

TEST REPORT

Product : Handheld UHF Reader
Trade mark : CHAINWAY
Model/Type reference : C76
Serial Number : N/A
Report Number : EED32K00243603
FCC ID : 2AC6AC76
Date of Issue : Mar. 28, 2019
Test Standards : 47 CFR Part 15 Subpart C
Test result : PASS

Prepared for:

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Mar. 28, 2019

Check No.:3096338075



2 Version

Version No.	Date	Description
00	Mar. 28, 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	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(s) and the sample information are provided by the client.

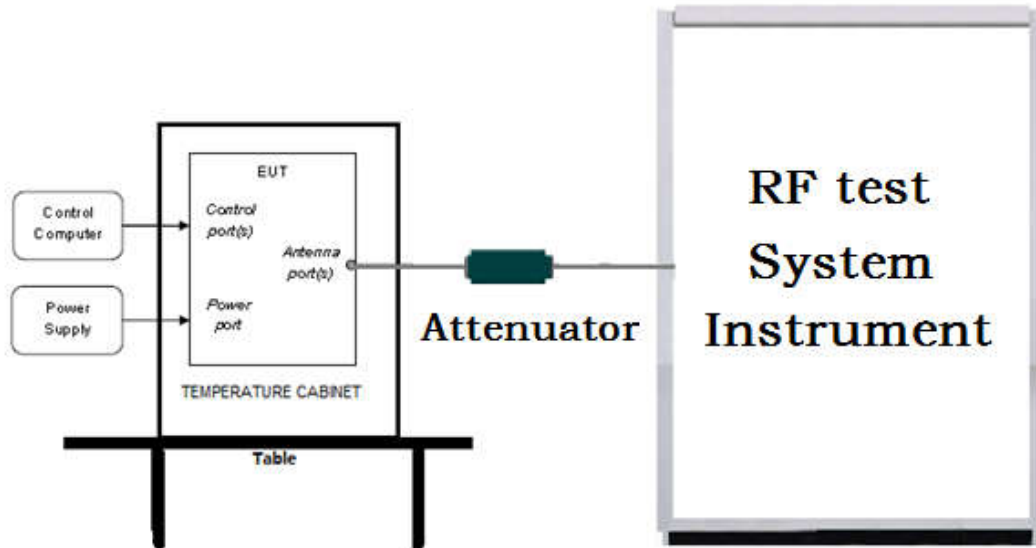
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5 Test Requirement

5.1 Test setup

5.1.1 For Conducted test setup



5.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

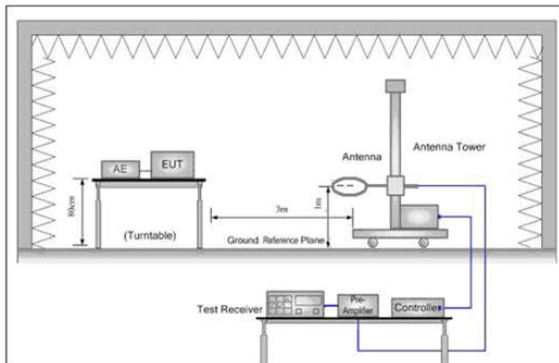


Figure 1. Below 30MHz

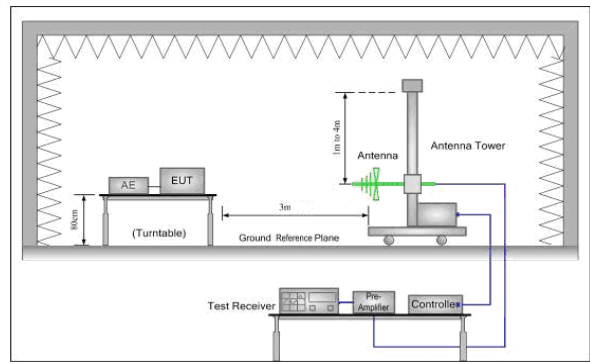


Figure 2. 30MHz to 1GHz

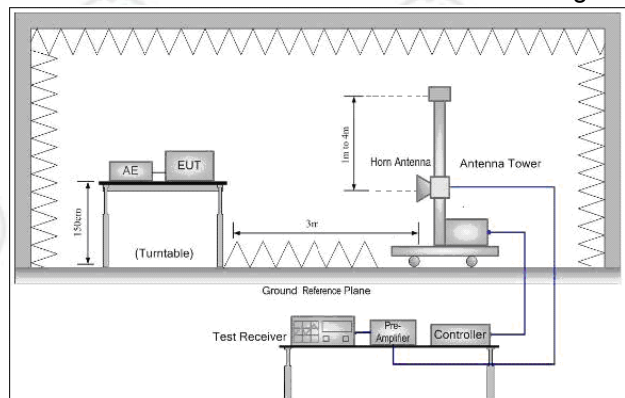
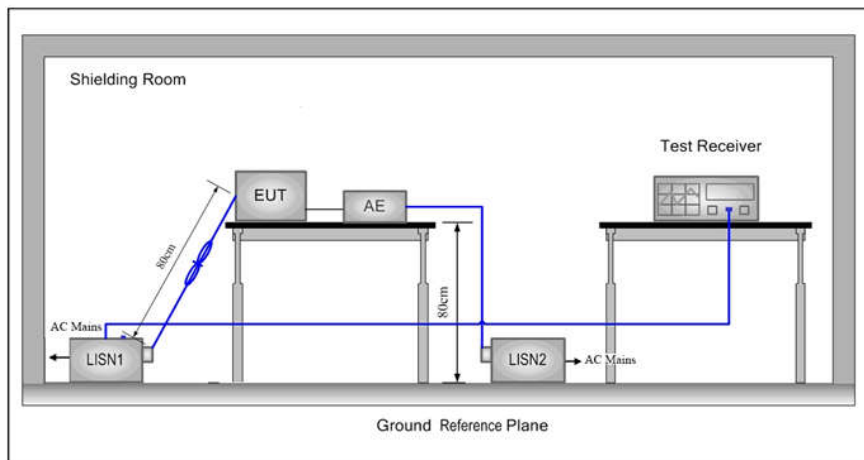


Figure 3. Above 1GHz

5.1.3 For Conducted Emissions test setup

Conducted Emissions setup



5.2 Test Environment

Operating Environment:	
Temperature:	25.0 °C
Humidity:	49 % 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
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

Scan under all rate at lowest channel !								
Mode	802.11b							
Data Rate	1Mbps	2Mbps	5.5Mbps	11Mbps				
Power(dBm)	14.21	14.85	15.21	15.45				
Mode	802.11g							
Data Rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
Power(dBm)	14.51	14.00	13.87	13.54	13.21	13.00	12.87	12.21
Mode	802.11n (HT20)							
Data Rate	6.5Mbps	13Mbps	19.5Mbps	26Mbps	39Mbps	52Mbps	58.5Mbps	65Mbps
Power(dBm)	13.70	13.25	12.95	12.64	12.42	12.14	11.95	11.72
Mode	802.11n (HT40)							
Data Rate	13.5Mbps	27Mbps	40.5Mbps	54Mbps	81Mbps	108Mbps	121.5Mbps	135Mbps
Power(dBm)	12.75	12.56	12.36	12.24	11.87	11.54	11.24	11.00

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:	Shenzhen Chainway Information Technology Co., Ltd.
Address of Applicant:	9/F, Building 2, Daqian Industrial Park, Longchang Rd., District 67, Bao'an, Shenzhen
Manufacturer:	Shenzhen Chainway Information Technology Co., Ltd.
Address of Manufacturer:	9/F, Building 2, Daqian Industrial Park, Longchang Rd., District 67, Bao'an, Shenzhen
Factory:	Shenzhen Chainway Information Technology Co., Ltd.
Address of Factory:	9/F, Building 2, Daqian Industrial Park, Longchang Rd., District 67, Bao'an, Shenzhen

6.2 General Description of EUT

Product Name:	Handheld UHF Reader	
Model No.(EUT):	C76	
Trade Mark:	CHAINWAY	
EUT Supports Radios application:	BT 4.0 Single mode: 2402MHz to 2480MHz; 2.4GHz Wi-Fi: 802.11b/g/n(HT20)(HT40): 2412MHz ~2462 MHz; 5GHz Wi-Fi: U-NII-1: 5.15-5.25GHz; U-NII-2A: 5.25-5.35GHz; U-NII-2C: 5.470-5.725GHz; U-NII-3: 5.725-5.850GHz; 802.11a; 802.11n(20MHz/40MHz); RFID: 902MHz to 928MHz; NFC: 13.56MHz; GPS: 1559MHz to 1610MHz	
Power Supply:	Adapter:	Model: GME10D-050200FUu Input: 100-240V~ 50/60Hz, 0.28A Output: 5V---2A
	Battery:	Rechargeable Li-ion Battery 3.8V, 4000mAh, 15.2Wh
Firmware version:	C76E_LWG_M0_V0.4.6_S171219	
Hardware version:	C70SEA_MB_V11	
Sample Received Date:	Sep. 05, 2018	
Sample tested Date:	Sep. 12, 2018 to Feb. 20, 2019	

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)
Test Power Grade:	N/A
Test Software of EUT:	N/A
Antenna Type:	PFC antenna
Antenna Gain:	0.43dBi
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 with associated equipment below.

Associated equipment name		Manufacture	model	serial number	Supplied by	Certification
AE1	Phone	Apple	A1367	TTF20120027	CTI	FCC
AE2	Router	HuaWei	WS550	K8E8W1531400 2784	CTI	FCC
AE3	PC	Apple	MMGF2 ZP/A	ODN20170212	CTI	FCC

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	03-13-2018	03-12-2019
Spectrum Analyzer	Keysight	N9010A	MY54510339	03-13-2018	03-12-2019
Signal Generator	Keysight	N5182B	MY53051549	03-13-2018	03-12-2019
High-pass filter	Sinoscite	FL3CX03WG1 8NM12-0398-002	---	01-10-2018 01-08-2019	01-09-2019 01-07-2020
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-10-2018 01-08-2019	01-09-2019 01-07-2020
DC Power	Keysight	E3642A	MY54426035	03-13-2018	03-12-2019
PC-1	Lenovo	R4960d	---	03-13-2018	03-12-2019
BT&WI-FI Automatic control	R&S	OSP120	101374	03-13-2018	03-12-2019
RF control unit	JS Tonscend	JS0806-2	15860006	03-13-2018	03-12-2019
RF control unit	JS Tonscend	JS0806-1	15860004	03-13-2018	03-12-2019
RF control unit	JS Tonscend	JS0806-4	158060007	03-13-2018	03-12-2019
BT&WI-FI Automatic test software	JS Tonscend	JS1120-2	---	03-13-2018	03-12-2019
Temperature/Humidity Indicator	biaozhi	HM10	1804186	10-13-2017 10-12-2018	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	03-13-2018	03-12-2019
Temperature/ Humidity Indicator	Defu	TH128	/	03-13-2018	03-12-2019
Communication test set	Agilent	E5515C	GB47050 534	03-13-2018	03-12-2019
Communication test set	R&S	CMW500	152394	01-10-2018 01-08-2019	01-09-2019 01-07-2020
LISN	R&S	ENV216	100098	01-10-2018 01-08-2019	01-09-2019 01-07-2020
LISN	schwarzbeck	NNLK8121	8121-529	03-13-2018	03-12-2019
Voltage Probe	R&S	ESH2-Z3 0299.7810.5 6	100042	03-13-2018	03-12-2019
Current Probe	R&S	EZ-17 816.2063.03	100106	03-13-2018	03-12-2019
ISN	TESEQ	ISN T800	30297	03-13-2018	03-12-2019
Barometer	changchun	DYM3	1188	03-13-2018	03-12-2019

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	---	06-04-2016	06-03-2019
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-401	12-22-2017 07-30-2018	12-21-2018 07-29-2019
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-618	08-21-2018	08-20-2019
Microwave Preamplifier	Agilent	8449B	3008A024 25	01-17-2018 01-16-2019	01-16-2019 01-15-2020
Microwave Preamplifier	Tonscend	EMC051845 SE	980380	04-25-2018	04-23-2021
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D- 1869	06-05-2018	06-03-2021
Horn Antenna	ETS- LINDGREN	3117	00057410	06-05-2018	06-04-2021
Double ridge horn antenna	A.H.SYSTEMS	SAS-574	6042	06-05-2018	06-04-2021
Pre-amplifier	A.H.SYSTEMS	PAP-1840-60	6041	06-22-2017	06-21-2019
Loop Antenna	ETS	6502	00071730	05-11-2018	05-10-2019
Spectrum Analyzer	R&S	FSP40	100416	05-25-2018	05-24-2019
Receiver	R&S	ESCI	100435	11-23-2018	11-22-2019
Receiver	R&S	ESCI7	100938- 003	01-09-2018 01-07-2019	01-08-2019 01-06-2020
Multi device Controller	maturo	NCD/070/107 11112	---	05-11-2018	05-10-2019
LISN	schwarzbeck	NNBM8125	81251547	05-11-2018	05-10-2019
LISN	schwarzbeck	NNBM8125	81251548	03-13-2018	03-12-2019
Signal Generator	Agilent	E4438C	MY45095 744	03-13-2018	03-12-2019
Signal Generator	Keysight	E8257D	MY53401 106	10-11-2017 10-12-2018	10-12-2018 10-11-2019
Temperature/ Humidity Indicator	Shanghai qixiang	HM10	1804298	03-16-2018	03-15-2019
Communication test set	Agilent	E5515C	GB47050 534	01-10-2018 01-09-2019	01-09-2019 01-08-2020
Cable line	Fulai(7M)	SF106	5219/6A	01-10-2018 01-09-2019	01-09-2019 01-08-2020
Cable line	Fulai(6M)	SF106	5220/6A	01-10-2018 01-09-2019	01-09-2019 01-08-2020
Cable line	Fulai(3M)	SF106	5216/6A	01-10-2018 01-09-2019	01-09-2019 01-08-2020
Cable line	Fulai(3M)	SF106	5217/6A	01-19-2017 01-18-2018	01-18-2018 01-17-2019
Communication test set	R&S	CMW500	104466	01-10-2018 01-09-2019	01-09-2019 01-08-2020
High-pass filter	Sinoscite	FL3CX03WG 18NM12- 0398-002	---	01-10-2018 01-09-2019	01-09-2019 01-08-2020
High-pass filter	MICRO- TRONICS	SPA-F- 63029-4	---	01-10-2018 01-09-2019	01-09-2019 01-08-2020
band rejection filter	Sinoscite	FL5CX01CA0 9CL12-0395- 001	---	01-10-2018 01-09-2019	01-09-2019 01-08-2020
band rejection filter	Sinoscite	FL5CX01CA0 8CL12-0393- 001	---	01-10-2018 01-09-2019	01-09-2019 01-08-2020
band rejection filter	Sinoscite	FL5CX02CA0 4CL12-0396- 002	---	01-10-2018 01-09-2019	01-09-2019 01-08-2020
band rejection filter	Sinoscite	FL5CX02CA0 3CL12-0394- 001	---	06-04-2016	06-03-2019

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 (Radiated Emission)	PASS	Appendix H)
Part15C Section 15.205/15.209	ANSI C63.10	Radiated Spurious Emissions	PASS	Appendix I)

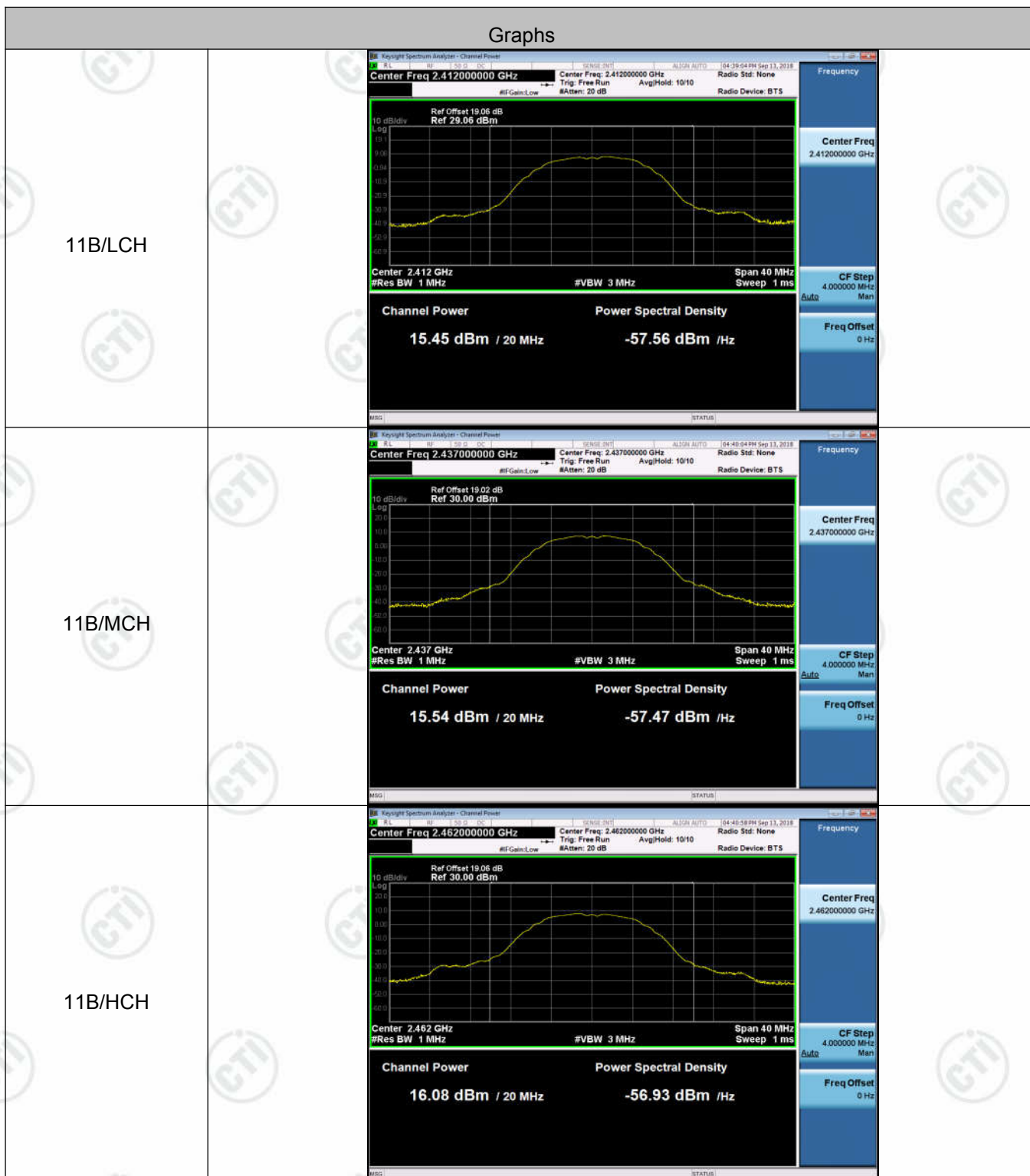
Appendix A): Conducted Peak Output Power

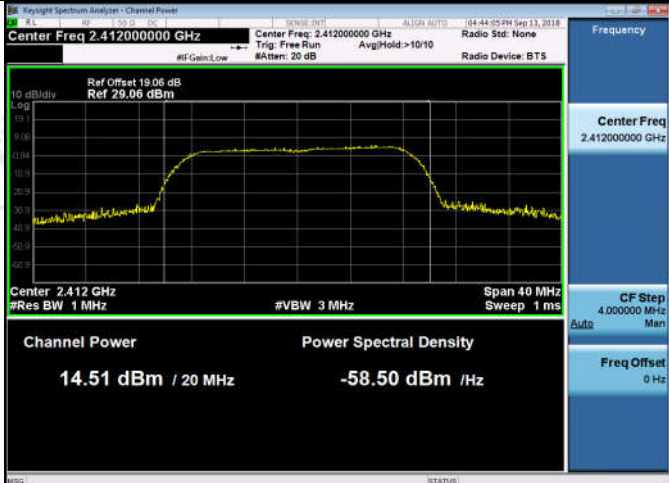
Result Table

Mode	Channel	Conducted Peak Output Power [dBm]	Verdict
11B	LCH	15.45	PASS
11B	MCH	15.54	PASS
11B	HCH	16.08	PASS
11G	LCH	14.51	PASS
11G	MCH	14.22	PASS
11G	HCH	14.74	PASS
11N20SISO	LCH	13.7	PASS
11N20SISO	MCH	13.47	PASS
11N20SISO	HCH	14.09	PASS
11N40SISO	LCH	12.75	PASS
11N40SISO	MCH	12.81	PASS
11N40SISO	HCH	12.66	PASS

Test Graph

Graphs



11G/LCH	 <p>KeySight Spectrum Analyzer - Channel Power</p> <p>Center Freq 2.412000000 GHz</p> <p>Ref Offset 19.06 dB Ref 29.06 dBm</p> <p>Center 2.412 GHz #Res BW 1 MHz</p> <p>#VBW 3 MHz</p> <p>Span 40 MHz Sweep 1 ms</p> <p>Channel Power 14.51 dBm / 20 MHz</p> <p>Power Spectral Density -58.50 dBm / Hz</p> <p>Frequency Center Freq 2.412000000 GHz</p> <p>CF Step 4.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
11G/MCH	 <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>Center 2.437 GHz #Res BW 1 MHz</p> <p>#VBW 3 MHz</p> <p>Span 40 MHz Sweep 1 ms</p> <p>Channel Power 14.22 dBm / 20 MHz</p> <p>Power Spectral Density -58.79 dBm / Hz</p> <p>Frequency Center Freq 2.437000000 GHz</p> <p>CF Step 4.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>
11G/HCH	 <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>Center 2.462 GHz #Res BW 1 MHz</p> <p>#VBW 3 MHz</p> <p>Span 40 MHz Sweep 1 ms</p> <p>Channel Power 14.74 dBm / 20 MHz</p> <p>Power Spectral Density -58.27 dBm / Hz</p> <p>Frequency Center Freq 2.462000000 GHz</p> <p>CF Step 4.000000 MHz Auto Man</p> <p>Freq Offset 0 Hz</p>

11N20SISO/LCH	 <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: 13.70 dBm / 20 MHz</p> <p>Power Spectral Density: -59.31 dBm / Hz</p> <p>Center: 2.412 GHz #Res BW: 1 MHz #VBW: 3 MHz Span: 40 MHz Sweep: 1 ms</p>
11N20SISO/MCH	 <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: 13.47 dBm / 20 MHz</p> <p>Power Spectral Density: -59.54 dBm / Hz</p> <p>Center: 2.437 GHz #Res BW: 1 MHz #VBW: 3 MHz Span: 40 MHz Sweep: 1 ms</p>
11N20SISO/HCH	 <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: 14.09 dBm / 20 MHz</p> <p>Power Spectral Density: -58.92 dBm / Hz</p> <p>Center: 2.462 GHz #Res BW: 1 MHz #VBW: 3 MHz Span: 40 MHz Sweep: 1 ms</p>

11N40SISO/LCH	 <p>KeySight Spectrum Analyzer - Channel Power</p> <p>Center Freq: 2.422000000 GHz</p> <p>Ref Offset: 19.9 dB, Ref: 20.00 dBm</p> <p>Channel Power: 12.75 dBm / 40 MHz</p> <p>Power Spectral Density: -63.27 dBm / Hz</p>
11N40SISO/MCH	 <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: 12.81 dBm / 40 MHz</p> <p>Power Spectral Density: -63.21 dBm / Hz</p>
11N40SISO/HCH	 <p>KeySight Spectrum Analyzer - Channel Power</p> <p>Center Freq: 2.452000000 GHz</p> <p>Ref Offset: 19.06 dB, Ref: 20.00 dBm</p> <p>Channel Power: 12.66 dBm / 40 MHz</p> <p>Power Spectral Density: -63.36 dBm / Hz</p>

Appendix B): 6dB Occupied Bandwidth

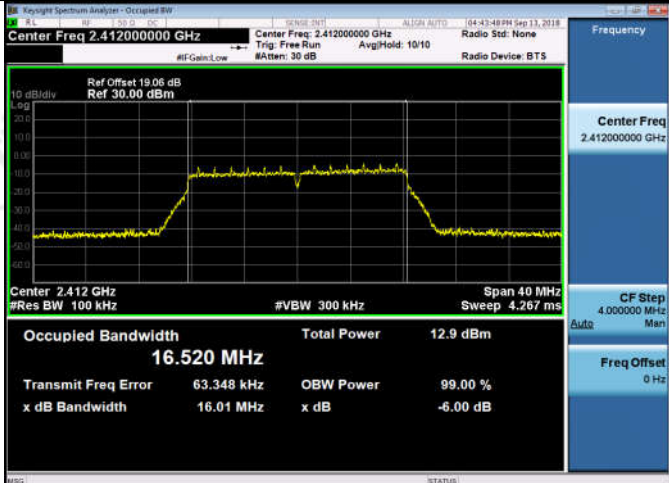
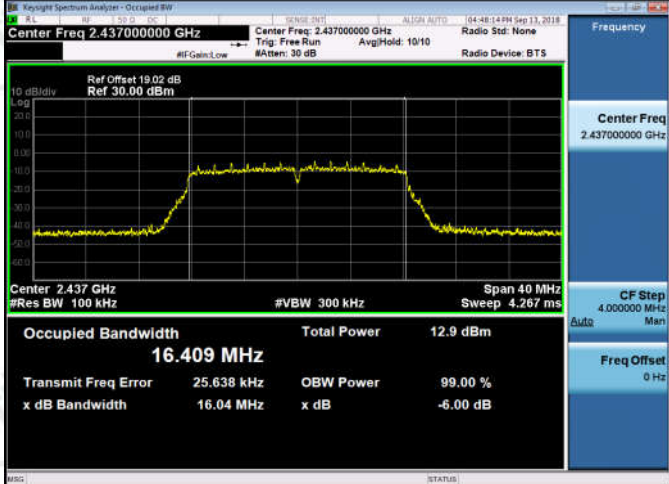
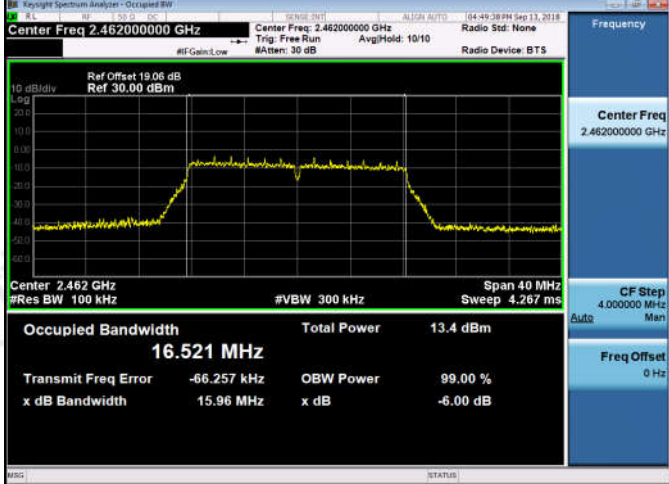
Result Table

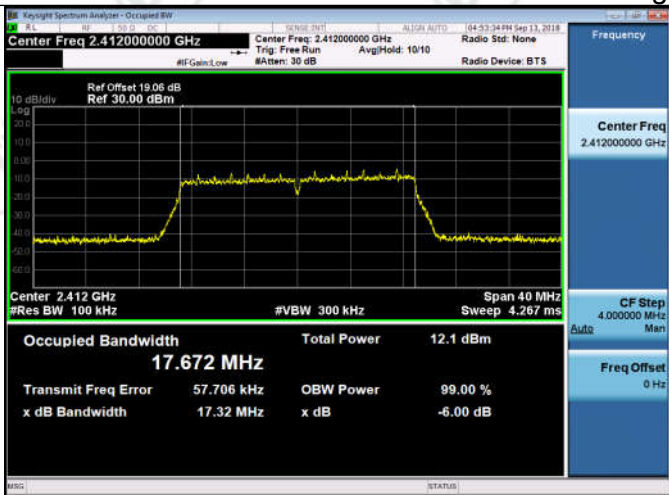
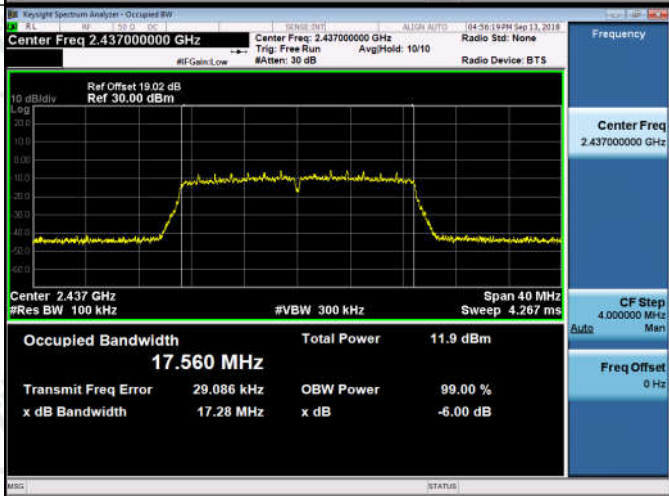
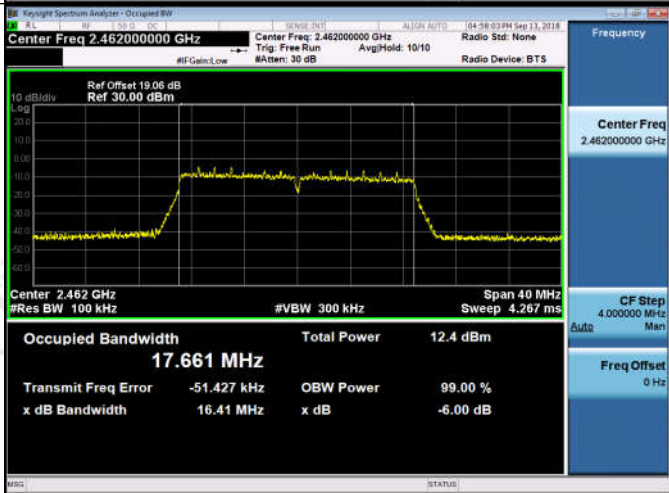
Mode	Channel	6dB Bandwidth [MHz]	99% OBW [MHz]	Verdict	Remark
11B	LCH	9.560	12.608	PASS	Peak detector
11B	MCH	8.566	12.301	PASS	
11B	HCH	9.567	12.690	PASS	
11G	LCH	16.01	16.520	PASS	
11G	MCH	16.04	16.409	PASS	
11G	HCH	15.96	16.521	PASS	
11N20SISO	LCH	17.32	17.672	PASS	
11N20SISO	MCH	17.28	17.560	PASS	
11N20SISO	HCH	16.41	17.661	PASS	
11N40SISO	LCH	23.17	35.787	PASS	
11N40SISO	MCH	33.79	35.621	PASS	
11N40SISO	HCH	31.89	35.829	PASS	

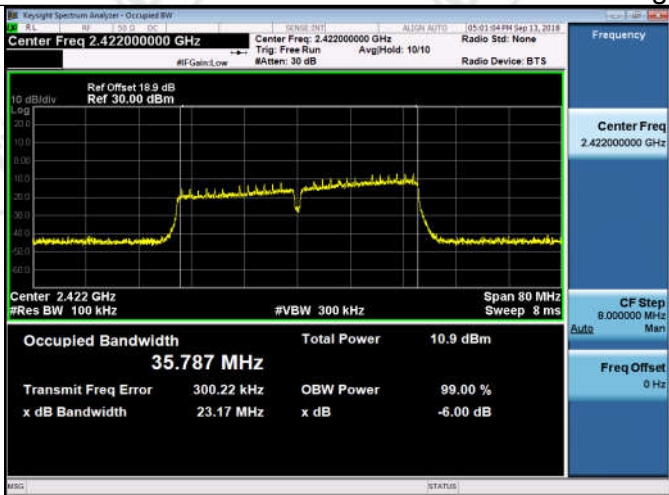
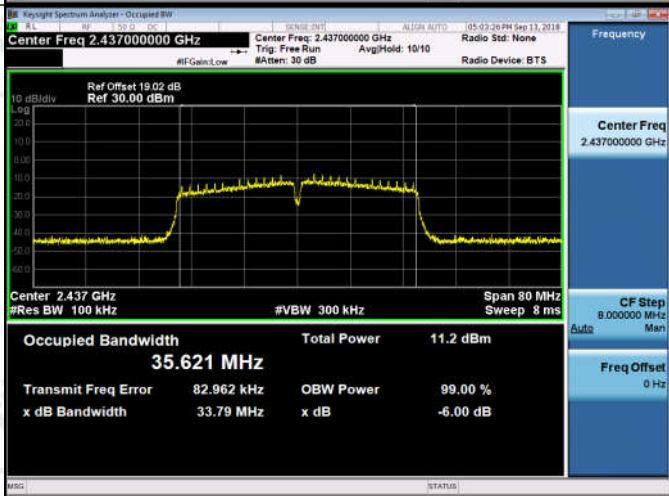
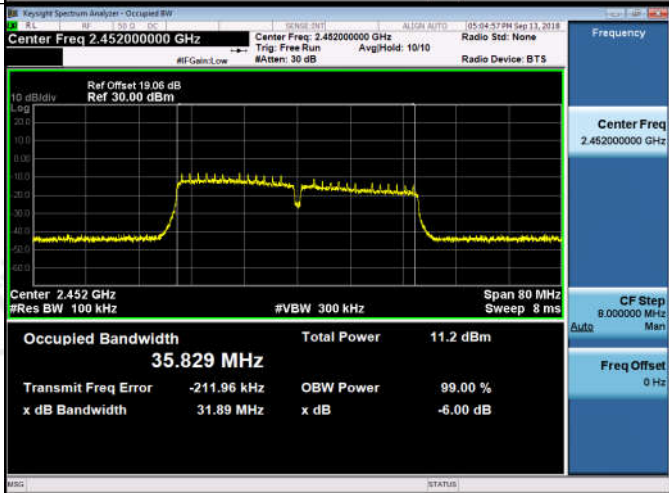
Test Graph

Graphs



11G/LCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.412000000 GHz</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>Center 2.412 GHz #Res BW 100 kHz</p> <p>Occupied Bandwidth 16.520 MHz</p> <p>Total Power 12.9 dBm</p> <p>Transmit Freq Error 63.348 kHz</p> <p>x dB Bandwidth 16.01 MHz</p> <p>Span 40 MHz Sweep 4.267 ms</p> <p>#VBW 300 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB -6.00 dB</p> <p>Frequency</p> <p>Center Freq 2.412000000 GHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p>
11G/MCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.437000000 GHz</p> <p>Ref Offset 19.02 dB Ref 30.00 dBm</p> <p>Center 2.437 GHz #Res BW 100 kHz</p> <p>Occupied Bandwidth 16.409 MHz</p> <p>Total Power 12.9 dBm</p> <p>Transmit Freq Error 25.638 kHz</p> <p>x dB Bandwidth 16.04 MHz</p> <p>Span 40 MHz Sweep 4.267 ms</p> <p>#VBW 300 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB -6.00 dB</p> <p>Frequency</p> <p>Center Freq 2.437000000 GHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p>
11G/HCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.462000000 GHz</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>Center 2.462 GHz #Res BW 100 kHz</p> <p>Occupied Bandwidth 16.521 MHz</p> <p>Total Power 13.4 dBm</p> <p>Transmit Freq Error -66.257 kHz</p> <p>x dB Bandwidth 15.96 MHz</p> <p>Span 40 MHz Sweep 4.267 ms</p> <p>#VBW 300 kHz</p> <p>OBW Power 99.00 %</p> <p>x dB -6.00 dB</p> <p>Frequency</p> <p>Center Freq 2.462000000 GHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p>

11N20SISO/LCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.412000000 GHz</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>Center 2.412 GHz #Res BW 100 kHz</p> <p>Occupied Bandwidth 17.672 MHz</p> <p>Total Power 12.1 dBm</p> <p>Transmit Freq Error 57.706 kHz</p> <p>x dB Bandwidth 17.32 MHz</p> <p>OBW Power 99.00 %</p> <p>x dB -6.00 dB</p>
11N20SISO/MCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.437000000 GHz</p> <p>Ref Offset 19.02 dB Ref 30.00 dBm</p> <p>Center 2.437 GHz #Res BW 100 kHz</p> <p>Occupied Bandwidth 17.560 MHz</p> <p>Total Power 11.9 dBm</p> <p>Transmit Freq Error 29.086 kHz</p> <p>x dB Bandwidth 17.28 MHz</p> <p>OBW Power 99.00 %</p> <p>x dB -6.00 dB</p>
11N20SISO/HCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.462000000 GHz</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>Center 2.462 GHz #Res BW 100 kHz</p> <p>Occupied Bandwidth 17.661 MHz</p> <p>Total Power 12.4 dBm</p> <p>Transmit Freq Error -51.427 kHz</p> <p>x dB Bandwidth 16.41 MHz</p> <p>OBW Power 99.00 %</p> <p>x dB -6.00 dB</p>

11N40SISO/LCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.422000000 GHz</p> <p>Ref Offset 19.9 dB Ref 30.00 dBm</p> <p>Center 2.422 GHz #Res BW 100 kHz</p> <p>Occupied Bandwidth 35.787 MHz</p> <p>Total Power 10.9 dBm</p> <p>Transmit Freq Error 300.22 kHz</p> <p>x dB Bandwidth 23.17 MHz</p> <p>OBW Power 99.00 %</p> <p>x dB -6.00 dB</p>
11N40SISO/MCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.437000000 GHz</p> <p>Ref Offset 19.02 dB Ref 30.00 dBm</p> <p>Center 2.437 GHz #Res BW 100 kHz</p> <p>Occupied Bandwidth 35.621 MHz</p> <p>Total Power 11.2 dBm</p> <p>Transmit Freq Error 82.962 kHz</p> <p>x dB Bandwidth 33.79 MHz</p> <p>OBW Power 99.00 %</p> <p>x dB -6.00 dB</p>
11N40SISO/HCH	 <p>Keyight Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.452000000 GHz</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>Center 2.452 GHz #Res BW 100 kHz</p> <p>Occupied Bandwidth 35.829 MHz</p> <p>Total Power 11.2 dBm</p> <p>Transmit Freq Error -211.96 kHz</p> <p>x dB Bandwidth 31.89 MHz</p> <p>OBW Power 99.00 %</p> <p>x dB -6.00 dB</p>

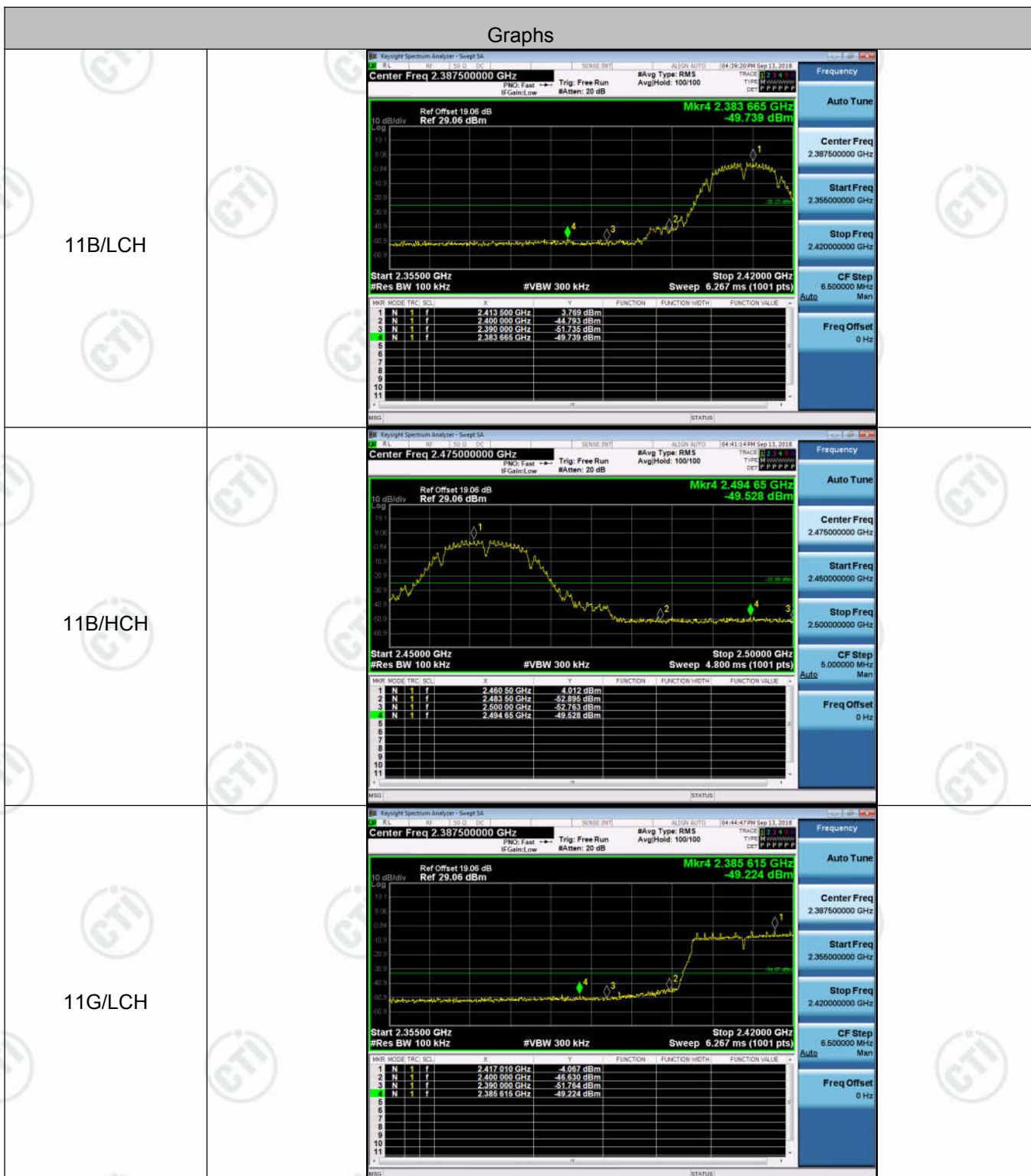
Appendix C): Band-edge for RF Conducted Emissions

Result Table

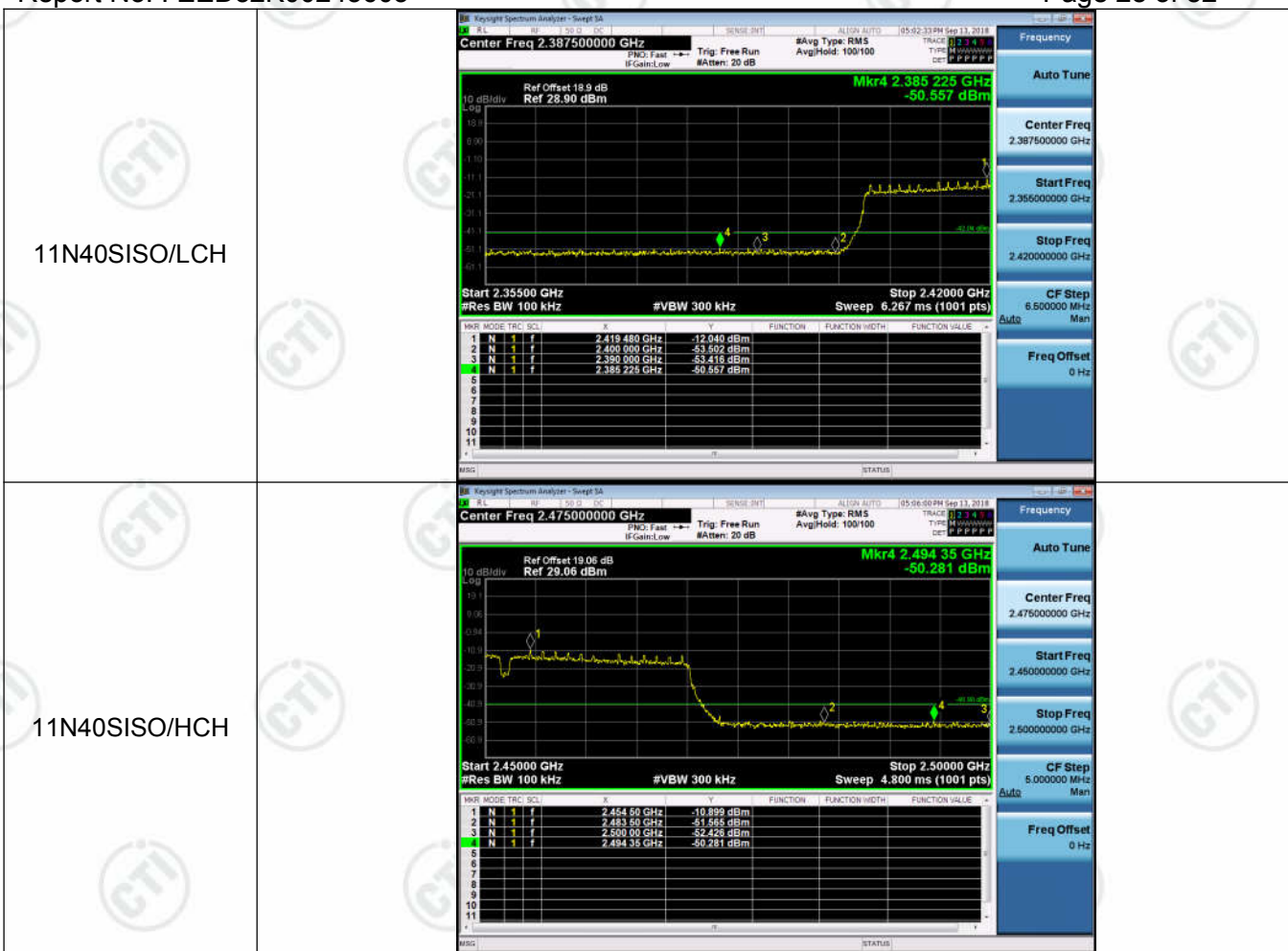
Mode	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	LCH	3.769	-49.739	-26.23	PASS
11B	HCH	4.012	-49.528	-25.99	PASS
11G	LCH	-4.067	-49.224	-34.07	PASS
11G	HCH	-3.348	-50.394	-33.35	PASS
11N20SISO	LCH	-4.663	-49.805	-34.66	PASS
11N20SISO	HCH	-4.344	-49.786	-34.34	PASS
11N40SISO	LCH	-12.040	-50.557	-42.04	PASS
11N40SISO	HCH	-10.899	-50.281	-40.9	PASS

Test Graph

Graphs



11G/HCH	<div><div><div>Keyight Spectrum Analyzer - Sweep SA</div><div>Center Freq 2.475000000 GHz</div><div>Ref Offset 19.06 dB Ref 29.06 dBm</div><div>Mkr4 2.497 70 GHz -50.394 dBm</div><div>Start 2.450000 GHz #Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Stop 2.500000 GHz Sweep 4.800 ms (1001 pts)</div><div><table><tr><th>MARK</th><th>MODE</th><th>TRC</th><th>SOL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.454 60 GHz</td><td>-3.348 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>-51.721 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>-53.864 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.497 70 GHz</td><td>-50.394 dBm</td><td></td><td></td><td></td></tr></table></div><div><div>Frequency</div><div>Auto Tune</div><div>Center Freq 2.475000000 GHz</div><div>Start Freq 2.450000000 GHz</div><div>Stop Freq 2.500000000 GHz</div><div>CF Step 5.000000 MHz Man</div><div>Freq Offset 0 Hz</div></div></div></div>	MARK	MODE	TRC	SOL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.454 60 GHz	-3.348 dBm				2	N	1	f	2.483 50 GHz	-51.721 dBm				3	N	1	f	2.500 00 GHz	-53.864 dBm				4	N	1	f	2.497 70 GHz	-50.394 dBm			
MARK	MODE	TRC	SOL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																																						
1	N	1	f	2.454 60 GHz	-3.348 dBm																																									
2	N	1	f	2.483 50 GHz	-51.721 dBm																																									
3	N	1	f	2.500 00 GHz	-53.864 dBm																																									
4	N	1	f	2.497 70 GHz	-50.394 dBm																																									
11N20SISO/LCH	<div><div><div>Keyight Spectrum Analyzer - Sweep SA</div><div>Center Freq 2.387500000 GHz</div><div>Ref Offset 19.06 dB Ref 29.06 dBm</div><div>Mkr4 2.386 265 GHz -49.805 dBm</div><div>Start 2.355000 GHz #Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Stop 2.420000 GHz Sweep 6.267 ms (1001 pts)</div><div><table><tr><th>MARK</th><th>MODE</th><th>TRC</th><th>SOL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.419 545 GHz</td><td>-4.883 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>-50.398 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>-52.481 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.386 265 GHz</td><td>-49.805 dBm</td><td></td><td></td><td></td></tr></table></div><div><div>Frequency</div><div>Auto Tune</div><div>Center Freq 2.387500000 GHz</div><div>Start Freq 2.355000000 GHz</div><div>Stop Freq 2.420000000 GHz</div><div>CF Step 5.000000 MHz Man</div><div>Freq Offset 0 Hz</div></div></div></div>	MARK	MODE	TRC	SOL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.419 545 GHz	-4.883 dBm				2	N	1	f	2.400 000 GHz	-50.398 dBm				3	N	1	f	2.390 000 GHz	-52.481 dBm				4	N	1	f	2.386 265 GHz	-49.805 dBm			
MARK	MODE	TRC	SOL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE																																						
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3	N	1	f	2.390 000 GHz	-52.481 dBm																																									
4	N	1	f	2.386 265 GHz	-49.805 dBm																																									
11N20SISO/HCH	<div><div><div>Keyight Spectrum Analyzer - Sweep SA</div><div>Center Freq 2.475000000 GHz</div><div>Ref Offset 19.06 dB Ref 29.06 dBm</div><div>Mkr4 2.499 50 GHz -49.786 dBm</div><div>Start 2.450000 GHz #Res BW 100 kHz</div><div>#VBW 300 kHz</div><div>Stop 2.500000 GHz Sweep 4.800 ms (1001 pts)</div><div><table><tr><th>MARK</th><th>MODE</th><th>TRC</th><th>SOL</th><th>X</th><th>Y</th><th>FUNCTION</th><th>FUNCTION WIDTH</th><th>FUNCTION VALUE</th></tr><tr><td>1</td><td>N</td><td>1</td><td>f</td><td>2.454 60 GHz</td><td>-4.344 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>-52.129 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>-52.270 dBm</td><td></td><td></td><td></td></tr><tr><td>4</td><td>N</td><td>1</td><td>f</td><td>2.499 50 GHz</td><td>-49.786 dBm</td><td></td><td></td><td></td></tr></table></div><div><div>Frequency</div><div>Auto Tune</div><div>Center Freq 2.475000000 GHz</div><div>Start Freq 2.450000000 GHz</div><div>Stop Freq 2.500000000 GHz</div><div>CF Step 5.000000 MHz Man</div><div>Freq Offset 0 Hz</div></div></div></div>	MARK	MODE	TRC	SOL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	1	N	1	f	2.454 60 GHz	-4.344 dBm				2	N	1	f	2.483 50 GHz	-52.129 dBm				3	N	1	f	2.500 00 GHz	-52.270 dBm				4	N	1	f	2.499 50 GHz	-49.786 dBm			
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3	N	1	f	2.500 00 GHz	-52.270 dBm																																									
4	N	1	f	2.499 50 GHz	-49.786 dBm																																									

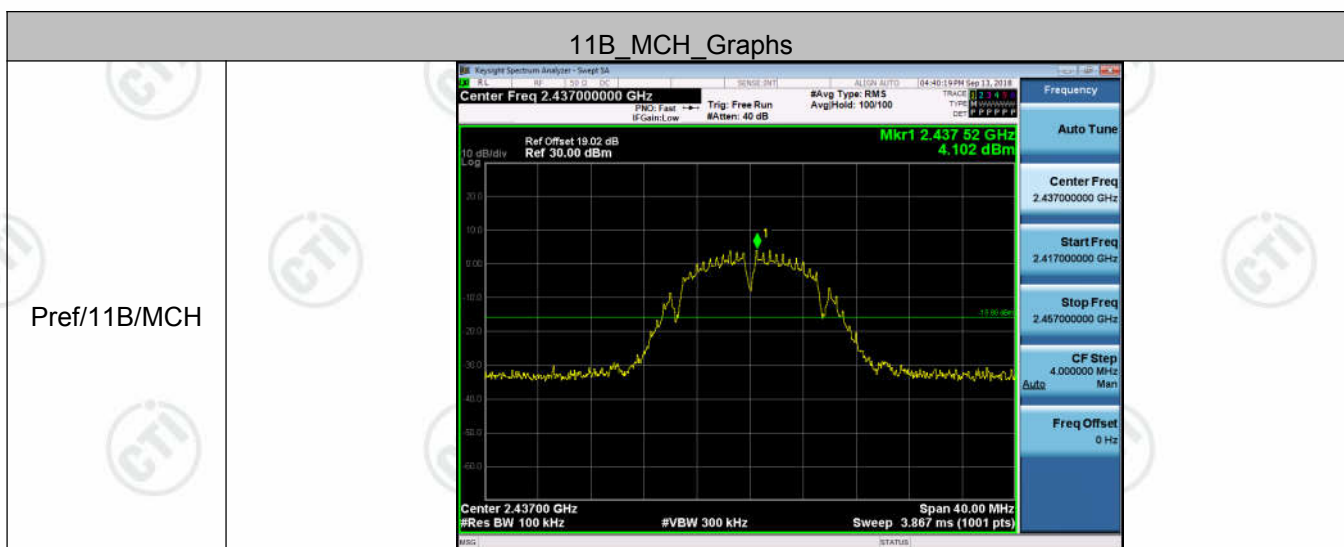
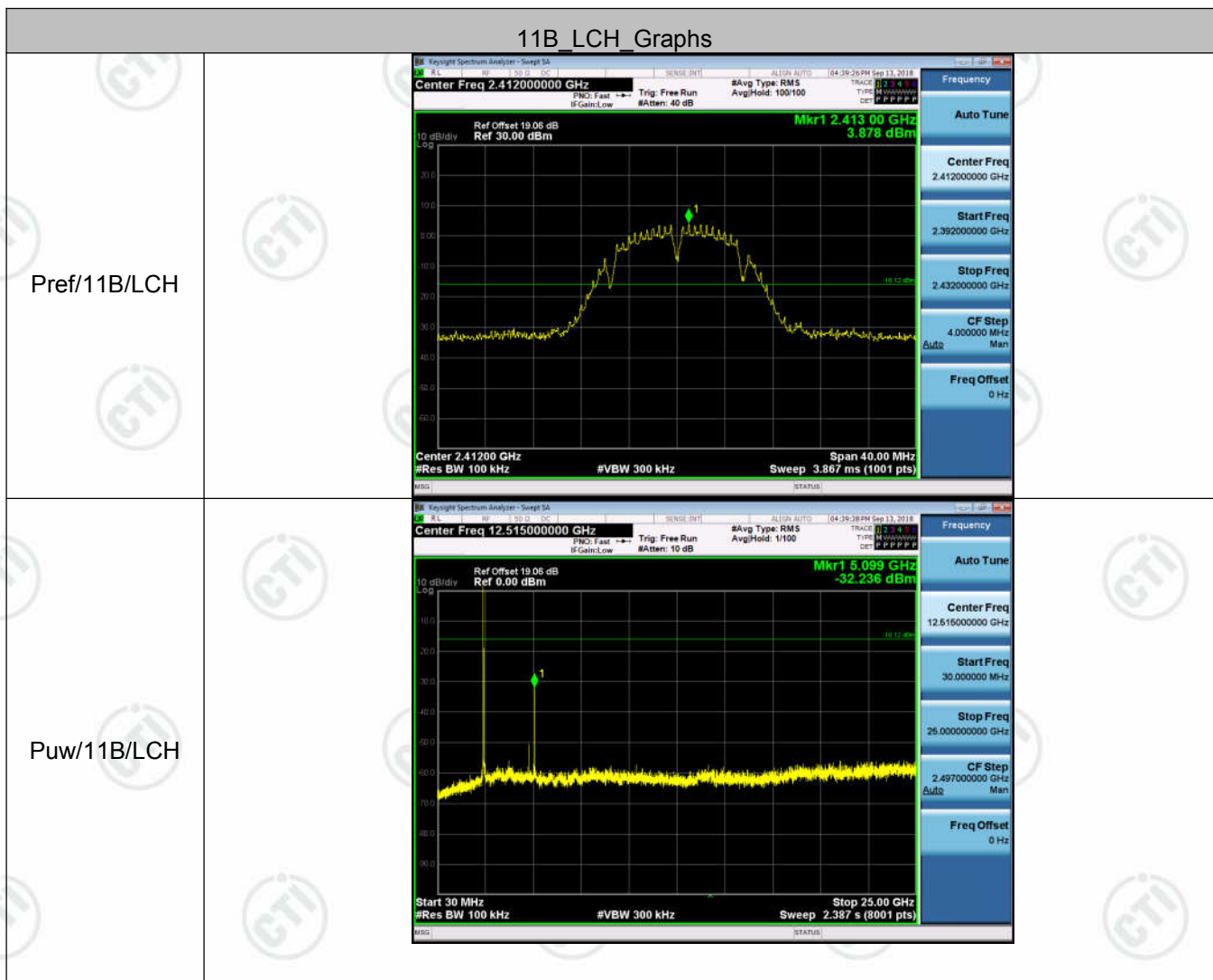


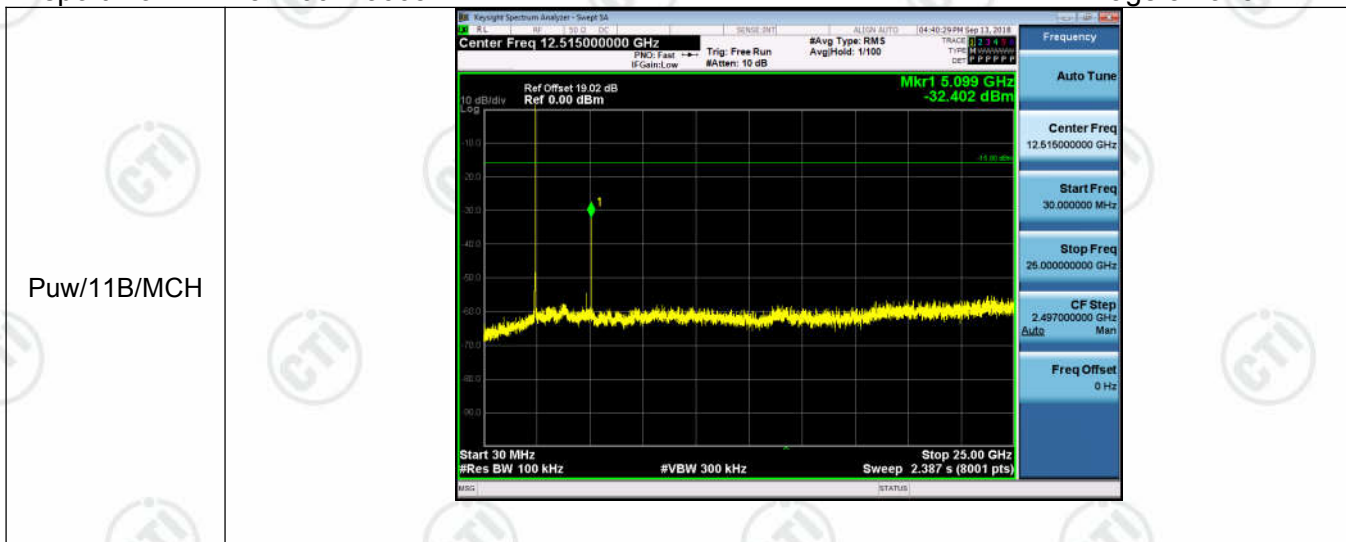
Appendix D): RF Conducted Spurious Emissions

Result Table

Mode	Channel	Pref [dBm]	Puw[dBm]	Verdict
11B	LCH	3.878	<Limit	PASS
11B	MCH	4.102	<Limit	PASS
11B	HCH	4.346	<Limit	PASS
11G	LCH	-3.755	<Limit	PASS
11G	MCH	-4.491	<Limit	PASS
11G	HCH	-3.741	<Limit	PASS
11N20SISO	LCH	-5.165	<Limit	PASS
11N20SISO	MCH	-5.434	<Limit	PASS
11N20SISO	HCH	-4.363	<Limit	PASS
11N40SISO	LCH	-7.055	<Limit	PASS
11N40SISO	MCH	-7.727	<Limit	PASS
11N40SISO	HCH	-7.503	<Limit	PASS

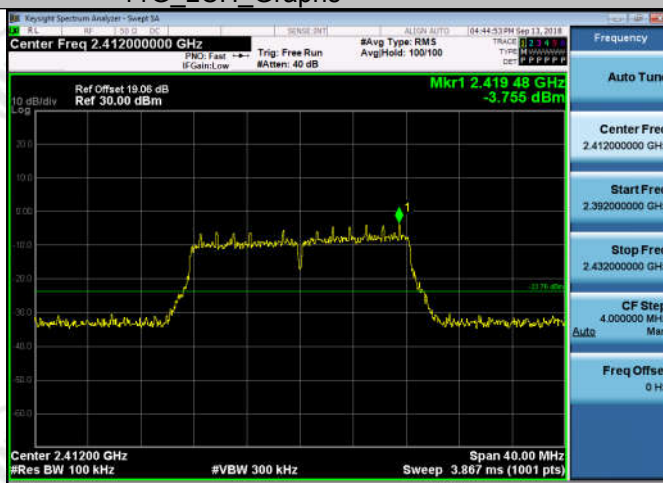
Test Graph



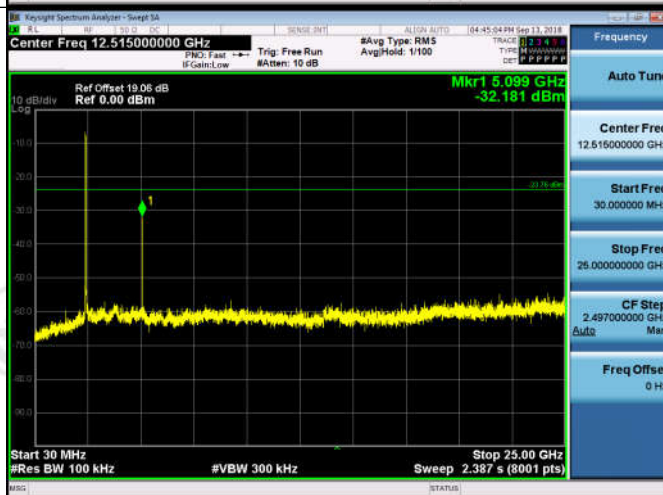


11G_LCH_Graphs

Pref/11G/LCH

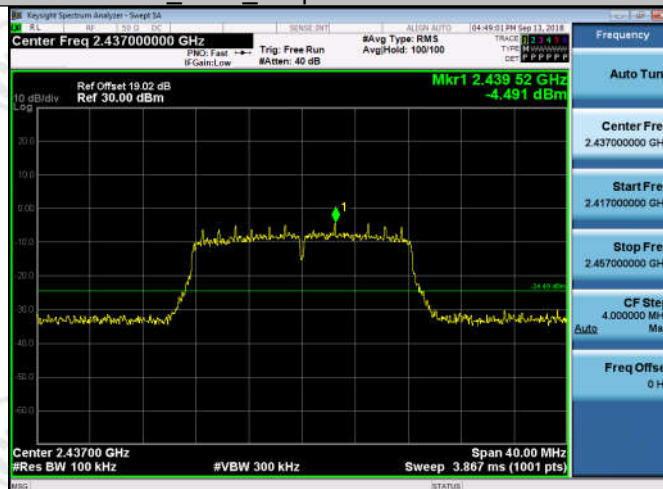


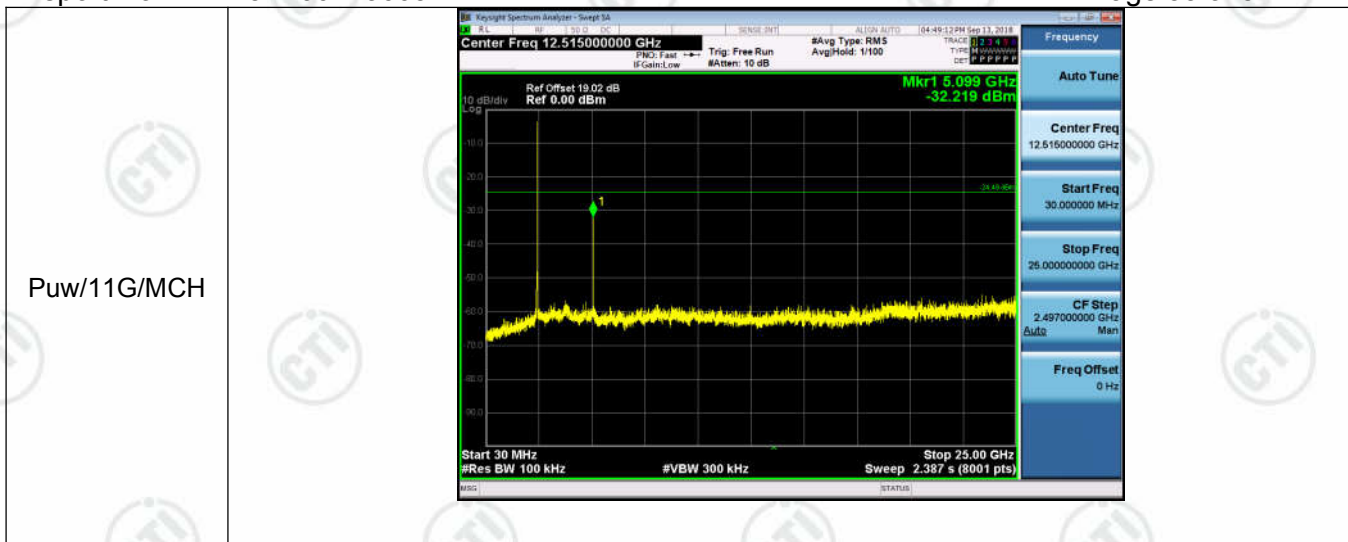
Puw/11G/LCH

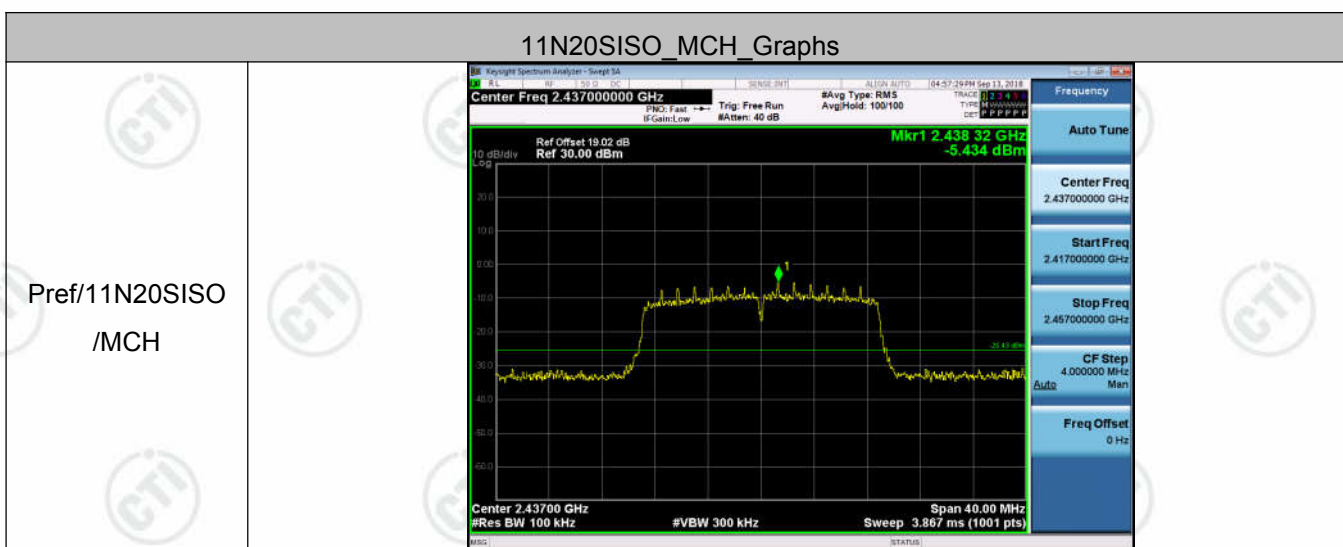
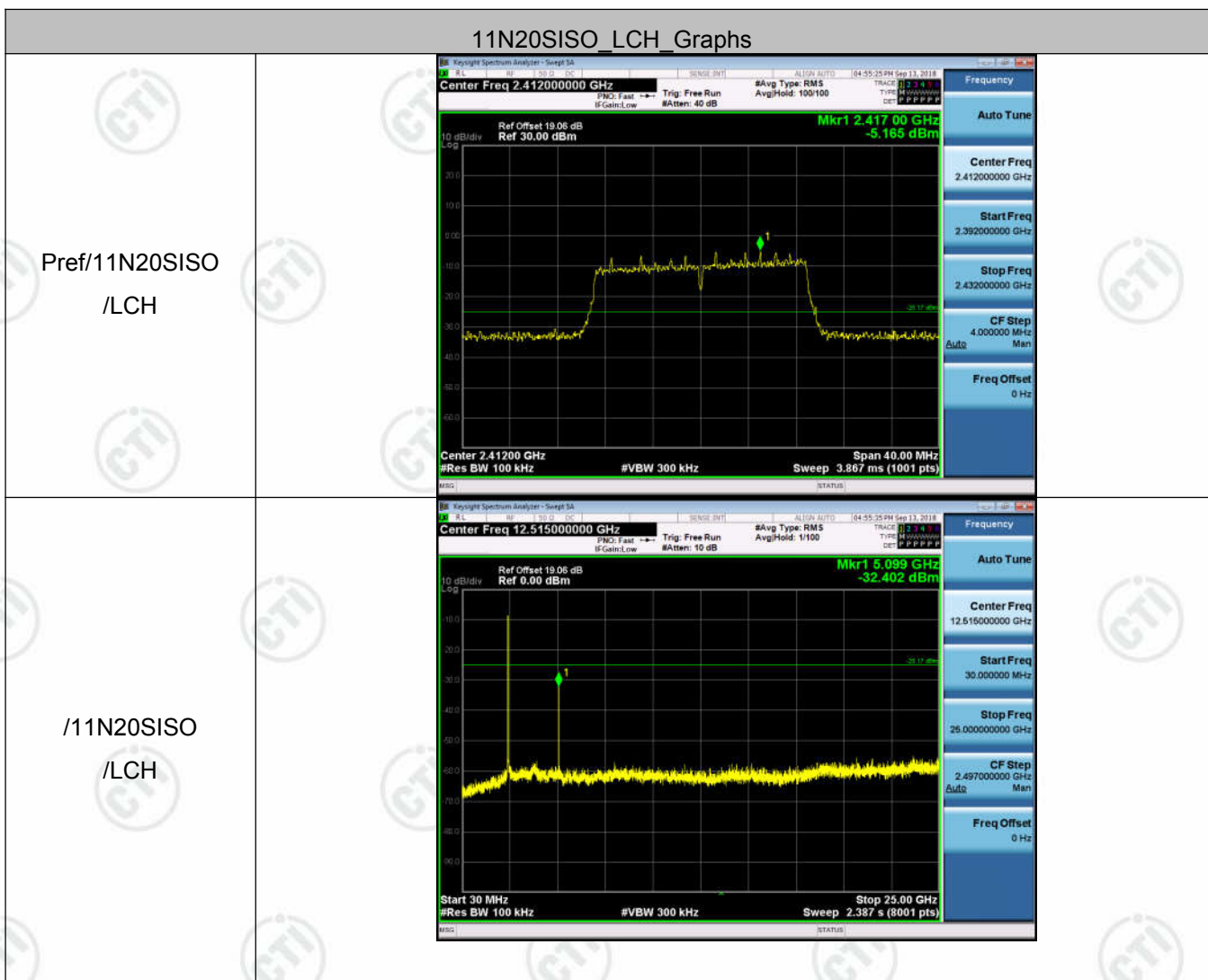


11G_MCH_Graphs

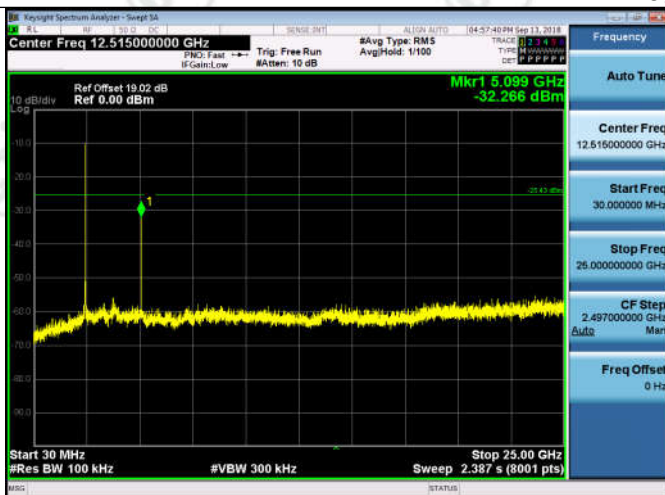
Pref/11G/MCH





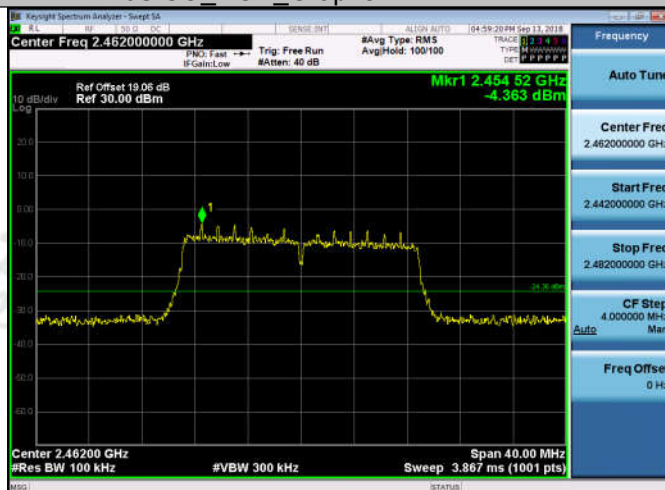


Puw/11N20SISO
/MCH

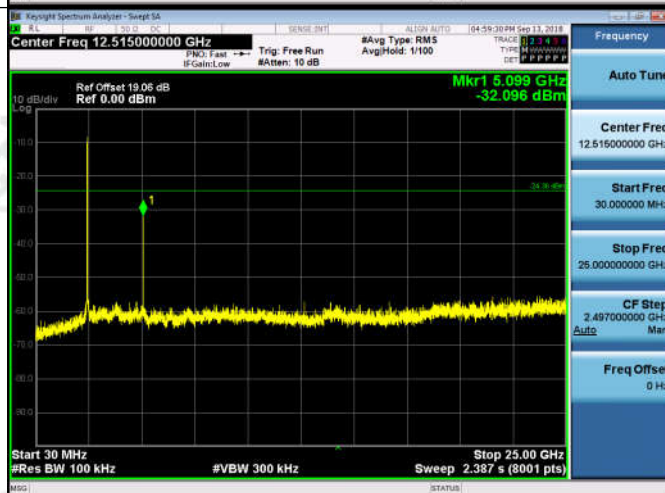


11N20SISO_HCH_Graphs

Pref/11N20SISO
/HCH

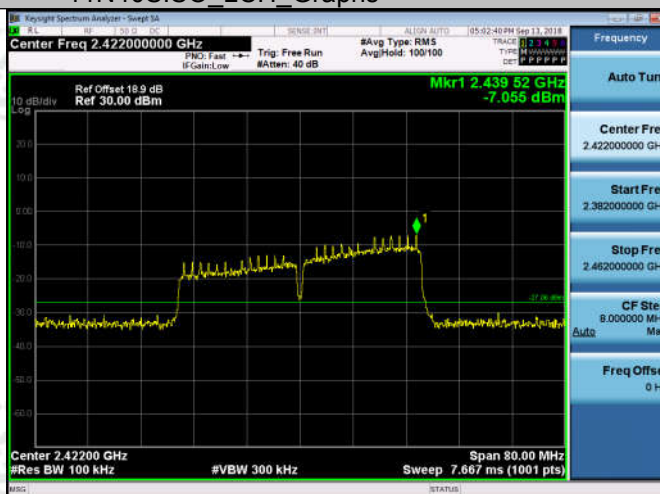


Puw/11N20SISO
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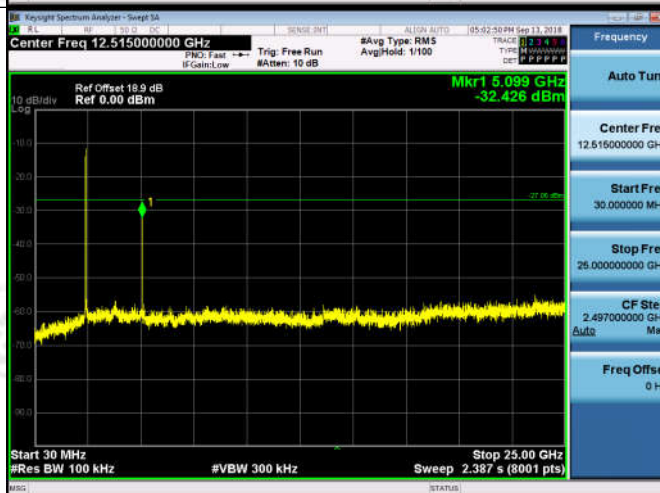


11N40SISO_LCH_Graphs

Pref/11N40SISO
/LCH

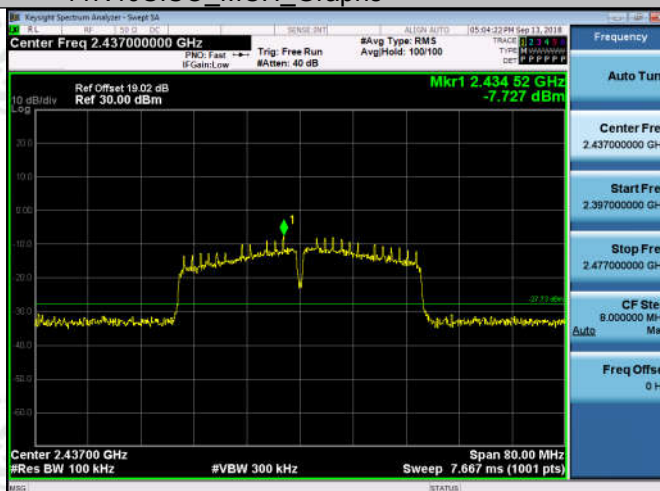


Puw/11N40SISO
/LCH

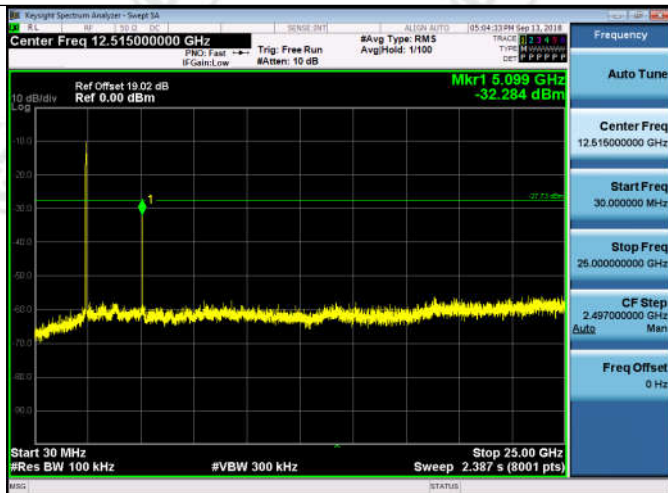


11N40SISO_MCH_Graphs

Pref/11N40SISO
/MCH

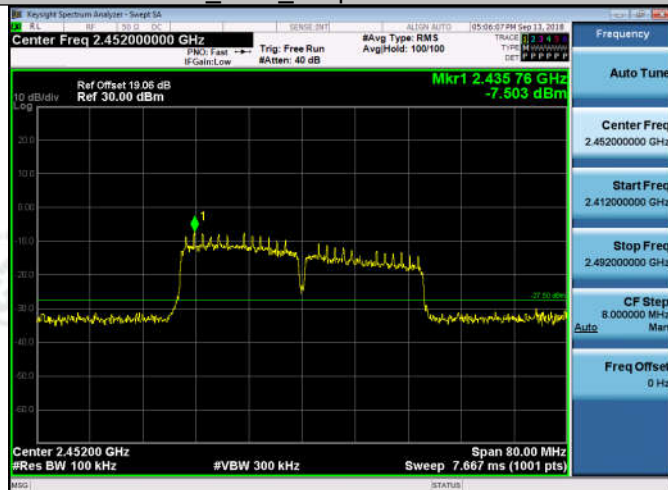


Puw/11N40SISO
/MCH

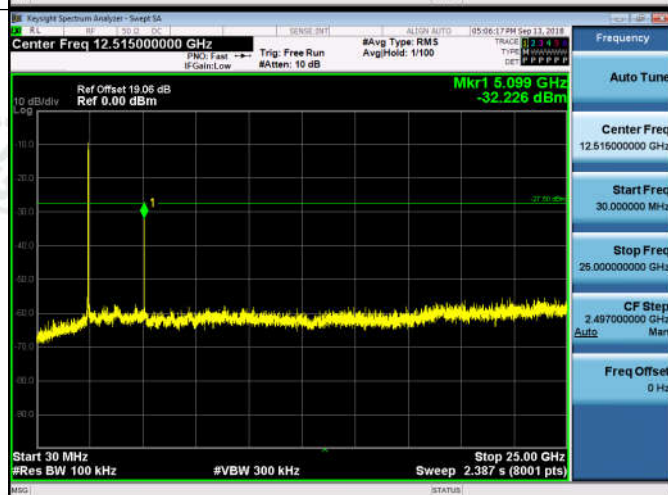


11N40SISO_HCH_Graphs

Pref/11N40SISO
/HCH



Puw/11N40SISO
/HCH



Appendix E): Power Spectral Density

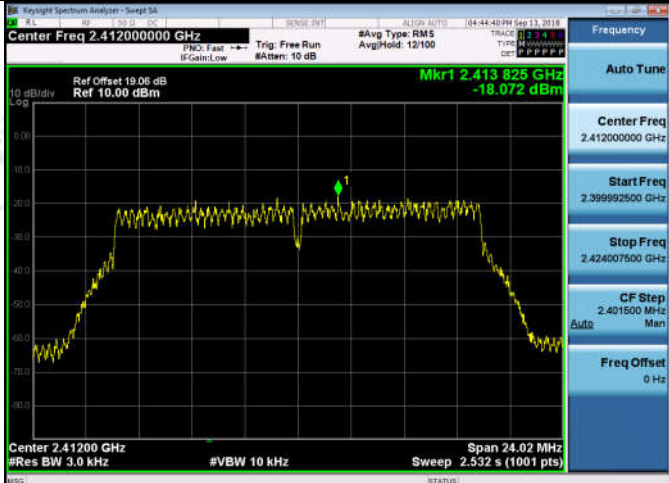
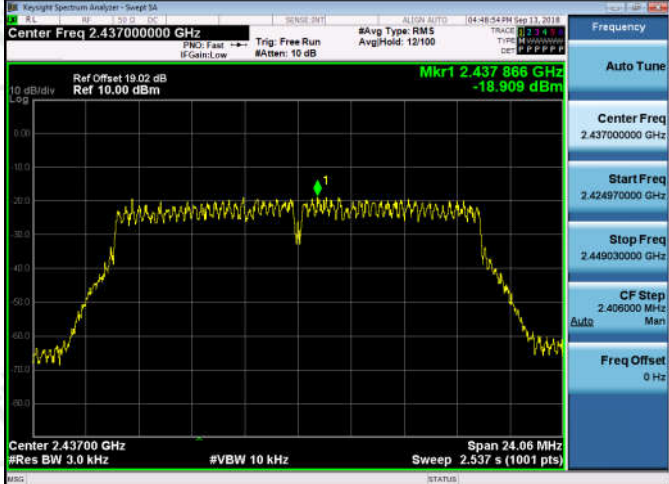
Result Table

Mode	Channel	Power Spectral Density [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
11B	LCH	-10.876	8	PASS
11B	MCH	-9.384	8	PASS
11B	HCH	-10.068	8	PASS
11G	LCH	-18.072	8	PASS
11G	MCH	-18.909	8	PASS
11G	HCH	-17.974	8	PASS
11N20SISO	LCH	-18.969	8	PASS
11N20SISO	MCH	-19.059	8	PASS
11N20SISO	HCH	-18.317	8	PASS
11N40SISO	LCH	-23.611	8	PASS
11N40SISO	MCH	-22.829	8	PASS
11N40SISO	HCH	-22.193	8	PASS

Test Graph

Graphs



11G/LCH	
11G/MCH	
11G/HCH	