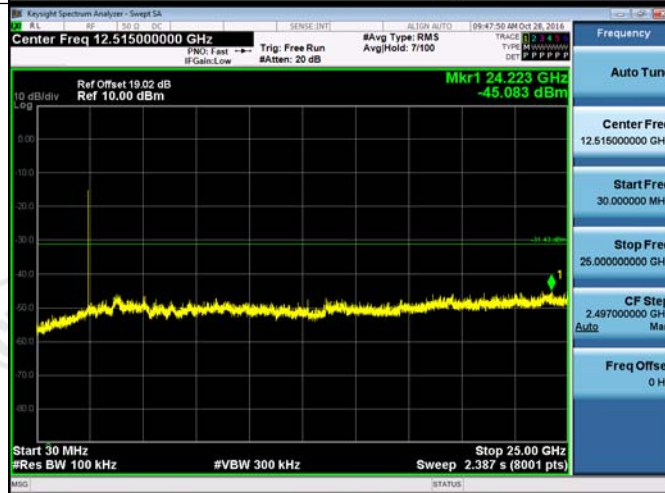


11G_MCH_Graphs

Pref/11G/MCH

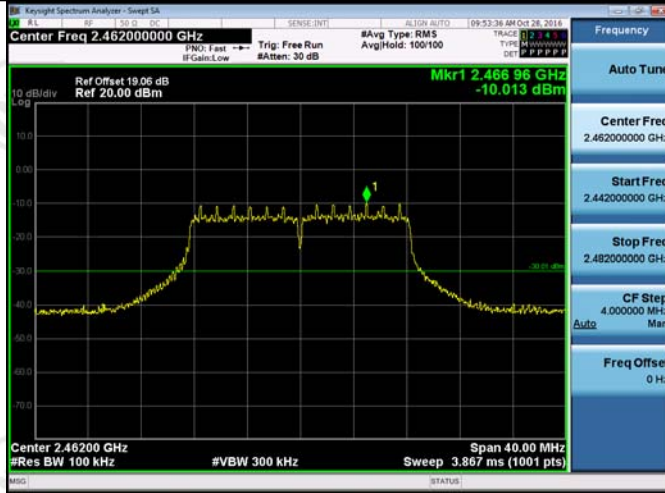


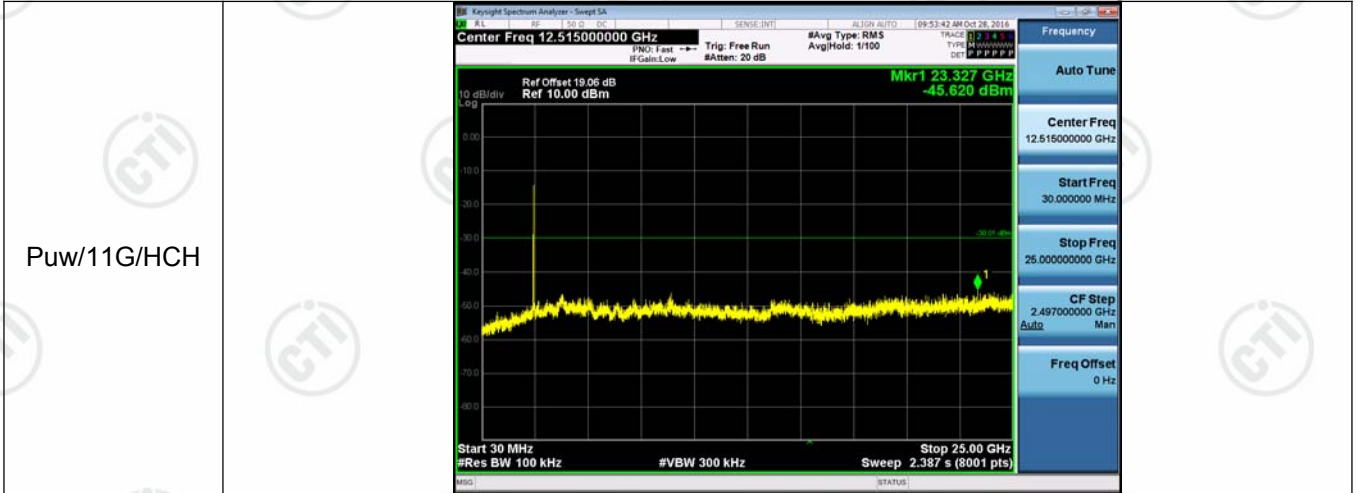
Puw/11G/MCH



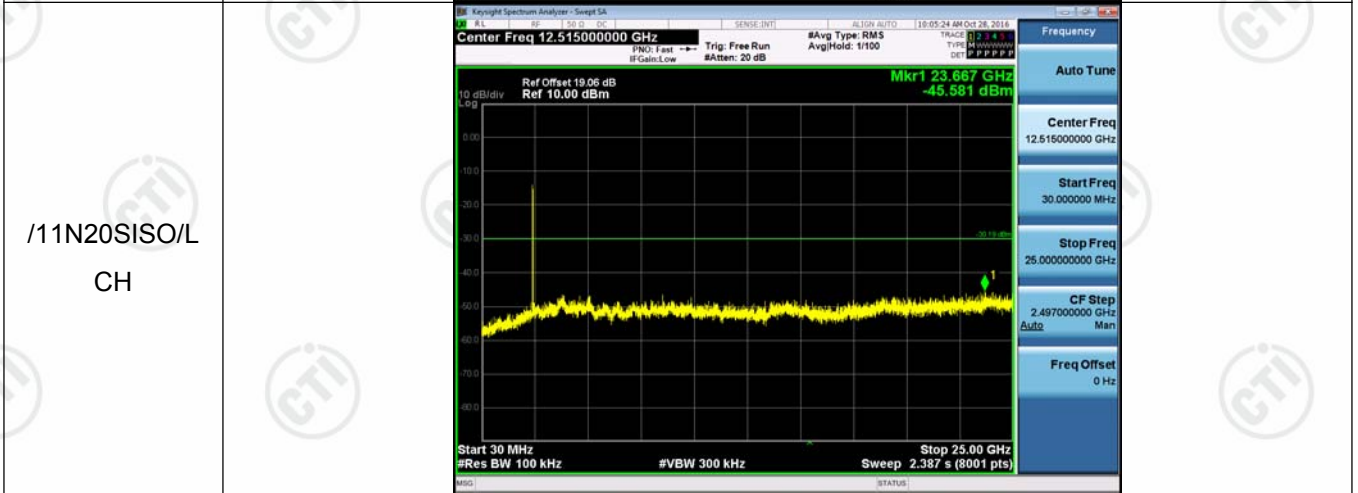
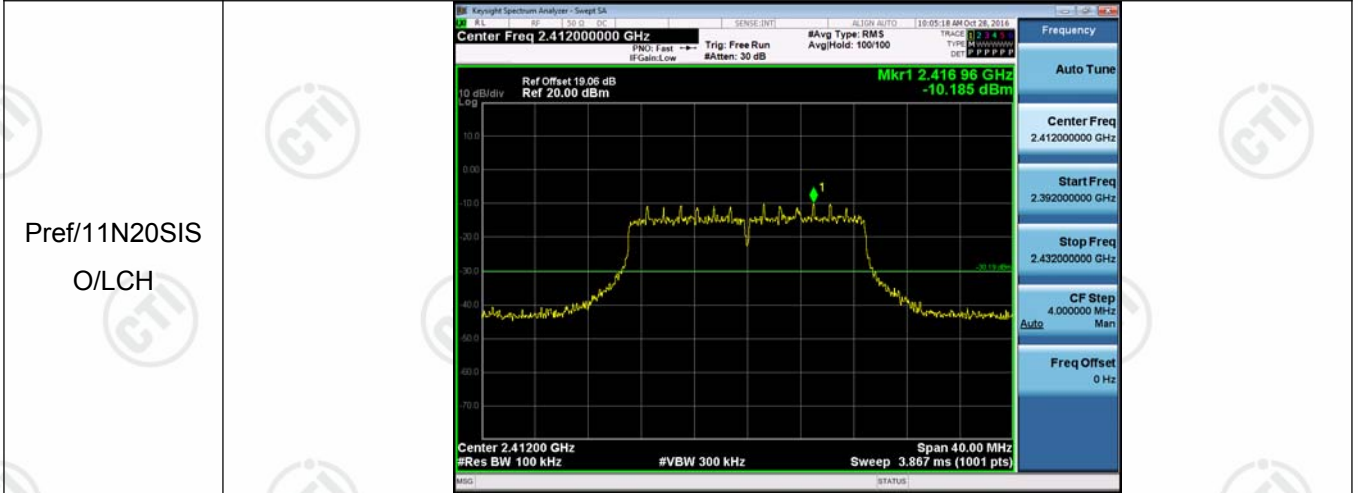
11G_HCH_Graphs

Pref/11G/HCH





11N20SISO LCH_Graphs

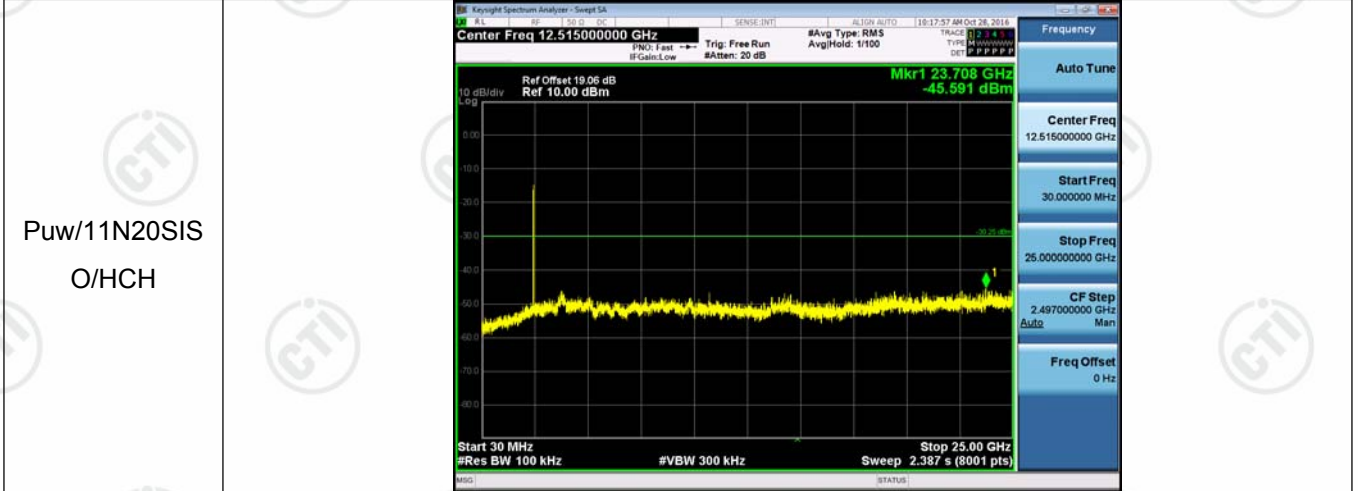


11N20SISO_MCH_Graphs

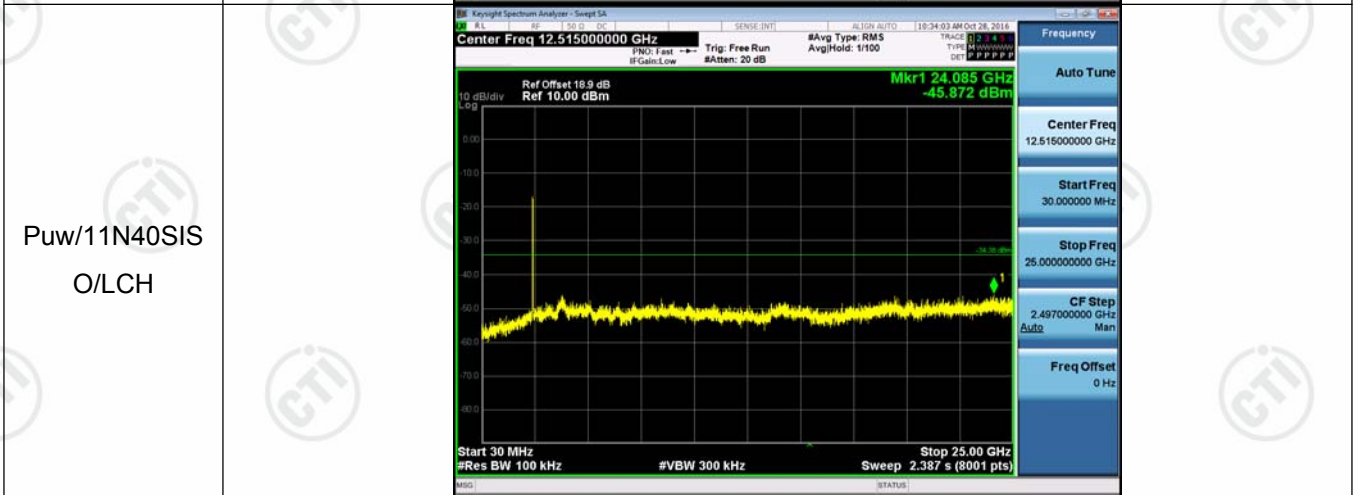
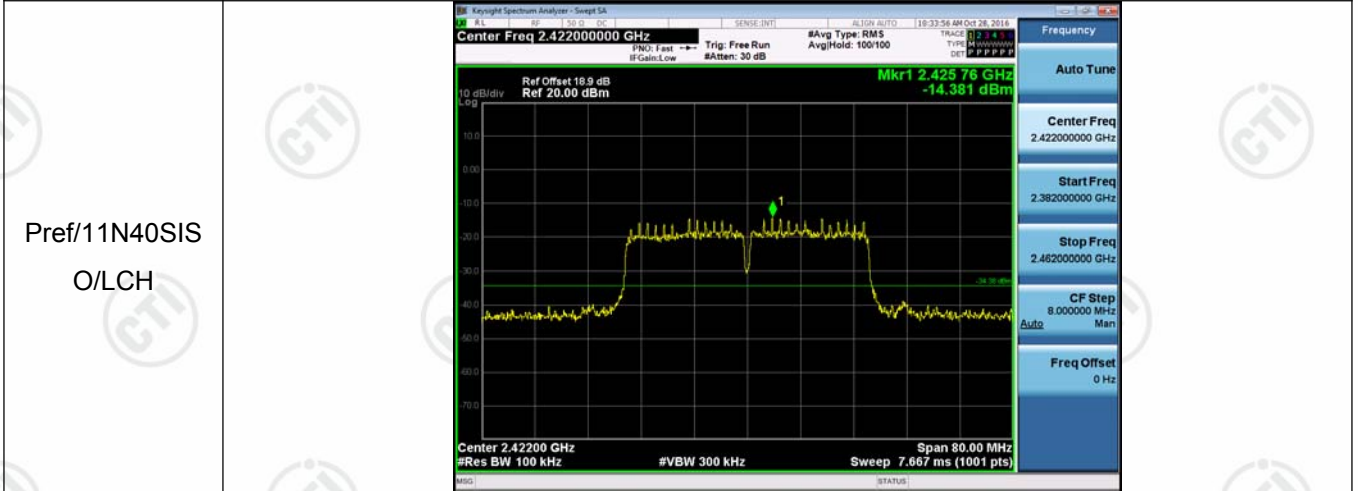
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<p>Puw/11N20SIS O/MCH</p>	

11N20SISO_HCH_Graphs

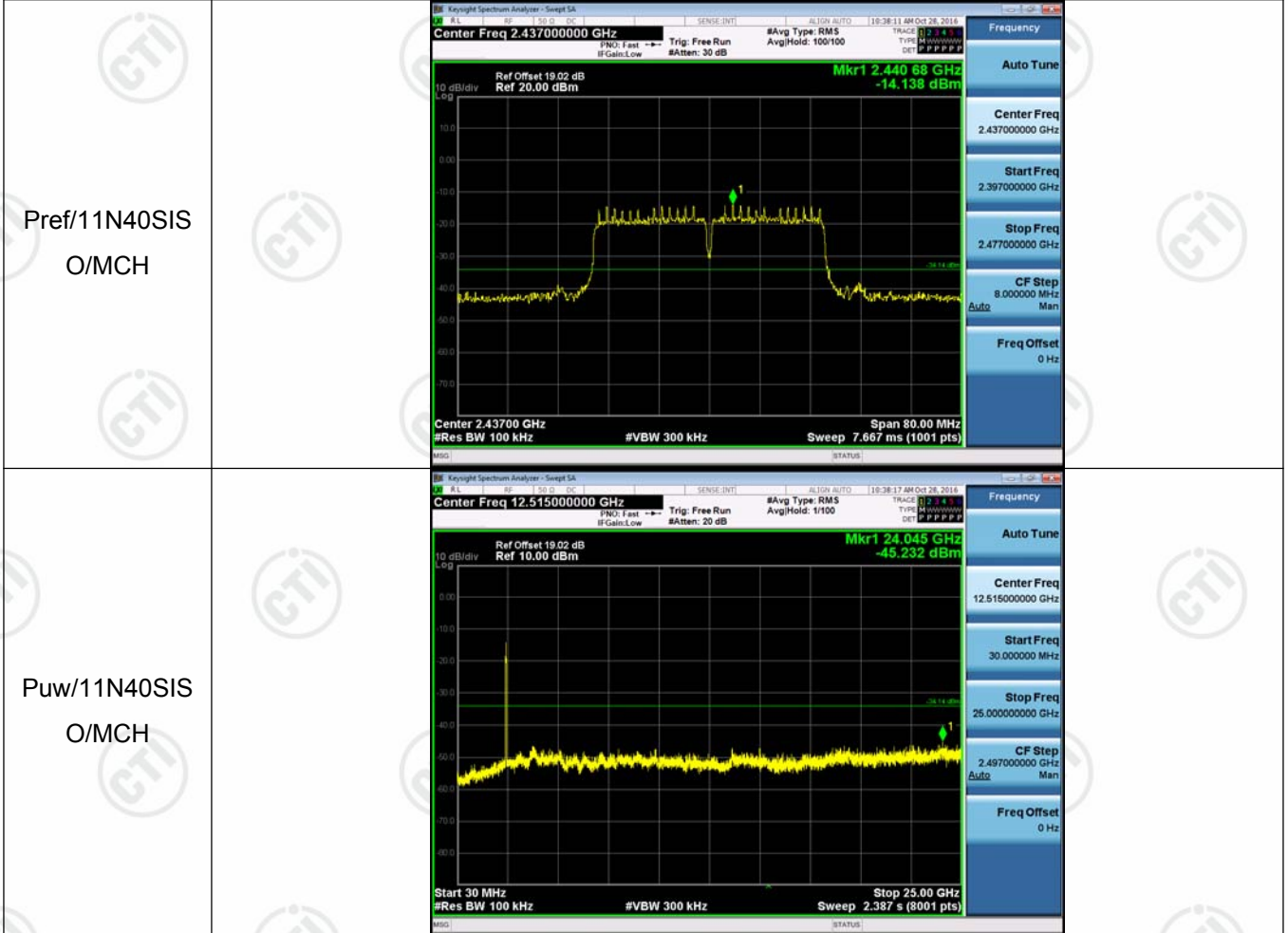
<p>Pref/11N20SIS O/HCH</p>	
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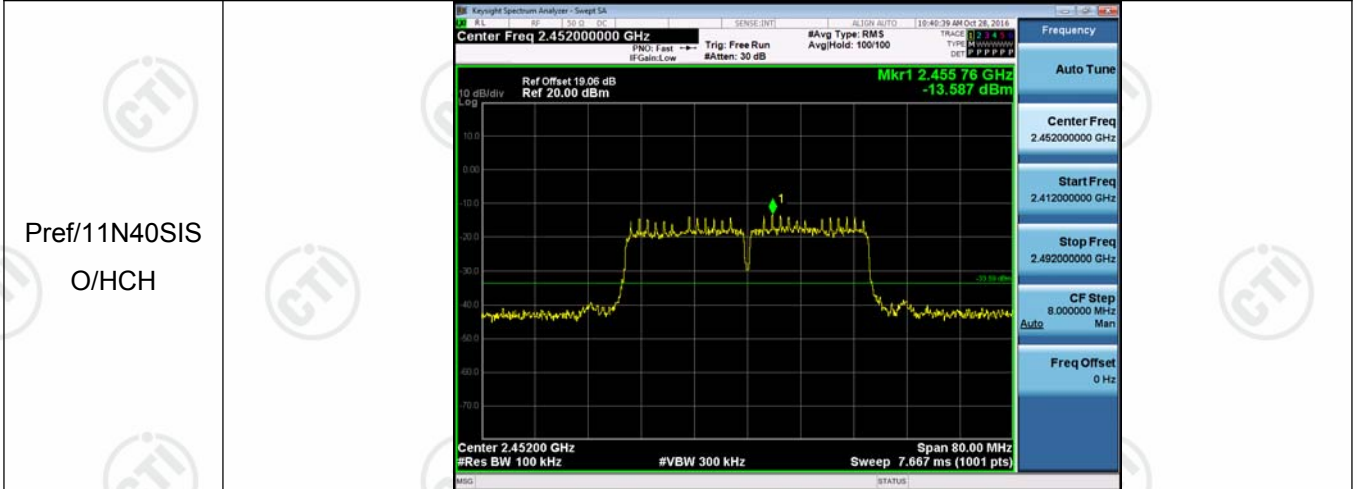
11N40SISO LCH_Graphs



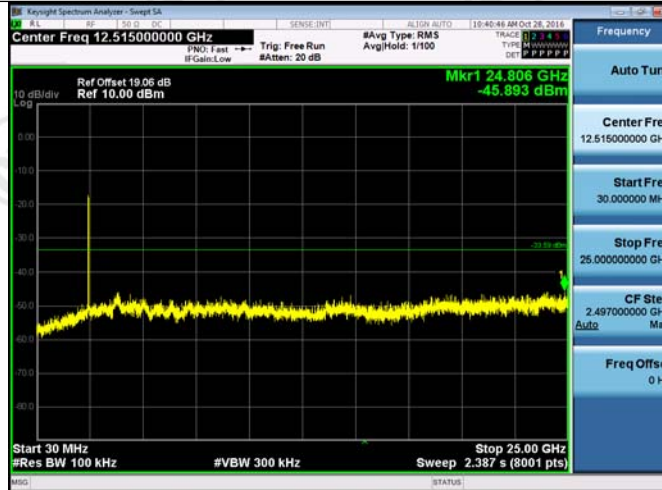
11N40SISO_MCH_Graphs



11N40SISO_HCH_Graphs



Puw/11N40SIS
O/HCH

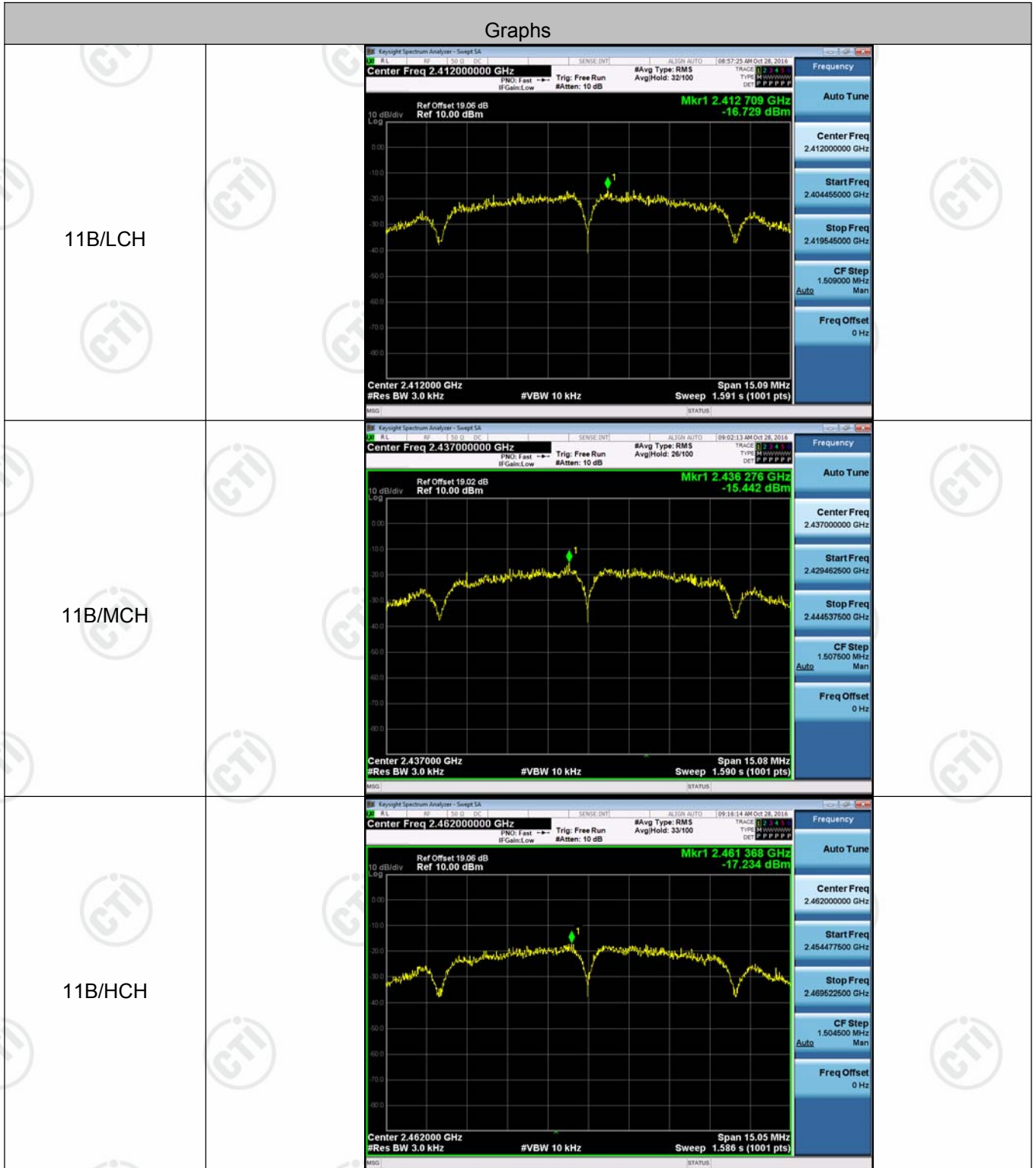


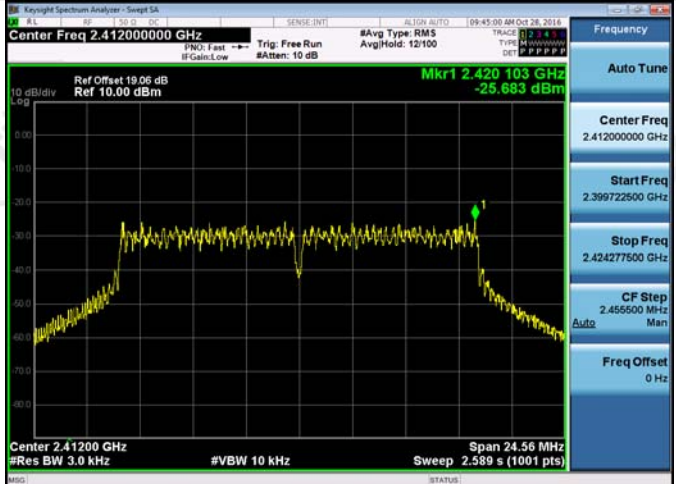
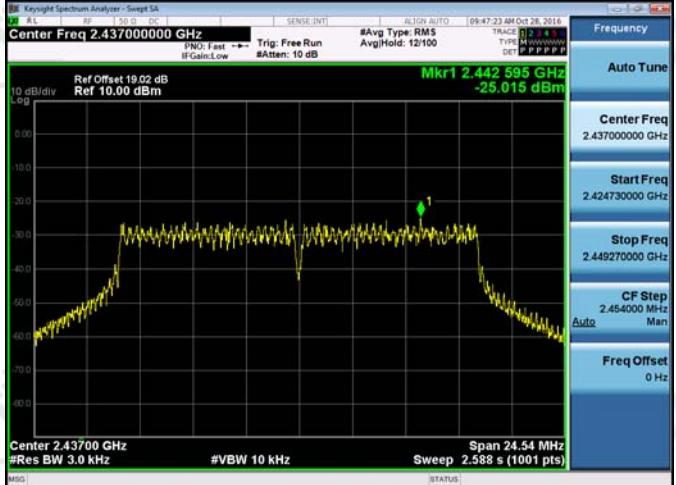
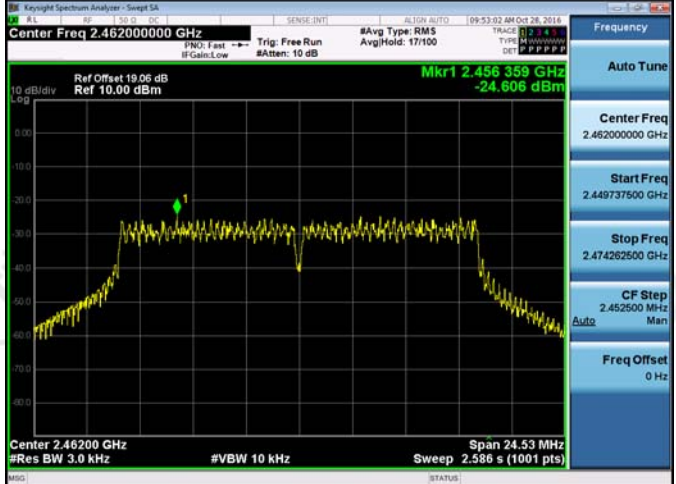
Appendix E): Power Spectral Density

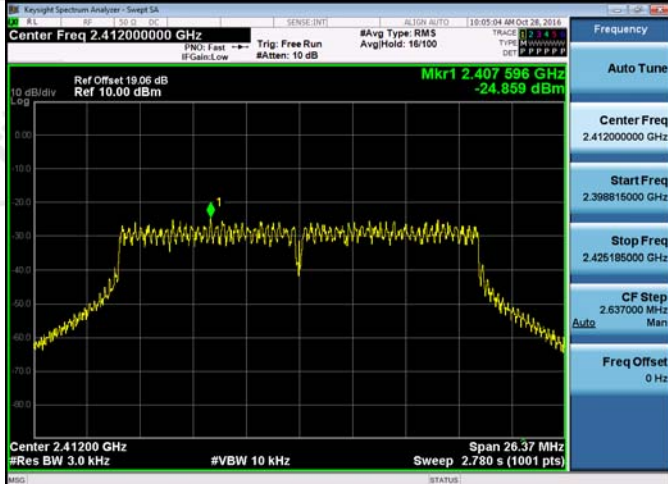
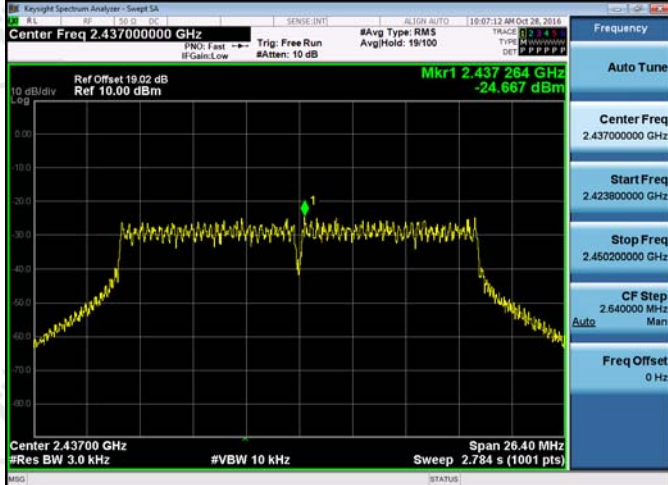
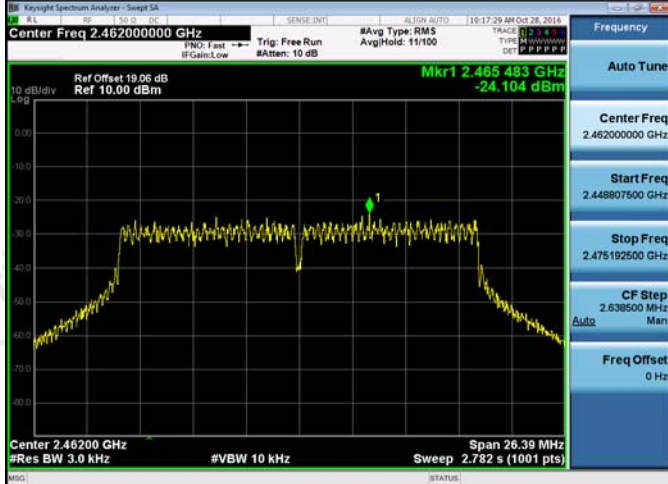
Result Table

Mode	Channel	Power Spectral Density [dBm]	Verdict
11B	LCH	-16.729	PASS
11B	MCH	-15.442	PASS
11B	HCH	-17.234	PASS
11G	LCH	-25.683	PASS
11G	MCH	-25.015	PASS
11G	HCH	-24.606	PASS
11N20SISO	LCH	-24.859	PASS
11N20SISO	MCH	-24.667	PASS
11N20SISO	HCH	-24.104	PASS
11N40SISO	LCH	-28.641	PASS
11N40SISO	MCH	-28.636	PASS
11N40SISO	HCH	-27.801	PASS

Test Graph



<p>11G/LCH</p>	
<p>11G/MCH</p>	
<p>11G/HCH</p>	

<p>11N20SISO/LCH</p>	
<p>11N20SISO/MCH</p>	
<p>11N20SISO/HCH</p>	

<p>11N40SISO/LCH</p>	<p>Center Freq 2.42200000 GHz Mkr1 2.418 79 GHz -28.641 dBm Center 2.42200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 53.54 MHz Sweep 5.645 s (1001 pts)</p>
<p>11N40SISO/MCH</p>	<p>Center Freq 2.43700000 GHz Mkr1 2.434 13 GHz -28.636 dBm Center 2.43700 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 53.22 MHz Sweep 5.612 s (1001 pts)</p>
<p>11N40SISO/HCH</p>	<p>Center Freq 2.45200000 GHz Mkr1 2.468 91 GHz -27.801 dBm Center 2.45200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 53.34 MHz Sweep 5.624 s (1001 pts)</p>

Appendix F): Antenna Requirement

15.203 requirement:

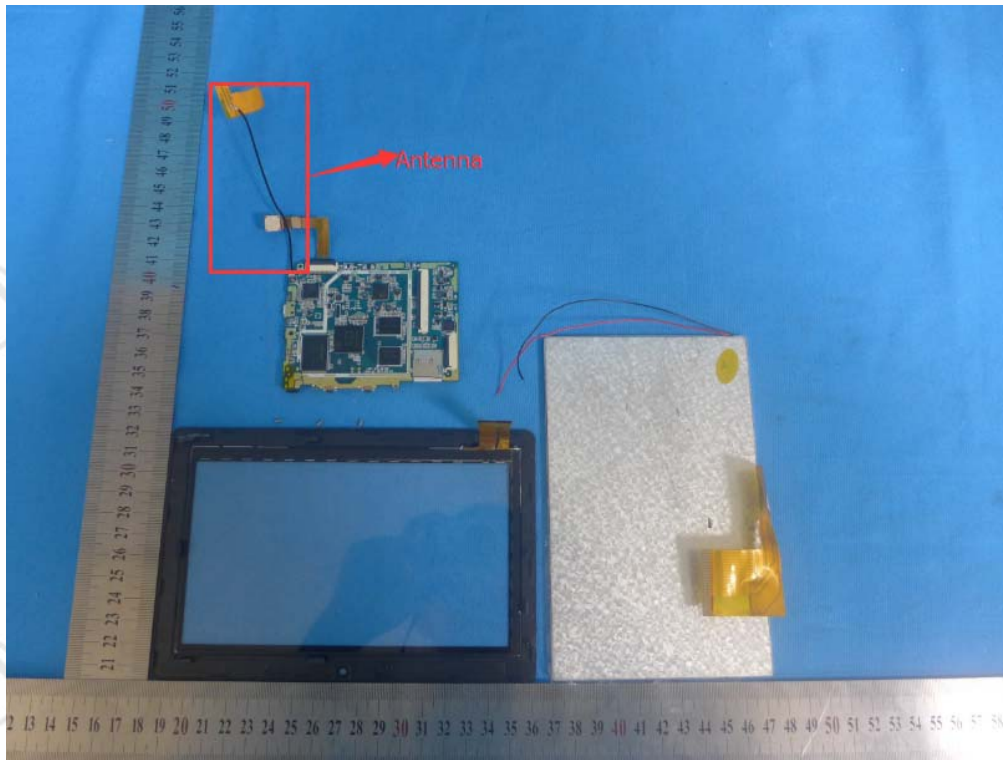
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit 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 PIFA antenna and no consideration of replacement. The best case gain of the antenna is 0dBi.



Appendix G): AC Power Line Conducted Emission

<p>Test Procedure:</p>	<p>Test frequency range :150KHz-30MHz</p> <ol style="list-style-type: none"> 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 50Ω/50μH + 5Ω 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. 														
<p>Limit:</p>	<table border="1" data-bbox="464 1061 1331 1279"> <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> <p>* 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</p>	Frequency range (MHz)	Limit (dBμV)		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 (dBμV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													

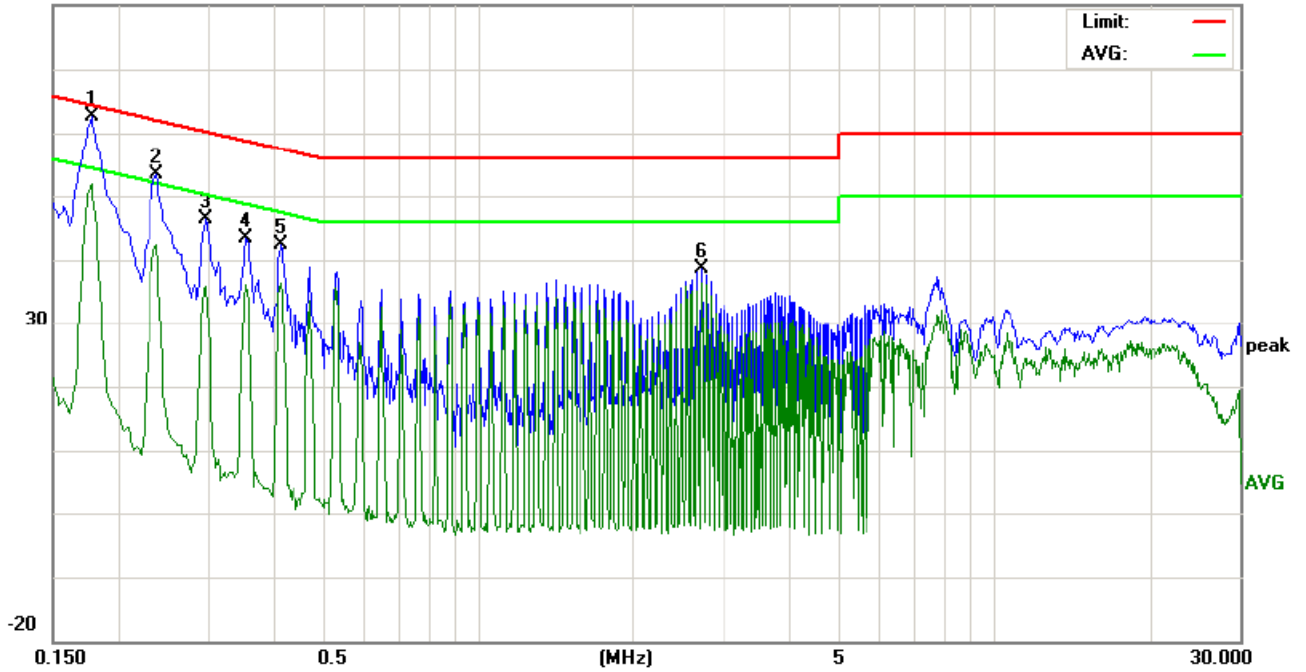
Measurement Data

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:

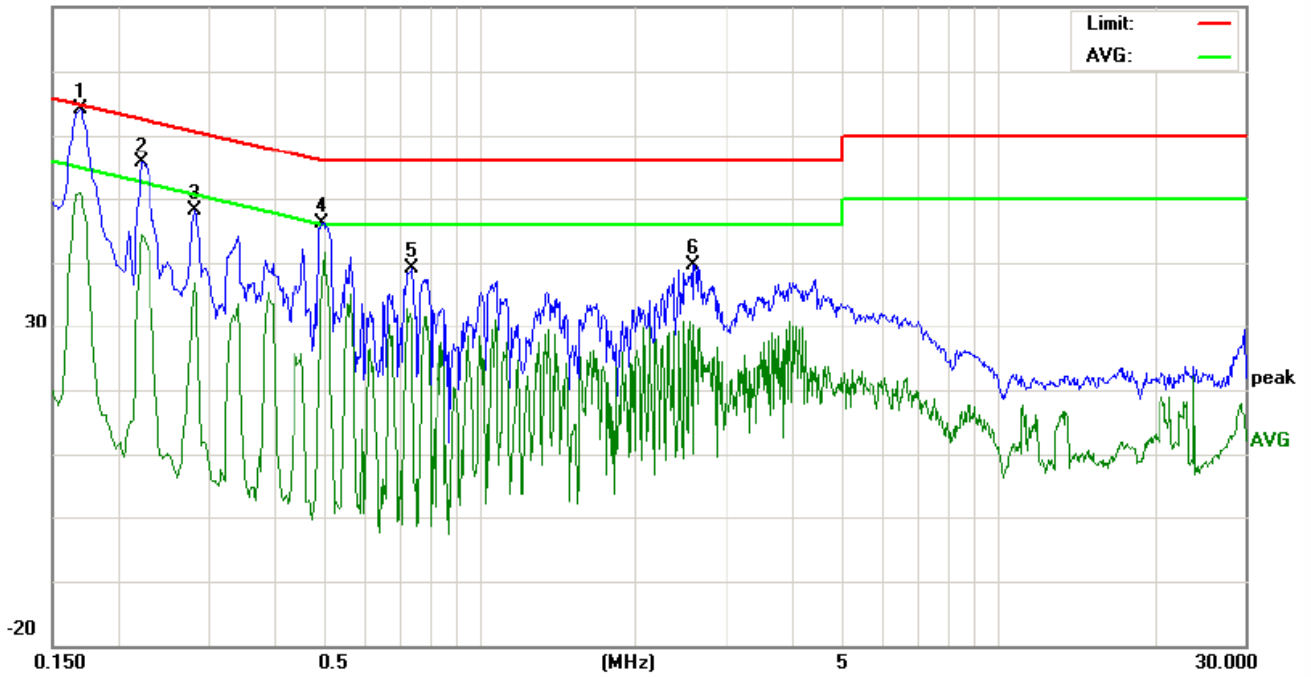
80.0 dBuV



No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1776	52.78	51.23	41.13	9.80	62.58	61.03	50.93	64.59	54.59	-3.56	-3.66	P	
2	0.2377	43.67		32.55	9.80	53.47		42.35	62.17	52.17	-8.70	-9.82	P	
3	0.2969	36.65		26.16	9.80	46.45		35.96	60.33	50.33	-13.88	-14.37	P	
4	0.3537	33.46		26.27	9.85	43.31		36.12	58.87	48.87	-15.56	-12.75	P	
5	0.4124	32.37		26.48	9.90	42.27		36.38	57.60	47.60	-15.33	-11.22	P	
6	2.7060	28.64		26.49	10.00	38.64		36.49	56.00	46.00	-17.36	-9.51	P	

Neutral line:

80.0 dBuV



No.	Freq. MHz	Reading_Level (dBuV)			Correct Factor dB	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
		Peak	QP	AVG		peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1693	54.41	52.41	40.87	9.80	64.21	62.21	50.67	64.99	54.99	-2.78	-4.32	P	
2	0.2219	45.72		34.62	9.80	55.52		44.42	62.74	52.74	-7.22	-8.32	P	
3	0.2816	38.26		27.18	9.80	48.06		36.98	60.77	50.77	-12.71	-13.79	P	
4	0.4965	36.21		26.89	9.90	46.11		36.79	56.06	46.06	-9.95	-9.27	P	
5	0.7388	29.34		19.45	9.90	39.24		29.35	56.00	46.00	-16.76	-16.65	P	
6	2.5799	29.60		20.41	10.00	39.60		30.41	56.00	46.00	-16.40	-15.59	P	

Notes:

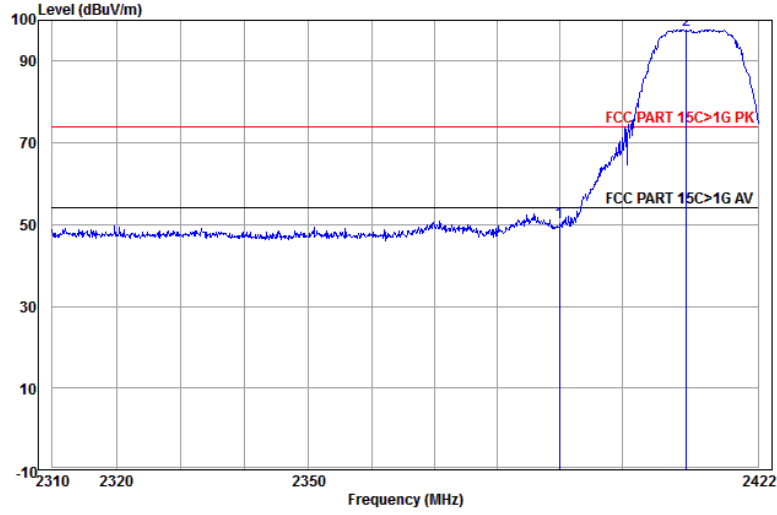
1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.

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

Receiver Setup:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Detector</th> <th>RBW</th> <th>VBW</th> <th>Remark</th> </tr> </thead> <tbody> <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>RMS</td> <td>1MHz</td> <td>3MHz</td> <td>Average</td> </tr> </tbody> </table>	Frequency	Detector	RBW	VBW	Remark	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak	Above 1GHz	Peak	1MHz	3MHz	Peak	RMS	1MHz	3MHz	Average	
Frequency	Detector	RBW	VBW	Remark																	
30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak																	
Above 1GHz	Peak	1MHz	3MHz	Peak																	
	RMS	1MHz	3MHz	Average																	
Test Procedure:	<p>Below 1GHz test procedure as below:</p> <ol style="list-style-type: none"> 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. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 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. 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. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 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 <p>Above 1GHz test procedure as below:</p> <ol style="list-style-type: none"> 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). Test the EUT in the lowest channel , the Highest channel 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. Repeat above procedures until all frequencies measured was complete. 																				
Limit:	<table border="1"> <thead> <tr> <th>Frequency</th> <th>Limit (dBμV/m @3m)</th> <th>Remark</th> </tr> </thead> <tbody> <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> </tbody> </table>	Frequency	Limit (dB μ V/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 (dB μ V/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																			

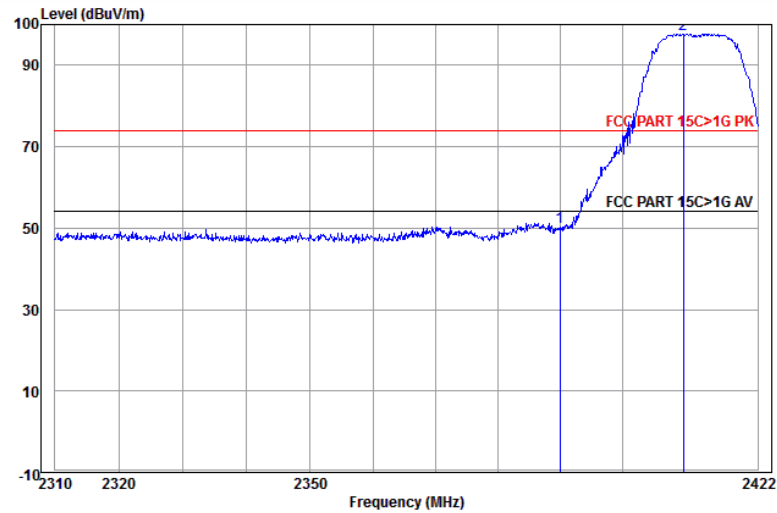
Test plot as follows:

Worse case mode:	802.11b (11Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



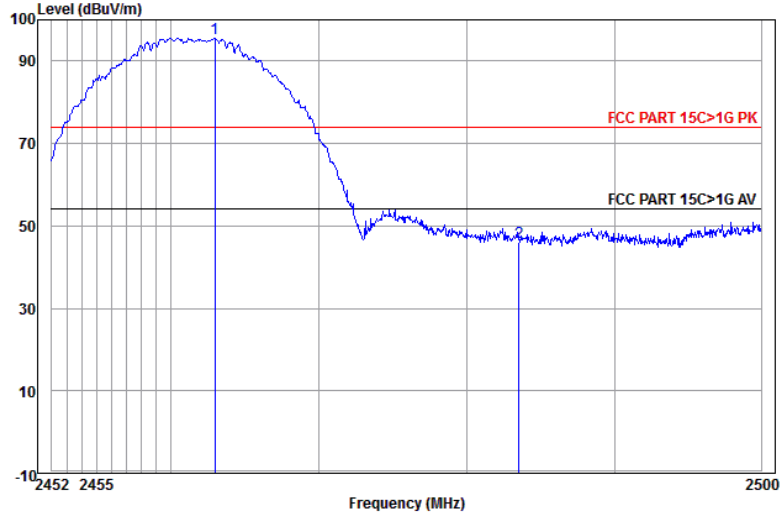
	Ant Freq	Cable Factor	Preamp Factor	Read Level	Limit Level	Over Limit	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	4.28	34.39	48.12	50.54	74.00	-23.46	Horizontal
2 pp	2410.446	32.57	4.33	34.39	95.09	97.60	74.00	23.60	Horizontal

Worse case mode:	802.11b (11Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Peak



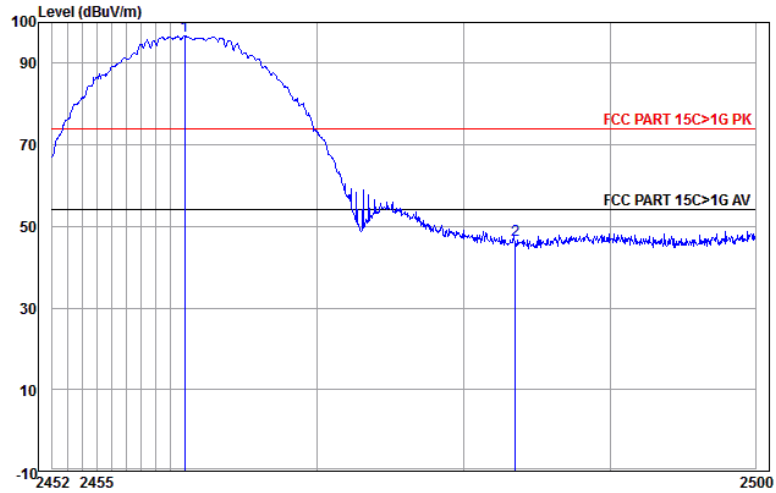
	Ant Freq	Cable Factor	Preamp Factor	Read Level	Limit Level	Over Limit	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	2390.000	32.53	4.28	34.39	47.94	50.36	74.00	-23.64	Horizontal
2 pp	2409.875	32.57	4.33	34.39	95.11	97.62	74.00	23.62	Horizontal

Worse case mode:	802.11b (11Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Peak



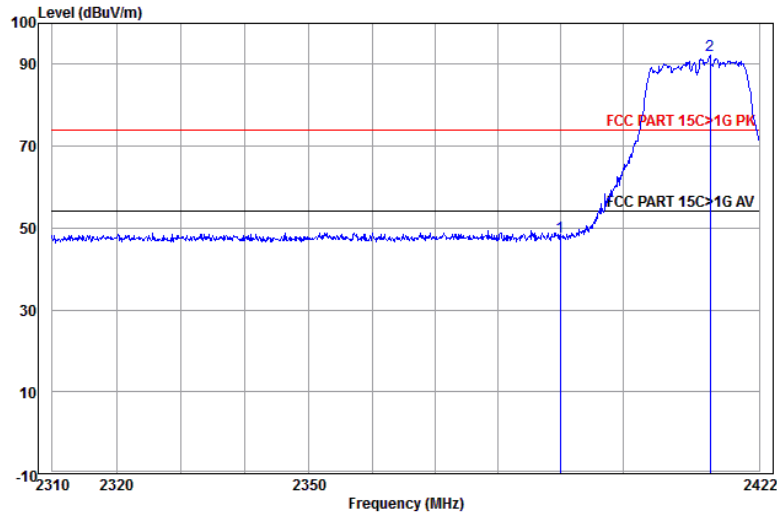
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2462.958	32.68	4.46	34.40	92.70	95.44	74.00	21.44	Horizontal
2	2483.500	32.71	4.51	34.41	43.27	46.08	74.00	-27.92	Horizontal

Worse case mode:	802.11b (11Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Vertical	Remark: Peak



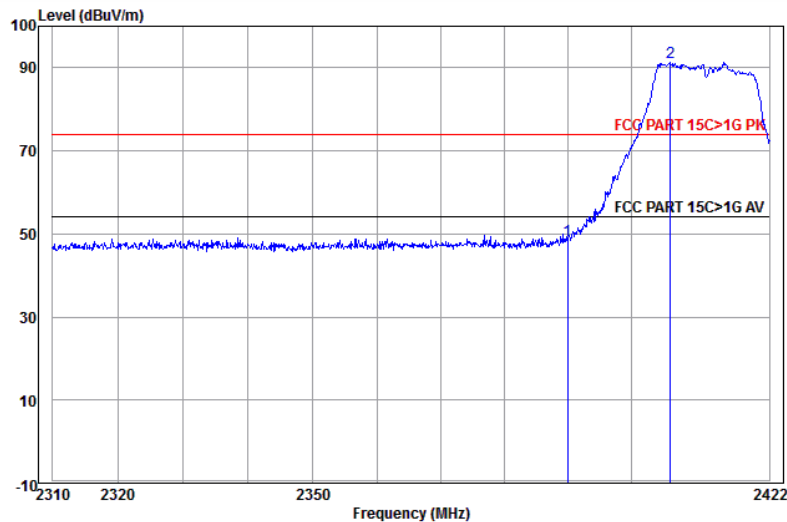
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2460.953	32.67	4.45	34.40	94.01	96.73	74.00	22.73	Vertical
2	2483.500	32.71	4.51	34.41	43.84	46.65	74.00	-27.35	Vertical

Worse case mode:	802.11g (6Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



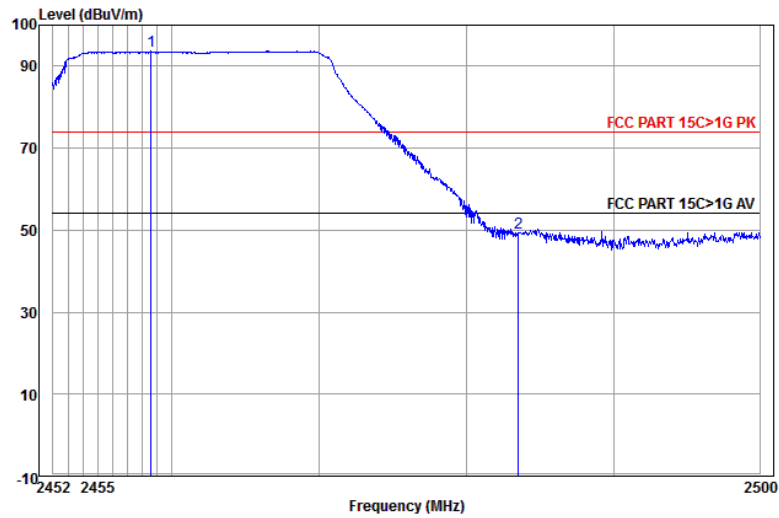
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	4.28	34.39	45.45	47.87	74.00	-26.13	Horizontal
2 pp	2414.101	32.58	4.34	34.39	89.59	92.12	74.00	18.12	Horizontal

Worse case mode:	802.11g (6Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Peak



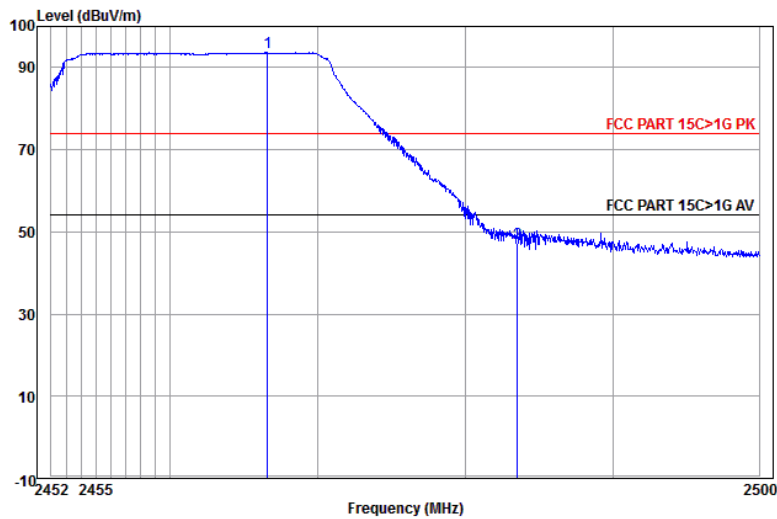
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	4.28	34.39	45.97	48.39	74.00	-25.61	Vertical
2 pp	2406.227	32.57	4.32	34.39	88.90	91.40	74.00	17.40	Vertical

Worse case mode:	802.11g (6Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Peak



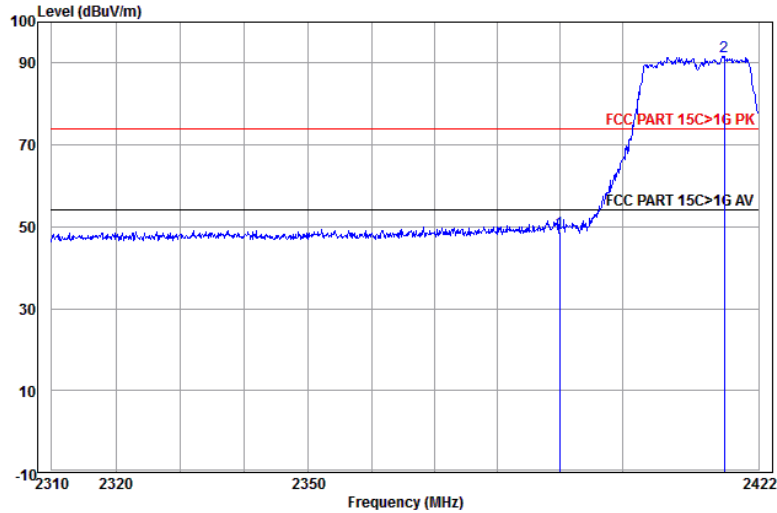
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2458.616	32.67	4.45	34.40	90.85	93.57	74.00	19.57	Horizontal
2	2483.500	32.71	4.51	34.41	46.49	49.30	74.00	-24.70	Horizontal

Worse case mode:	802.11g (6Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Vertical	Remark: Peak



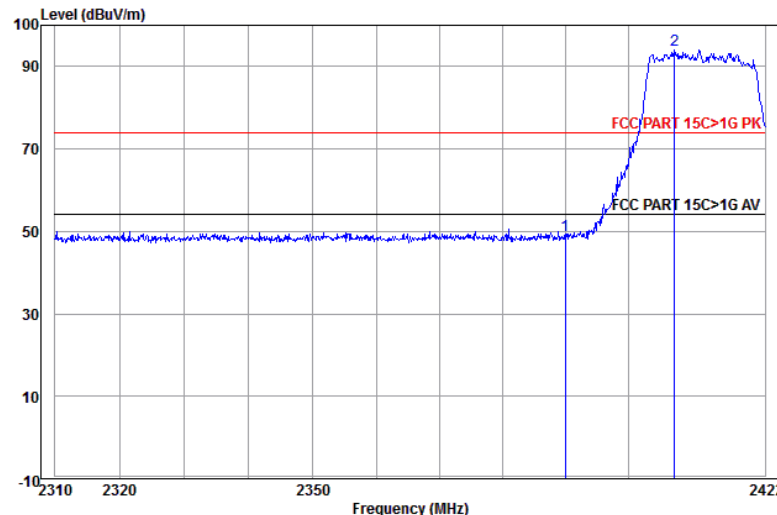
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2466.589	32.68	4.47	34.40	90.93	93.68	74.00	19.68	Vertical
2	2483.500	32.71	4.51	34.41	44.58	47.39	74.00	-26.61	Vertical

Worse case mode:	802.11n(HT20) (6.5Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



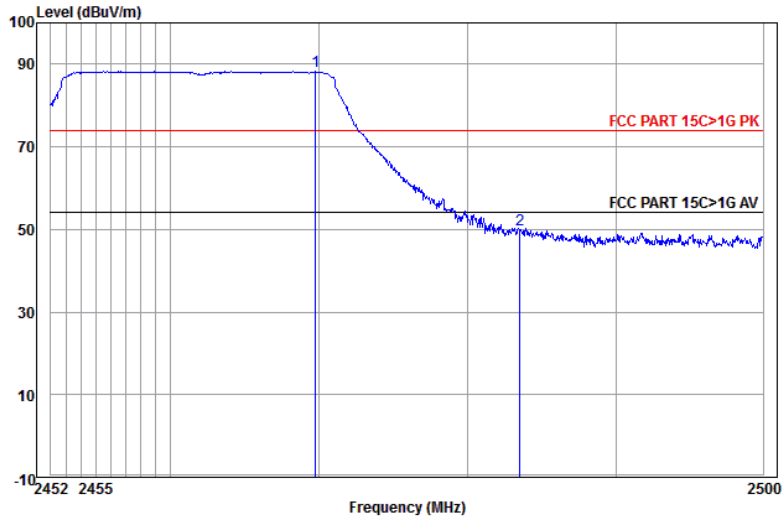
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Over Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	4.28	34.39	46.47	48.89	74.00	-25.11	Horizontal
2	pp 2416.502	32.59	4.35	34.39	89.12	91.67	74.00	17.67	Horizontal

Worse case mode:	802.11n(HT20) (6.5Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Peak



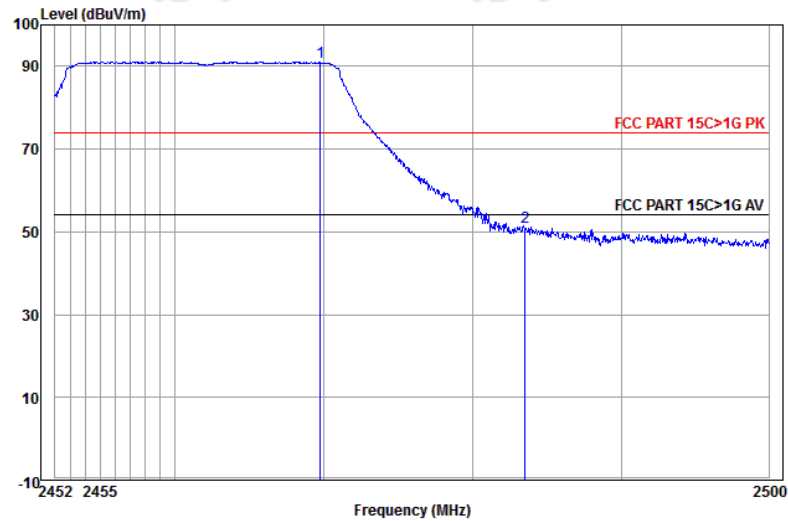
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Over Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	4.28	34.39	46.70	49.12	74.00	-24.88	Vertical
2	pp 2407.480	32.57	4.32	34.39	91.56	94.06	74.00	20.06	Vertical

Worse case mode:	802.11n(HT20) (6.5Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Peak



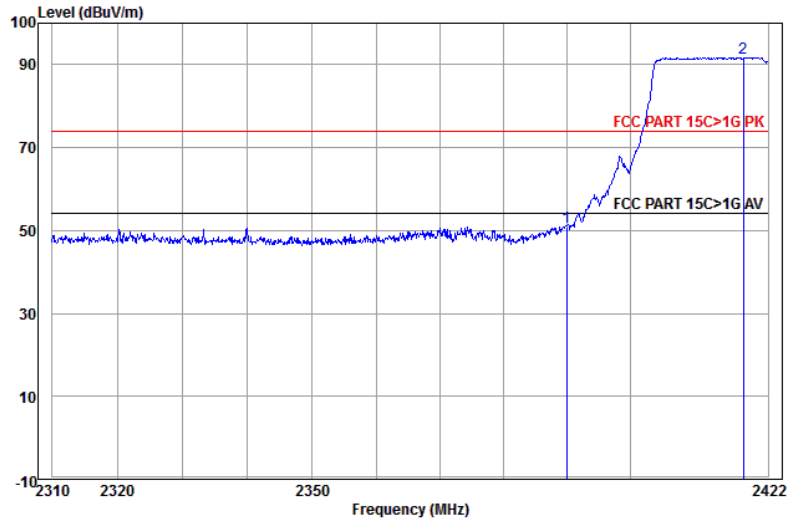
	Ant Freq	Cable Factor	Preamp Factor	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2469.747	32.69	4.47	34.40	85.53	88.29	74.00	14.29 Horizontal
2	2483.500	32.71	4.51	34.41	47.18	49.99	74.00	-24.01 Horizontal

Worse case mode:	802.11n(HT20) (6.5Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Vertical	Remark: Peak



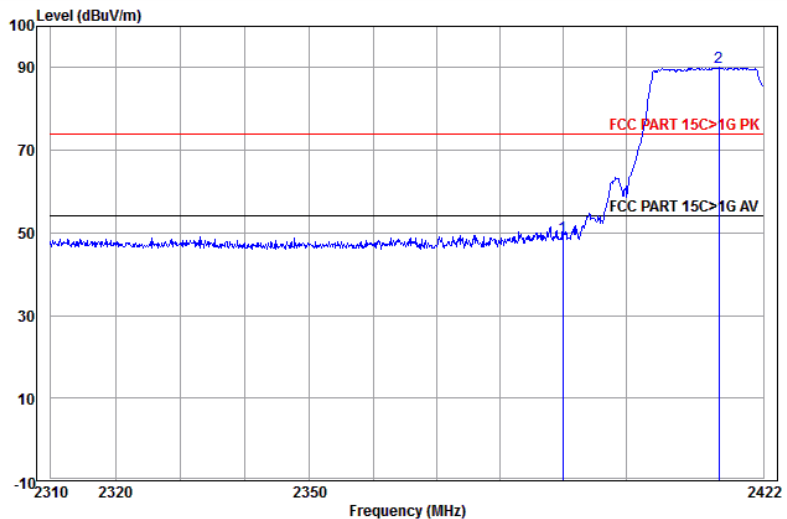
	Ant Freq	Cable Factor	Preamp Factor	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2469.747	32.69	4.47	34.40	88.33	91.09	74.00	17.09 Vertical
2	2483.500	32.71	4.51	34.41	48.18	50.99	74.00	-23.01 Vertical

Worse case mode:	802.11n(HT40) (13..5Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Horizontal	Remark: Peak



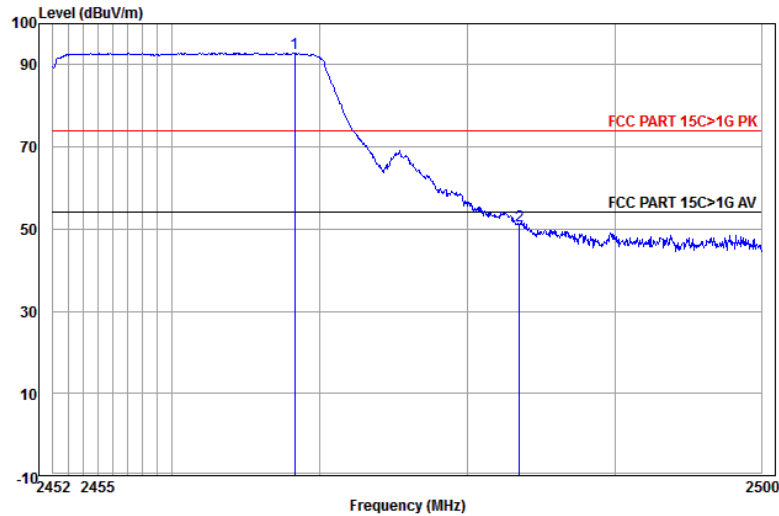
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	4.28	34.39	48.43	50.85	74.00	-23.15	Horizontal
2 pp	2418.104	32.59	4.35	34.39	89.20	91.75	74.00	17.75	Horizontal

Worse case mode:	802.11n(HT40) (13..5Mbps)		
Frequency: 2390.0MHz	Test channel: Lowest	Polarization: Vertical	Remark: Peak



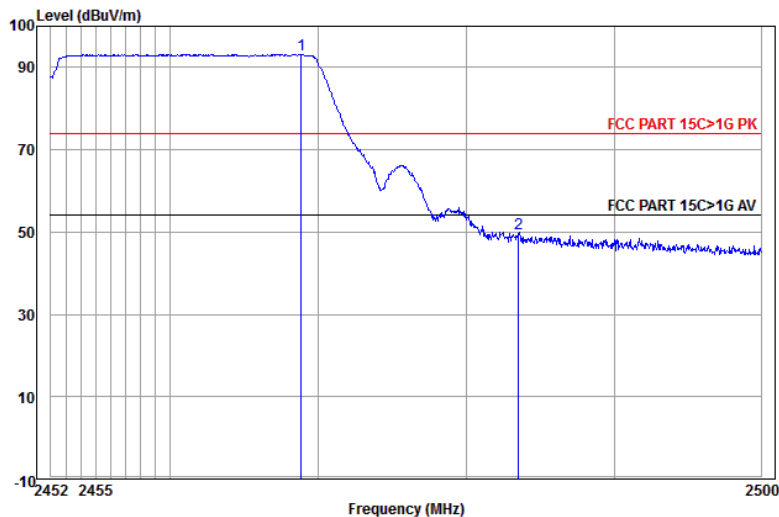
	Ant Freq	Cable Factor	Preamp Loss	Read Level	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2390.000	32.53	4.28	34.39	46.71	49.13	74.00	-24.87	Vertical
2 pp	2414.901	32.58	4.34	34.39	87.44	89.97	74.00	15.97	Vertical

Worse case mode:	802.11n(HT40) (13..5Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Horizontal	Remark: Peak



	Ant Freq	Cable Factor	Preamp Loss	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dB		
1 pp	2468.264	32.69	4.47	34.40	90.14	92.90	74.00	18.90	Horizontal
2	2483.500	32.71	4.51	34.41	48.13	50.94	74.00	-23.06	Horizontal

Worse case mode:	802.11n(HT40) (13..5Mbps)		
Frequency: 2483.5MHz	Test channel: Highest	Polarization: Vertical	Remark: Peak



	Ant Freq	Cable Factor	Preamp Loss	Read Level	Read Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dB	dBuV	dBuV/m	dB		
1 pp	2468.838	32.69	4.47	34.40	90.40	93.16	74.00	19.16	Vertical
2	2483.500	32.71	4.51	34.41	46.87	49.68	74.00	-24.32	Vertical

Remark:

1) Through Pre-scan 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 & Pre-amplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading - Correct Factor

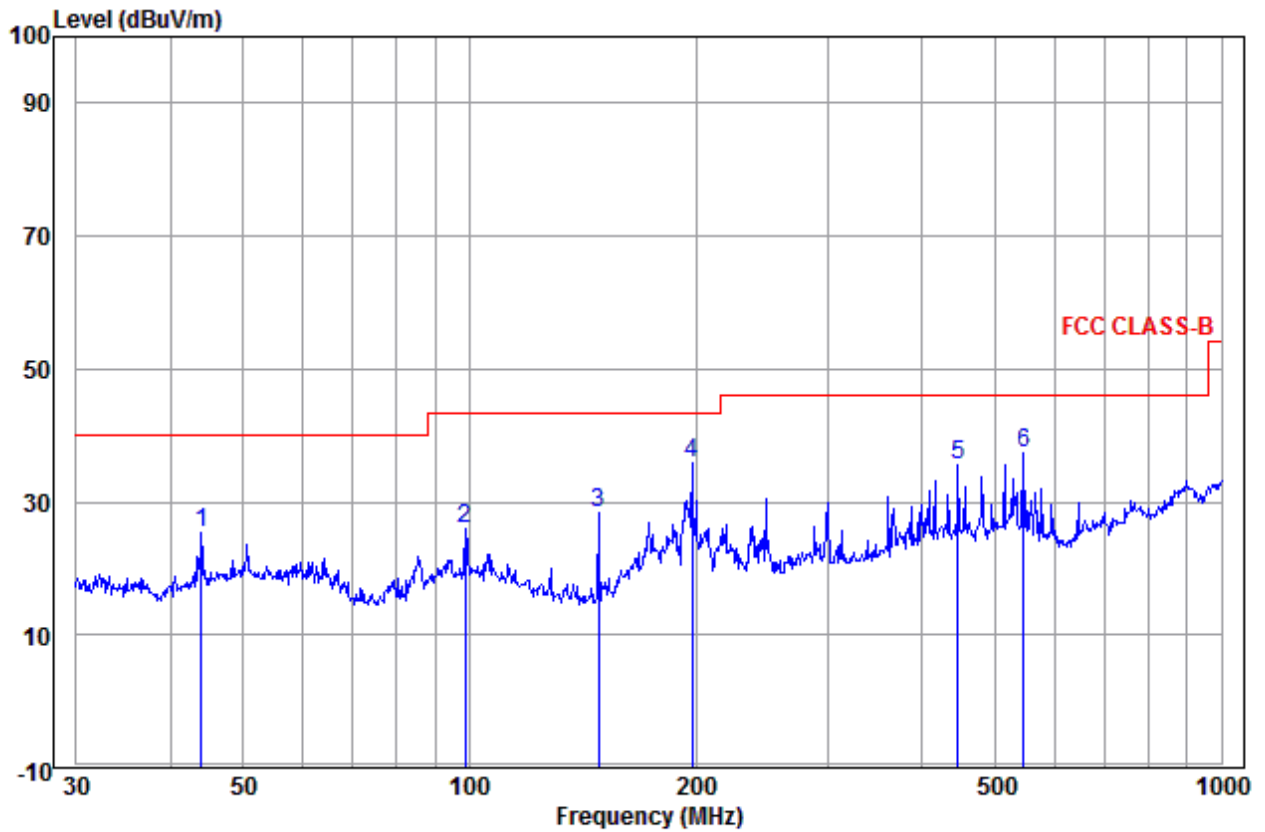
Correct Factor = Pre-amplifier Factor - Antenna Factor - Cable Factor

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
RMS		1MHz	3MHz	Average	
Test Procedure:					
Below 1GHz test procedure as below:					
<p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>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.</p>					
Above 1GHz test procedure as below:					
<p>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)..</p> <p>h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel</p> <p>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.</p> <p>j. Repeat above procedures until all frequencies measured was complete.</p>					
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
<p>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.</p>					

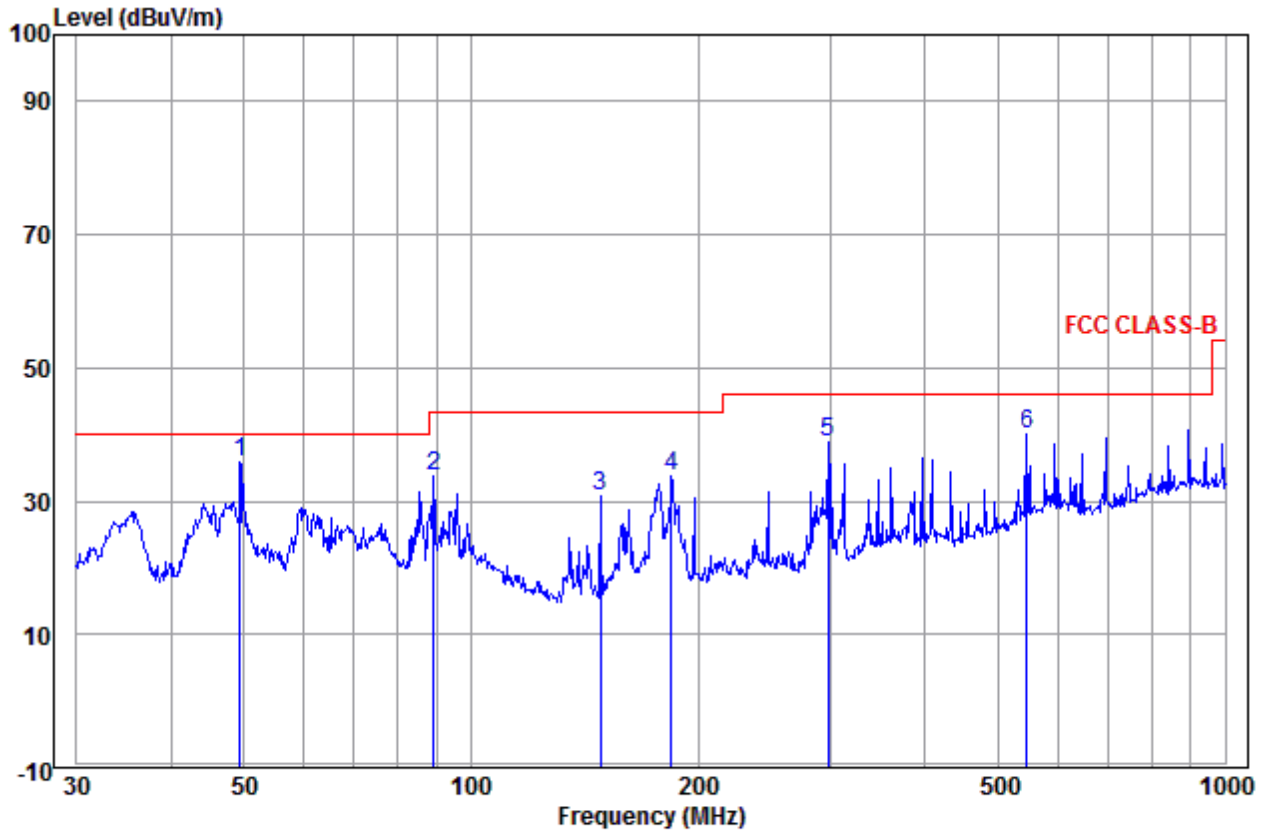
Radiated Spurious Emissions test Data:
Radiated Emission below 1GHz

30MHz~1GHz (QP)		
Test mode:	Transmitting	Horizontal



	Ant Freq	Cable Factor	Cable Loss	Read Level	Limit Level	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	43.966	14.58	0.90	9.89	25.37	40.00	-14.63	Horizontal
2	98.833	12.98	1.57	11.35	25.90	43.50	-17.60	Horizontal
3	148.441	9.79	1.58	16.93	28.30	43.50	-15.20	Horizontal
4 pp	197.893	11.53	2.19	22.22	35.94	43.50	-7.56	Horizontal
5	446.414	17.05	2.98	15.59	35.62	46.00	-10.38	Horizontal
6	545.183	18.58	3.20	15.47	37.25	46.00	-8.75	Horizontal

Test mode:	Transmitting	Vertical
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	Ant Freq	Cable Factor	Cable Loss	Read Level	Limit Level	Over Line	Over Limit	Pol/Phase	Remark
	MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	pp 49.359	15.05	1.35	19.60	36.00	40.00	-4.00	Vertical	
2	89.276	11.02	1.59	21.08	33.69	43.50	-9.81	Vertical	
3	148.441	9.79	1.58	19.44	30.81	43.50	-12.69	Vertical	
4	184.490	11.07	2.03	20.57	33.67	43.50	-9.83	Vertical	
5	297.224	13.44	2.38	22.91	38.73	46.00	-7.27	Vertical	
6	545.183	18.58	3.20	18.40	40.18	46.00	-5.82	Vertical	

Transmitter Emission above 1GHz

Test mode: 802.11b(11Mbps)			Test Frequency: 2412MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1270.334	30.39	2.59	34.89	46.33	44.42	74.00	-29.58	Pass	Horizontal
1461.238	30.79	2.79	34.71	46.12	44.99	74.00	-29.01	Pass	Horizontal
1711.050	31.25	3.01	34.50	45.77	45.53	74.00	-28.47	Pass	Horizontal
4824.000	34.73	5.10	34.35	40.30	45.78	74.00	-28.22	Pass	Horizontal
7236.000	36.42	6.69	34.90	39.01	47.22	74.00	-26.78	Pass	Horizontal
9648.000	37.93	7.70	35.07	38.95	49.51	74.00	-24.49	Pass	Horizontal
1241.562	30.32	2.56	34.92	47.34	45.30	74.00	-28.70	Pass	Vertical
1464.963	30.80	2.79	34.70	46.49	45.38	74.00	-28.62	Pass	Vertical
1719.783	31.26	3.02	34.50	46.72	46.50	74.00	-27.50	Pass	Vertical
4824.000	34.73	5.10	34.35	39.76	45.24	74.00	-28.76	Pass	Vertical
7236.000	36.42	6.69	34.90	38.93	47.14	74.00	-26.86	Pass	Vertical
9648.000	37.93	7.70	35.07	38.62	49.18	74.00	-24.82	Pass	Vertical

Test mode: 802.11b(11Mbps)			Test Frequency: 2437MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1263.883	30.38	2.59	34.90	47.70	45.77	74.00	-28.23	Pass	Horizontal
1680.831	31.20	2.99	34.53	45.60	45.26	74.00	-28.74	Pass	Horizontal
2146.115	32.03	3.65	34.33	45.44	46.79	74.00	-27.21	Pass	Horizontal
4874.000	34.84	5.09	34.33	40.24	45.84	74.00	-28.16	Pass	Horizontal
7311.000	36.43	6.76	34.90	39.29	47.58	74.00	-26.42	Pass	Horizontal
9748.000	38.03	7.61	35.05	39.03	49.62	74.00	-24.38	Pass	Horizontal
1251.079	30.35	2.57	34.91	48.74	46.75	74.00	-27.25	Pass	Vertical
1476.193	30.82	2.81	34.69	46.55	45.49	74.00	-28.51	Pass	Vertical
1728.561	31.28	3.03	34.49	46.49	46.31	74.00	-27.69	Pass	Vertical
4874.000	34.84	5.09	34.33	40.52	46.12	74.00	-27.88	Pass	Vertical
7311.000	36.43	6.76	34.90	39.86	48.15	74.00	-25.85	Pass	Vertical
9748.000	38.03	7.61	35.05	38.85	49.44	74.00	-24.56	Pass	Vertical

Test mode: 802.11b(11Mbps)			Test Frequency: 2462MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1244.726	30.33	2.57	34.92	47.10	45.08	74.00	-28.92	Pass	Horizontal
1464.963	30.80	2.79	34.70	47.30	46.19	74.00	-27.81	Pass	Horizontal
1698.033	31.23	3.00	34.51	46.16	45.88	74.00	-28.12	Pass	Horizontal
4924.000	34.94	5.07	34.32	40.03	45.72	74.00	-28.28	Pass	Horizontal
7386.000	36.44	6.83	34.90	38.37	46.74	74.00	-27.26	Pass	Horizontal
9848.000	38.14	7.53	35.03	39.48	50.12	74.00	-23.88	Pass	Horizontal
1464.963	30.80	2.79	34.70	46.82	45.71	74.00	-28.29	Pass	Vertical
1706.700	31.24	3.01	34.51	45.83	45.57	74.00	-28.43	Pass	Vertical
1938.352	31.61	3.19	34.34	46.08	46.54	74.00	-27.46	Pass	Vertical
4924.000	34.94	5.07	34.32	40.28	45.97	74.00	-28.03	Pass	Vertical
7386.000	36.44	6.83	34.90	38.56	46.93	74.00	-27.07	Pass	Vertical
9848.000	38.14	7.53	35.03	38.84	49.48	74.00	-24.52	Pass	Vertical

Test mode: 802.11g(6Mbps)			Test Frequency: 2412MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1247.899	30.34	2.57	34.91	47.68	45.68	74.00	-28.32	Pass	Horizontal
1468.696	30.81	2.80	34.70	46.72	45.63	74.00	-28.37	Pass	Horizontal
1702.361	31.24	3.00	34.51	46.92	46.65	74.00	-27.35	Pass	Horizontal
4824.000	34.73	5.10	34.35	40.46	45.94	74.00	-28.06	Pass	Horizontal
7236.000	36.42	6.69	34.90	38.39	46.60	74.00	-27.40	Pass	Horizontal
9648.000	37.93	7.70	35.07	38.54	49.10	74.00	-24.90	Pass	Horizontal
1251.079	30.35	2.57	34.91	46.76	44.77	74.00	-29.23	Pass	Vertical
1457.523	30.79	2.79	34.71	47.23	46.10	74.00	-27.90	Pass	Vertical
1918.716	31.58	3.17	34.35	45.34	45.74	74.00	-28.26	Pass	Vertical
4824.000	34.73	5.10	34.35	39.87	45.35	74.00	-28.65	Pass	Vertical
7236.000	36.42	6.69	34.90	37.26	45.47	74.00	-28.53	Pass	Vertical
9648.000	37.93	7.70	35.07	37.18	47.74	74.00	-26.26	Pass	Vertical

Test mode: 802.11g(6Mbps)			Test Frequency: 2437MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1257.465	30.36	2.58	34.90	46.95	44.99	74.00	-29.01	Pass	Horizontal
1468.696	30.81	2.80	34.70	45.93	44.84	74.00	-29.16	Pass	Horizontal
1732.967	31.29	3.03	34.49	46.05	45.88	74.00	-28.12	Pass	Horizontal
4874.000	34.84	5.09	34.33	40.67	46.27	74.00	-27.73	Pass	Horizontal
7311.000	36.43	6.76	34.90	39.03	47.32	74.00	-26.68	Pass	Horizontal
9748.000	38.03	7.61	35.05	37.12	47.71	74.00	-26.29	Pass	Horizontal
1263.883	30.38	2.59	34.90	47.16	45.23	74.00	-28.77	Pass	Vertical
1506.563	30.88	2.83	34.67	46.00	45.04	74.00	-28.96	Pass	Vertical
1928.509	31.59	3.18	34.35	45.93	46.35	74.00	-27.65	Pass	Vertical
4874.000	34.84	5.09	34.33	40.33	45.93	74.00	-28.07	Pass	Vertical
7311.000	36.43	6.76	34.90	39.11	47.40	74.00	-26.60	Pass	Vertical
9748.000	38.03	7.61	35.05	37.69	48.28	74.00	-25.72	Pass	Vertical

Test mode: 802.11g(6Mbps)			Test Frequency: 2462MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1238.405	30.32	2.56	34.92	47.13	45.09	74.00	-28.91	Pass	Horizontal
1487.509	30.85	2.82	34.68	46.18	45.17	74.00	-28.83	Pass	Horizontal
1724.166	31.27	3.02	34.49	46.28	46.08	74.00	-27.92	Pass	Horizontal
4924.000	34.94	5.07	34.32	40.70	46.39	74.00	-27.61	Pass	Horizontal
7386.000	36.44	6.83	34.90	38.00	46.37	74.00	-27.63	Pass	Horizontal
9848.000	38.14	7.53	35.03	37.91	48.55	74.00	-25.45	Pass	Horizontal
1251.079	30.35	2.57	34.91	47.76	45.77	74.00	-28.23	Pass	Vertical
1502.732	30.88	2.83	34.67	46.01	45.05	74.00	-28.95	Pass	Vertical
1719.783	31.26	3.02	34.50	46.22	46.00	74.00	-28.00	Pass	Vertical
4924.000	34.94	5.07	34.32	40.56	46.25	74.00	-27.75	Pass	Vertical
7386.000	36.44	6.83	34.90	38.70	47.07	74.00	-26.93	Pass	Vertical
9848.000	38.14	7.53	35.03	39.28	49.92	74.00	-24.08	Pass	Vertical

Test mode: 802.11n(HT20)(6.5Mbps)			Test Frequency: 2412MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1289.885	30.43	2.62	34.87	47.25	45.43	74.00	-28.57	Pass	Horizontal
1706.700	31.24	3.01	34.51	45.79	45.53	74.00	-28.47	Pass	Horizontal
1923.606	31.59	3.18	34.35	46.41	46.83	74.00	-27.17	Pass	Horizontal
4824.000	34.73	5.10	34.35	39.40	44.88	74.00	-29.12	Pass	Horizontal
7236.000	36.42	6.69	34.90	37.59	45.80	74.00	-28.20	Pass	Horizontal
9648.000	37.93	7.70	35.07	39.10	49.66	74.00	-24.34	Pass	Horizontal
1241.562	30.32	2.56	34.92	47.32	45.28	74.00	-28.72	Pass	Vertical
1472.440	30.82	2.80	34.70	46.53	45.45	74.00	-28.55	Pass	Vertical
1948.245	31.62	3.19	34.33	46.89	47.37	74.00	-26.63	Pass	Vertical
4824.000	34.73	5.10	34.35	41.09	46.57	74.00	-27.43	Pass	Vertical
7236.000	36.42	6.69	34.90	37.90	46.11	74.00	-27.89	Pass	Vertical
9648.000	37.93	7.70	35.07	37.88	48.44	74.00	-25.56	Pass	Vertical

Test mode: 802.11n(HT20)(6.5Mbps)			Test Frequency: 2437MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1260.670	30.37	2.58	34.90	47.18	45.23	74.00	-28.77	Pass	Horizontal
1479.955	30.83	2.81	34.69	45.94	44.89	74.00	-29.11	Pass	Horizontal
1689.410	31.21	2.99	34.52	46.78	46.46	74.00	-27.54	Pass	Horizontal
4874.000	34.84	5.09	34.33	39.61	45.21	74.00	-28.79	Pass	Horizontal
7311.000	36.43	6.76	34.90	39.14	47.43	74.00	-26.57	Pass	Horizontal
9748.000	38.03	7.61	35.05	39.32	49.91	74.00	-24.09	Pass	Horizontal
1251.079	30.35	2.57	34.91	46.92	44.93	74.00	-29.07	Pass	Vertical
1698.033	31.23	3.00	34.51	46.27	45.99	74.00	-28.01	Pass	Vertical
1918.716	31.58	3.17	34.35	46.98	47.38	74.00	-26.62	Pass	Vertical
4874.000	34.84	5.09	34.33	39.40	45.00	74.00	-29.00	Pass	Vertical
7311.000	36.43	6.76	34.90	40.03	48.32	74.00	-25.68	Pass	Vertical
9748.000	38.03	7.61	35.05	38.20	48.79	74.00	-25.21	Pass	Vertical

Test mode: 802.11n(HT20)(6.5Mbps)			Test Frequency: 2462MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1251.079	30.35	2.57	34.91	47.54	45.55	74.00	-28.45	Pass	Horizontal
1732.967	31.29	3.03	34.49	47.02	46.85	74.00	-27.15	Pass	Horizontal
4924.000	34.94	5.07	34.32	39.94	45.63	74.00	-28.37	Pass	Horizontal
5821.207	35.77	7.03	34.30	41.00	49.50	74.00	-24.50	Pass	Horizontal
7386.000	36.44	6.83	34.90	37.70	46.07	74.00	-27.93	Pass	Horizontal
9848.000	38.14	7.53	35.03	38.23	48.87	74.00	-25.13	Pass	Horizontal
1270.334	30.39	2.59	34.89	47.06	45.15	74.00	-28.85	Pass	Vertical
1468.696	30.81	2.80	34.70	46.92	45.83	74.00	-28.17	Pass	Vertical
1715.411	31.26	3.02	34.50	45.99	45.77	74.00	-28.23	Pass	Vertical
4924.000	34.94	5.07	34.32	40.40	46.09	74.00	-27.91	Pass	Vertical
7386.000	36.44	6.83	34.90	39.69	48.06	74.00	-25.94	Pass	Vertical
9848.000	38.14	7.53	35.03	38.66	49.30	74.00	-24.70	Pass	Vertical

Test mode: 802.11n(HT40)(13.5Mbps)			Test Frequency: 2422MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Final test level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1247.899	30.34	2.57	34.91	47.27	45.27	74.00	-28.73	Pass	Horizontal
1483.727	30.84	2.81	34.69	46.64	45.60	74.00	-28.40	Pass	Horizontal
1719.783	31.26	3.02	34.50	46.14	45.92	74.00	-28.08	Pass	Horizontal
4844.000	34.77	5.10	34.34	39.22	44.75	74.00	-29.25	Pass	Horizontal
7266.000	36.43	6.72	34.90	38.58	46.83	74.00	-27.17	Pass	Horizontal
9688.000	37.97	7.66	35.06	37.47	48.04	74.00	-25.96	Pass	Horizontal
1247.899	30.34	2.57	34.91	47.27	45.27	74.00	-28.73	Pass	Vertical
1453.818	30.78	2.78	34.71	46.35	45.20	74.00	-28.80	Pass	Vertical
1904.119	31.56	3.16	34.36	45.53	45.89	74.00	-28.11	Pass	Vertical
4844.000	34.77	5.10	34.34	39.31	44.84	74.00	-29.16	Pass	Vertical
7266.000	36.43	6.72	34.90	38.43	46.68	74.00	-27.32	Pass	Vertical
9688.000	37.97	7.66	35.06	38.39	48.96	74.00	-25.04	Pass	Vertical

Test mode: 802.11n(HT40)(13.5Mbps)			Test Frequency: 2437MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Final test level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1257.465	30.36	2.58	34.90	47.96	46.00	74.00	-28.00	Pass	Horizontal
1491.300	30.85	2.82	34.68	46.60	45.59	74.00	-28.41	Pass	Horizontal
1918.716	31.58	3.17	34.35	46.27	46.67	74.00	-27.33	Pass	Horizontal
4874.000	34.84	5.09	34.33	39.77	45.37	74.00	-28.63	Pass	Horizontal
7311.000	36.43	6.76	34.90	39.45	47.74	74.00	-26.26	Pass	Horizontal
9748.000	38.03	7.61	35.05	39.07	49.66	74.00	-24.34	Pass	Horizontal
1254.268	30.35	2.58	34.91	47.62	45.64	74.00	-28.36	Pass	Vertical
1491.300	30.85	2.82	34.68	46.27	45.26	74.00	-28.74	Pass	Vertical
1706.700	31.24	3.01	34.51	45.94	45.68	74.00	-28.32	Pass	Vertical
4874.000	34.84	5.09	34.33	39.35	44.95	74.00	-29.05	Pass	Vertical
7311.000	36.43	6.76	34.90	37.91	46.20	74.00	-27.80	Pass	Vertical
9748.000	38.03	7.61	35.05	38.73	49.32	74.00	-24.68	Pass	Vertical

Test mode: 802.11n(HT40)(13.5Mbps)			Test Frequency: 2452MHz			Remark: Peak			
Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Read Level (dBμV)	Final test level (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Result	Antenna Polaxis
1247.899	30.34	2.57	34.91	47.41	45.41	74.00	-28.59	Pass	Horizontal
1468.696	30.81	2.80	34.70	46.46	45.37	74.00	-28.63	Pass	Horizontal
1719.783	31.26	3.02	34.50	47.24	47.02	74.00	-26.98	Pass	Horizontal
4904.000	34.90	5.07	34.33	40.28	45.92	74.00	-28.08	Pass	Horizontal
7356.000	36.44	6.80	34.90	38.11	46.45	74.00	-27.55	Pass	Horizontal
9808.000	38.10	7.56	35.04	40.34	50.96	74.00	-23.04	Pass	Horizontal
1254.268	30.35	2.58	34.91	48.78	46.80	74.00	-27.20	Pass	Vertical
1453.818	30.78	2.78	34.71	46.68	45.53	74.00	-28.47	Pass	Vertical
1672.296	31.18	2.98	34.53	46.76	46.39	74.00	-27.61	Pass	Vertical
4904.000	34.90	5.07	34.33	39.96	45.60	74.00	-28.40	Pass	Vertical
7356.000	36.44	6.80	34.90	37.60	45.94	74.00	-28.06	Pass	Vertical
9808.000	38.10	7.56	35.04	37.27	47.89	74.00	-26.11	Pass	Vertical

Remark:

1) Through Pre-scan transmitting 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 & Pre-amplifier. The basic equation with a sample calculation is as follows:

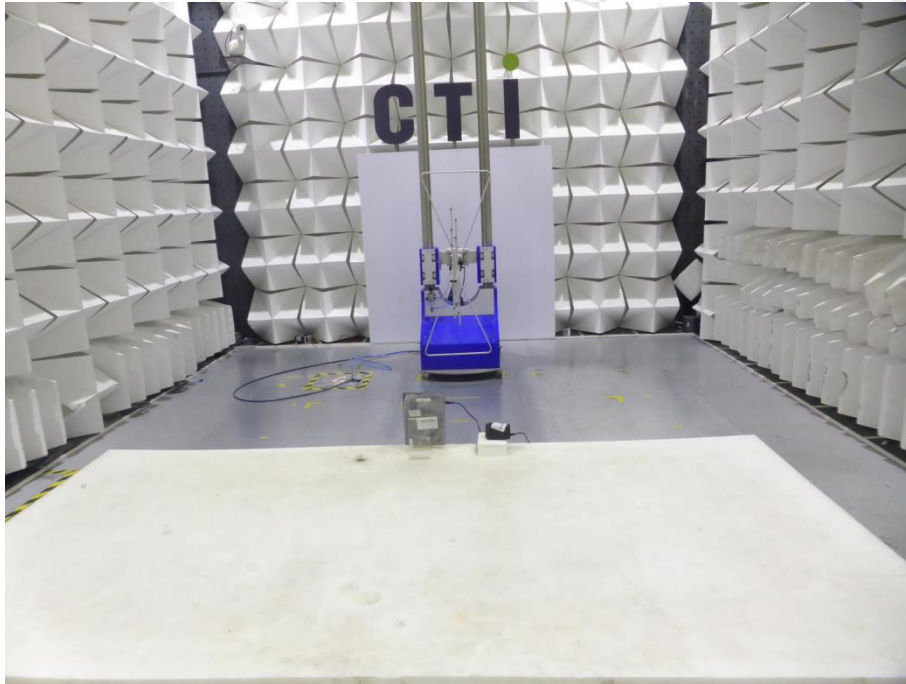
Final Test Level = Receiver Reading - Correct Factor

Correct Factor = Pre-amplifier Factor - Antenna Factor - Cable Factor

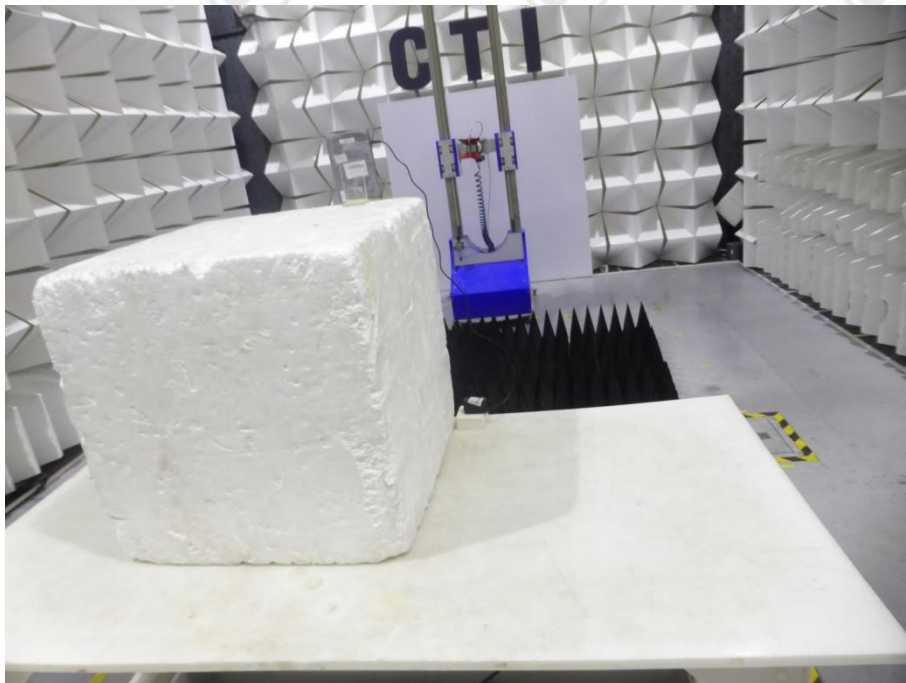
3) Scan from 9kHz to 25GHz, the disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below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

PHOTOGRAPHS OF TEST SETUP

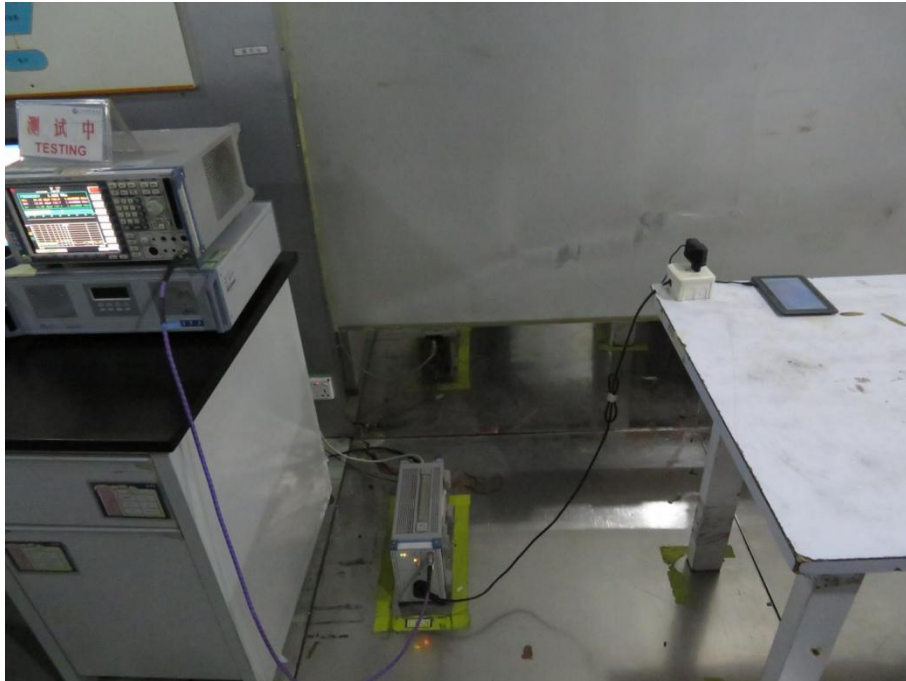
Test Model No.: Y88X PLUS



Radiated spurious emission Test Setup-1(Below 1GHz)



Radiated spurious emission Test Setup-2(Above 1GHz)



Conducted Emissions Test Setup

PHOTOGRAPHS OF EUT Constructional Details

Refer to Report No.EED32100276401 for EUT external and internal photos.

*** End of Report ***

The test report is effective only with both signature and specialized stamp, The result(s) shown in this report refer only to the sample(s) tested. Without written approval of CTI, this report can't be reproduced except in full.