

TEST REPORT

Product : WIFI+BT Module
Trade mark : GSD
Model/Type reference : WCT5LM2001
Serial Number : N/A
Report Number : EED32L00242603
FCC ID : 2AC23-WCT5L
Date of Issue : Dec. 04, 2019
Test Standards : 47 CFR Part 15Subpart C
Test result : PASS

Prepared for:

Hui Zhou Gaoshengda Technology Co.,LTD
NO.75 Zhongkai Development Area,Huizhou,Guangdong, China

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

Tested By:

mark. chen .

Compiled by:

smile zhong

Mark Chen

Smile Zhong

Reviewed by:

Ware Xin

Ware Xin

Approved by:

Kevin Yang

Kevin Yang

Date:

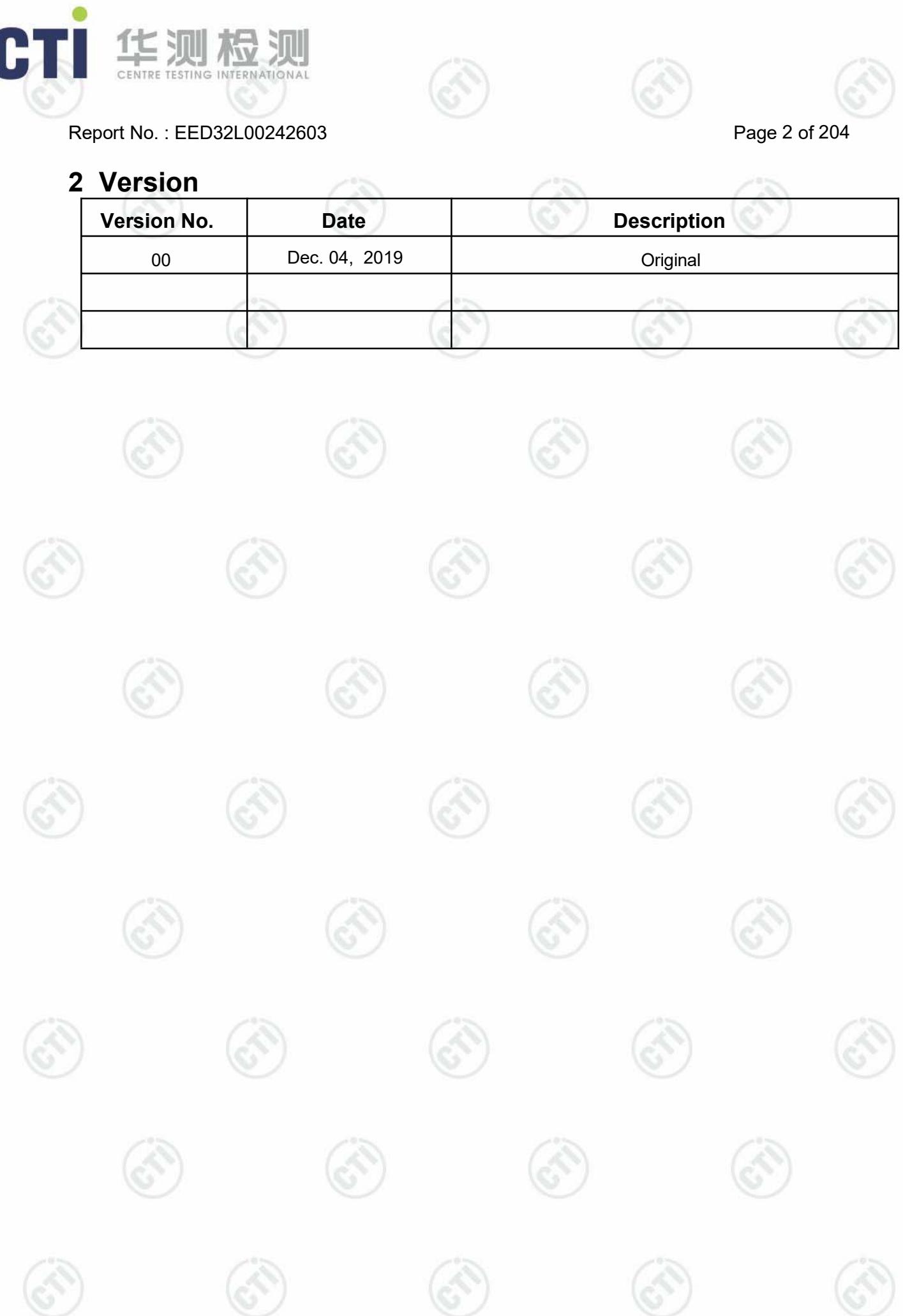
Dec. 04, 2019

Check No.: 3096388499



2 Version

Version No.	Date	Description
00	Dec. 04, 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.

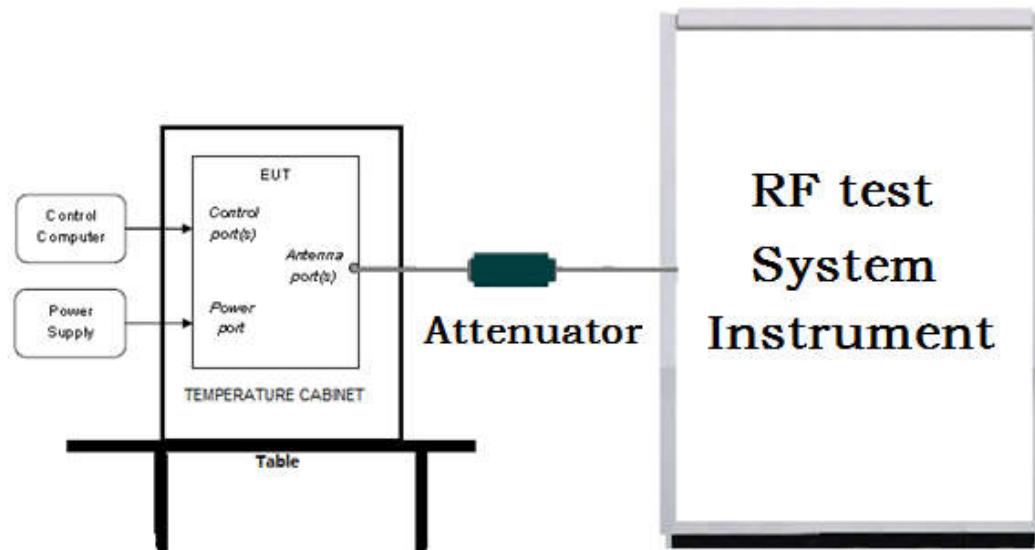
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5 Test Requirement

5.1 Test setup

5.1.1 For Conducted test setup



5.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

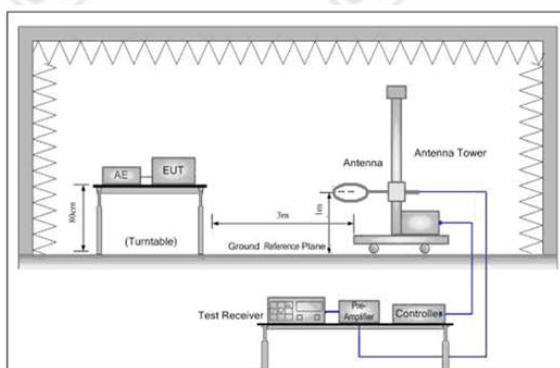


Figure 1. Below 30MHz

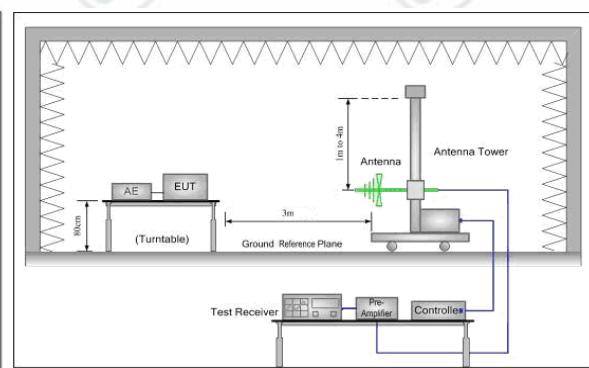


Figure 2. 30MHz to 1GHz

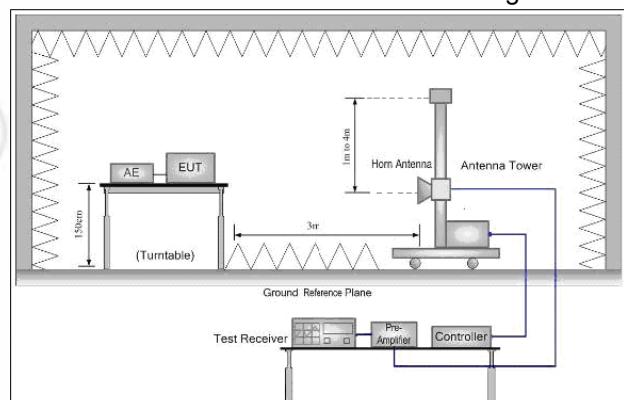
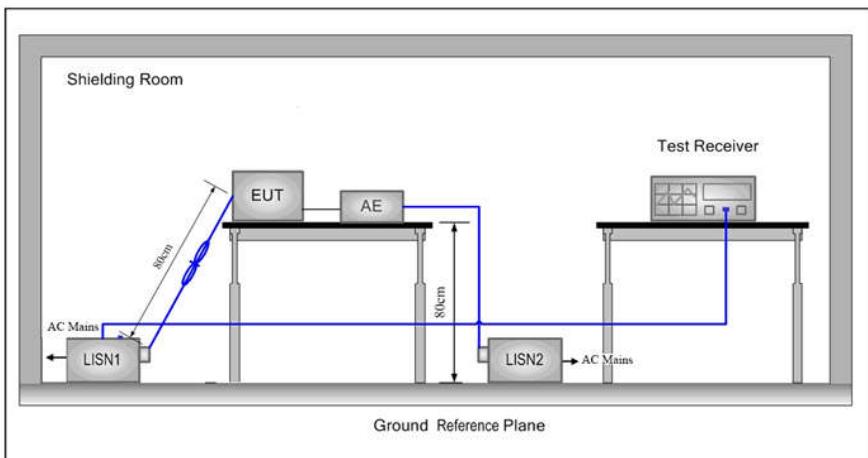


Figure 3. Above 1GHz

5.1.3 For Conducted Emissions test setup

Conducted Emissions setup



5.2 Test Environment

Operating Environment:

Temperature:	24.0 °C
Humidity:	55 % RH
Atmospheric Pressure:	1011mbar

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

Mode	802.11b								
Data Rate	1Mbps	2Mbps	5.5Mbps	11Mbps					
Power(dBm)	18.07	18.09	18.10	18.13					
Mode	802.11g								
Data Rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps	
Power(dBm)	21.69	21.67	21.65	21.63	21.60	21.58	21.56	21.54	
Mode	802.11n (HT20)								
Data Rate	6.5Mbps	13Mbps	19.5Mbps	26Mbps	39Mbps	52Mbps	58.5Mbps	65Mbps	
Power(dBm)	20.12	20.10	20.08	20.05	20.03	20.01	19.99	19.97	
Mode	802.11n (HT40)								
Data Rate	13.5Mbps	27Mbps	40.5Mbps	54Mbps	81Mbps	108Mbps	121.5Mbps	135Mbps	
Power(dBm)	20.75	20.73	20.70	20.68	20.65	20.63	20.61	20.59	

Through Pre-scan, 1Mbps 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:	Hui Zhou Gaoshengda Technology Co.,LTD
Address of Applicant:	NO.75 Zhongkai Development Area,Huizhou,Guangdong, China
Manufacturer:	Hui Zhou Gaoshengda Technology Co.,LTD
Address of Manufacturer:	NO.75 Zhongkai Development Area,Huizhou,Guangdong, China
Factory:	Hui Zhou Gaoshengda Technology Co.,LTD
Address of Factory:	NO.75 Zhongkai Development Area,Huizhou,Guangdong, China

6.2 General Description of EUT

Product Name:	WIFI+BT Module
Model No.(EUT):	WCT5LM2001
Trade Mark:	GSD
EUT Supports Radios application:	IEEE 802.11 b/g/n(HT20)(HT40): 2412MHz to 2462MHz
Power Supply:	DC 3.3V
Sample Received Date:	Aug. 29, 2019
Sample tested Date:	Aug. 29, 2019 to Nov. 04, 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:	Reference Table
Test Software of EUT:	MT7688 QA 0.0.2.6
Antenna Type and Gain:	Type: PIFA antenna Gain: 2dBi
Test Voltage:	DC 3.3V

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	Channel
3	2422MHz	6	2437MHz	9	2452MHz	
4	2427MHz	7	2442MHz			
5	2432MHz	8	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

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	Mode No.	Serial Number	Cal. Date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Signal Generator	Keysight	E8257D	MY53401106	03-01-2019	02-29-2020
Spectrum Analyzer	Keysight	N9010A	MY54510339	03-01-2019	02-29-2020
Attenuator	HuaXiang	SHX370	15040701	03-01-2019	02-29-2020
Signal Generator	Keysight	N5181A	MY46240094	03-01-2019	02-29-2020
Signal Generator	Keysight	N5182B	MY53051549	03-01-2019	02-29-2020
Temperature/Humidity Indicator	biaozhi	HM10	1804186	07-26-2019	07-25-2020
High-pass filter	Sinoscite	FL3CX03WG18 NM12-0398-002	---	01-09-2019	01-08-2020
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX01CA09 CL12-0395-001	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX01CA08 CL12-0393-001	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX02CA04 CL12-0396-002	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX02CA03 CL12-0394-001	---	01-09-2019	01-08-2020
Communication test set	R&S	CMW500	107929	04-28-2019	04-27-2020
DC Power	Keysight	E3642A	MY54426035	03-01-2019	02-29-2020
PC-1	Lenovo	R4960d	---	03-01-2019	02-29-2020
BT&WI-FI Automatic control	R&S	OSP120	101374	03-01-2019	02-29-2020
RF control unit	JS Tonscend	JS0806-2	15860006	03-01-2019	02-29-2020
RF control unit	JS Tonscend	JS0806-1	15860004	03-01-2019	02-29-2020
RF control unit	JS Tonscend	JS0806-4	158060007	03-01-2019	02-29-2020
BT&WI-FI Automatic test software	JS Tonscend	JSTS1120-2	---	03-01-2019	02-29-2020
high-low temperature test chamber	DongGuangQinZhuo	LK-80GA	QZ20150611 879	03-01-2019	02-29-2020

Conducted disturbance Test					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
Receiver	R&S	ESCI	100435	05-20-2019	05-19-2020
Temperature/ Humidity Indicator	Defu	TH128	/	06-14-2019	06-13-2020
Communication test set	Agilent	E5515C	GB47050 534	03-01-2019	02-28-2022
Communication test set	R&S	CMW500	102898	01-18-2019	01-17-2020
LISN	R&S	ENV216	100098	05-08-2019	05-07-2020
LISN	schwarzbeck	NNLK8121	8121-529	05-08-2019	05-07-2020
Voltage Probe	R&S	ESH2-Z3 0299.7810.5 6	100042	06-13-2017	06-12-2020
Current Probe	R&S	EZ-17 816.2063.03	100106	05-20-2019	05-19-2020
ISN	TESEQ	ISN T800	30297	01-16-2019	01-15-2020
Barometer	changchun	DYM3	1188	06-20-2019	06-19-2020

3M Semi/full-anechoic Chamber					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
3M Chamber & Accessory Equipment	TDK	SAC-3	---	05-24-2019	05-23-2022
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-401	12-21-2018	12-20-2019
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-618	07-26-2019	07-25-2020
Microwave Preamplifier	Agilent	8449B	3008A024 25	07-12-2019	07-11-2020
Microwave Preamplifier	Tonscend	EMC051845 SE	980380	01-16-2019	01-15-2020
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1869	04-25-2018	04-24-2021
Horn Antenna	ETS-LINDGREN	3117	00057410	06-05-2018	06-04-2021
Double ridge horn antenna	A.H.SYSTEMS	SAS-574	374	06-05-2018	06-04-2021
Pre-amplifier	A.H.SYSTEMS	PAP-1840-60	6041.604 2	07-26-2019	07-25-2020
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04-25-2018	04-24-2021
Spectrum Analyzer	R&S	FSP40	100416	04-28-2019	04-27-2020
Receiver	R&S	ESCI	100435	05-20-2019	05-19-2020
Receiver	R&S	ESCI7	100938-003	11-23-2018	11-22-2019
Multi device Controller	maturo	NCD/070/107 11112	---	01-09-2019	01-08-2020
Signal Generator	Agilent	E4438C	MY45095 744	03-01-2019	02-29-2020
Signal Generator	Keysight	E8257D	MY53401 106	03-01-2019	02-29-2020
Temperature/ Humidity Indicator	Shanghai qixiang	HM10	1804298	07-26-2019	07-25-2020
Communication test set	Agilent	E5515C	GB47050 534	03-01-2019	02-28-2022
Cable line	Fulai(7M)	SF106	5219/6A	01-09-2019	01-08-2020
Cable line	Fulai(6M)	SF106	5220/6A	01-09-2019	01-08-2020
Cable line	Fulai(3M)	SF106	5216/6A	01-09-2019	01-08-2020
Cable line	Fulai(3M)	SF106	5217/6A	01-09-2019	01-08-2020
High-pass filter	Sinoscite	FL3CX03WG 18NM12-0398-002	---	01-09-2019	01-08-2020
High-pass filter	MICRO-TRONICS	SPA-F-63029-4	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX01CA0 9CL12-0395-001	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX01CA0 8CL12-0393-001	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX02CA0 4CL12-0396-002	---	01-09-2019	01-08-2020
band rejection filter	Sinoscite	FL5CX02CA0 3CL12-0394-001	---	01-09-2019	01-08-2020

3M full-anechoic Chamber					
Equipment	Manufacturer	Model No.	Serial Number	Cal. date (mm-dd-yyyy)	Cal. Due date (mm-dd-yyyy)
RSE Automatic test software	JS Tonscend	JS36-RSE	10166	06-19-2019	06-18-2020
Receiver	Keysight	N9038A	MY57290136	03-27-2019	03-26-2020
Spectrum Analyzer	Keysight	N9020B	MY57111112	03-27-2019	03-26-2020
Spectrum Analyzer	Keysight	N9030B	MY57140871	03-27-2019	03-26-2020
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-075	04-25-2018	04-24-2021
Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-076	04-25-2018	04-24-2021
TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	9163-1148	04-25-2018	04-24-2021
Horn Antenna	Schwarzbeck	BBHA 9170	9170-832	04-25-2018	04-24-2021
Horn Antenna	Schwarzbeck	BBHA 9170	9170-829	04-25-2018	04-24-2021
Communication Antenna	Schwarzbeck	CLSA 0110L	1014	02-14-2019	02-13-2020
Biconical antenna	Schwarzbeck	VUBA 9117	9117-381	04-25-2018	04-24-2021
Horn Antenna	ETS-LINDGREN	3117	00057407	07-10-2018	07-09-2021
Preamplifier	EMCI	EMC184055SE	980596	05-22-2019	5-21-2020
Communication test set	R&S	CMW500	102898	01-18-2019	01-17-2020
Preamplifier	EMCI	EMC001330	980563	05-08-2019	05-07-2020
Preamplifier	Agilent	8449B	3008A02425	07-12-2019	07-11-2020
Temperature/Humidity Indicator	biaozhi	GM1360	EE1186631	04-30-2019	04-29-2020
Signal Generator	KEYSIGHT	E8257D	MY53401106	03-01-2019	02-29-2020
Fully Anechoic Chamber	TDK	FAC-3	---	01-17-2018	01-16-2021
Filter bank	JS Tonscend	JS0806-F	188060094	04-10-2018	04-09-2021
Cable line	Times	SFT205-NMSM-2.50M	394812-0001	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMSM-2.50M	394812-0002	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMSM-2.50M	394812-0003	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMSM-2.50M	393495-0001	01-09-2019	01-08-2020
Cable line	Times	EMC104-NMNM-1000	SN160710	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMSM-3.00M	394813-0001	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMNM-1.50M	381964-0001	01-09-2019	01-08-2020
Cable line	Times	SFT205-NMSM-7.00M	394815-0001	01-09-2019	01-08-2020
Cable line	Times	HF160-KMKM-3.00M	393493-0001	01-09-2019	01-08-2020

8 Radio Technical Requirements Specification

Reference documents for testing:

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

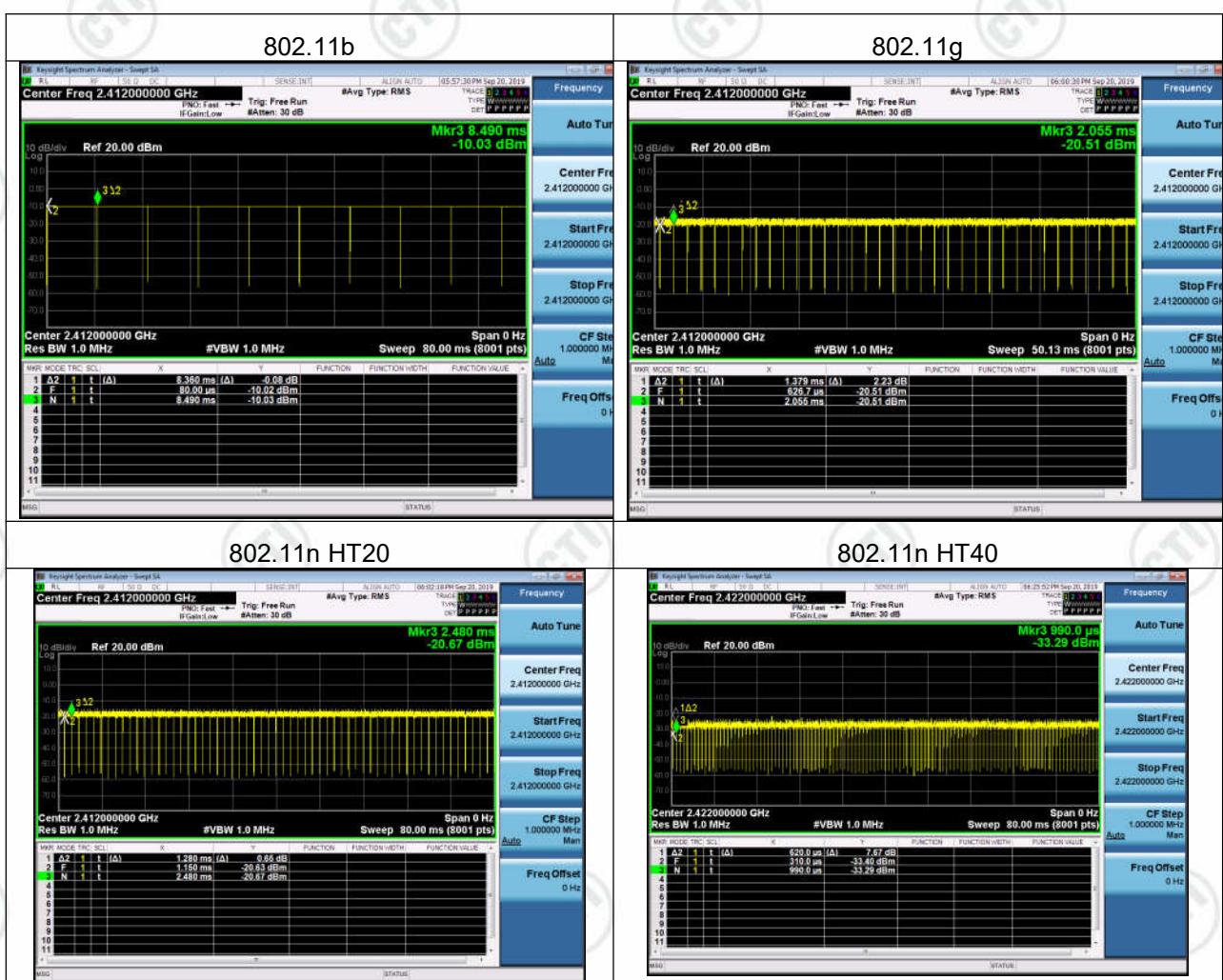
Test Results List:

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

EUT DUTY CYCLE

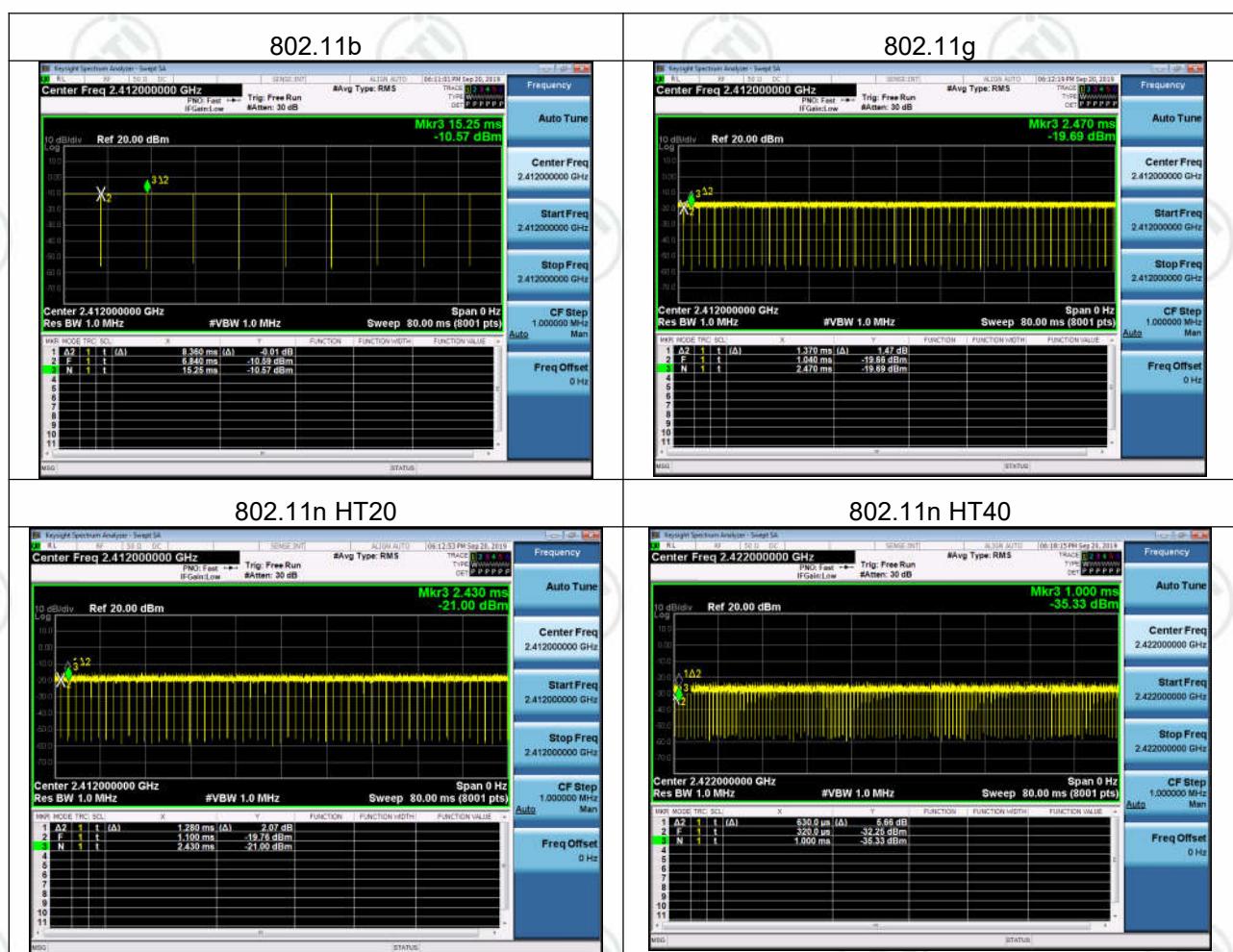
Ant1

Duty Cycle			
Configuration	TX ON(ms)	TX ALL(ms)	Duty Cycle(%)
802.11b	8.360	8.410	99.41%
802.11g	1.379	1.428	96.57%
802.11n HT20	1.280	1.330	96.24%
802.11n HT40	0.620	0.680	91.18%



Ant2

Duty Cycle			
Configuration	TX ON(ms)	TX ALL(ms)	Duty Cycle(%)
802.11b	8.360	8.410	99.41%
802.11g	1.370	1.430	95.80%
802.11n HT20	1.280	1.330	96.24%
802.11n HT40	0.630	0.680	92.65%

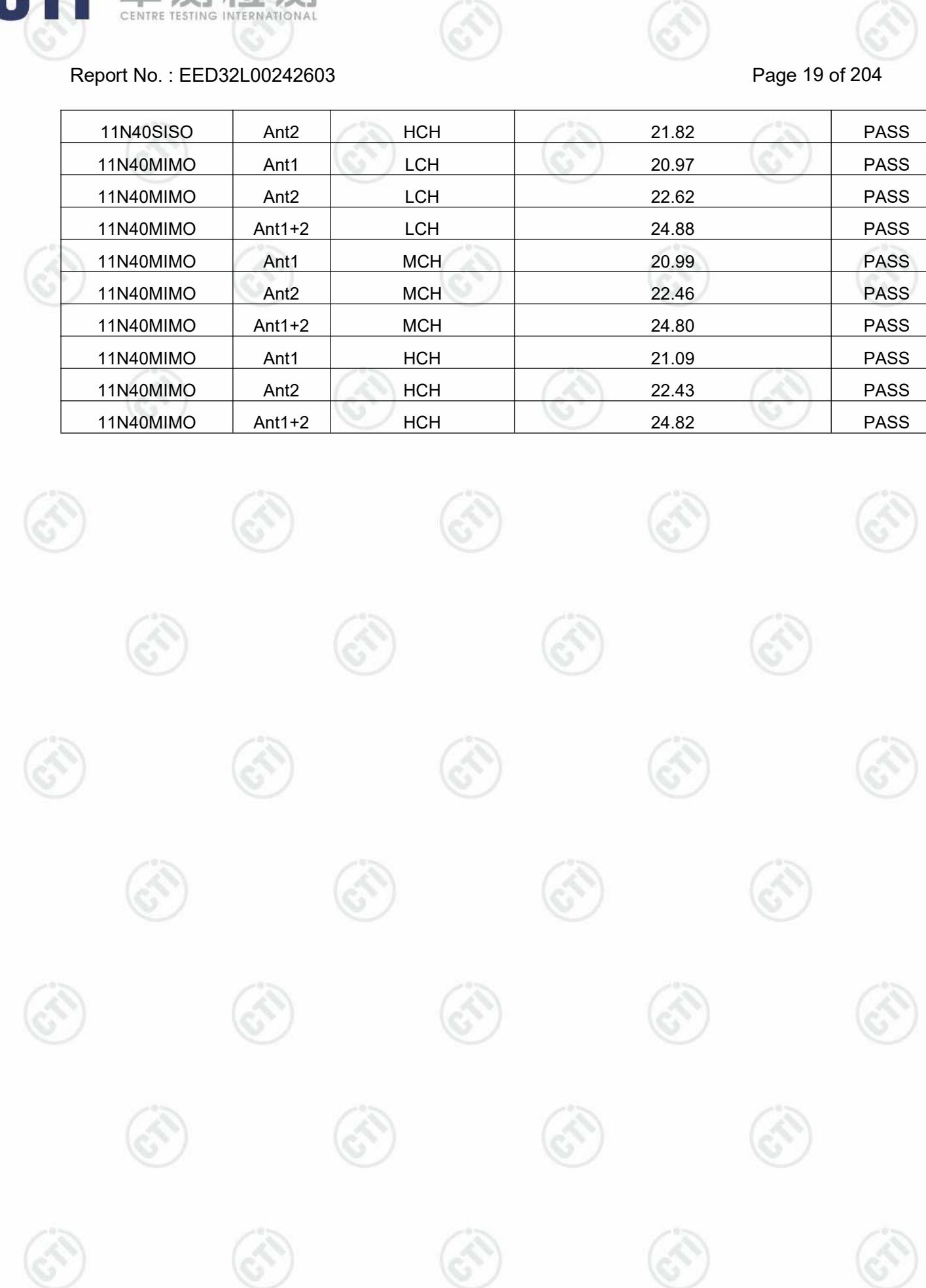


Appendix A): Conducted Peak Output Power

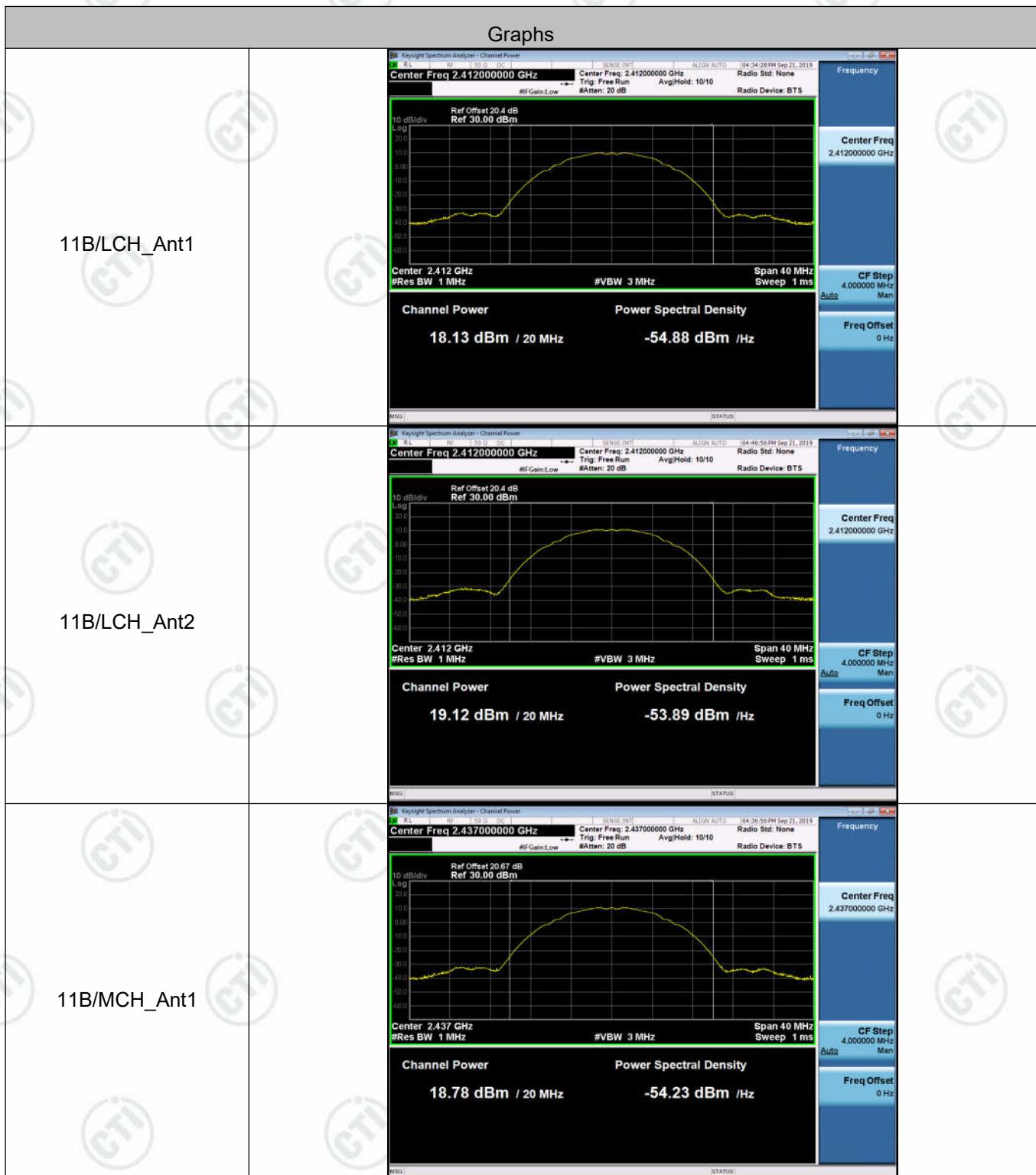
Result Table

Mode	Antenna	Channel	Conducted Peak Output Power [dBm]	Verdict
11B	Ant1	LCH	18.13	PASS
11B	Ant2	LCH	19.12	PASS
11B	Ant1	MCH	18.78	PASS
11B	Ant2	MCH	19.59	PASS
11B	Ant1	HCH	18.55	PASS
11B	Ant2	HCH	19.51	PASS
11G	Ant1	LCH	21.69	PASS
11G	Ant2	LCH	22.72	PASS
11G	Ant1	MCH	22.16	PASS
11G	Ant2	MCH	23.06	PASS
11G	Ant1	HCH	22.15	PASS
11G	Ant2	HCH	22.94	PASS
11N20SISO	Ant1	LCH	20.12	PASS
11N20SISO	Ant2	LCH	21.28	PASS
11N20SISO	Ant1	MCH	20.55	PASS
11N20SISO	Ant2	MCH	21.62	PASS
11N20SISO	Ant1	HCH	20.64	PASS
11N20SISO	Ant2	HCH	21.59	PASS
11N20MIMO	Ant1	LCH	20.32	PASS
11N20MIMO	Ant2	LCH	22.28	PASS
11N20MIMO	Ant1+2	LCH	24.42	PASS
11N20MIMO	Ant1	MCH	20.71	PASS
11N20MIMO	Ant2	MCH	22.58	PASS
11N20MIMO	Ant1+2	MCH	24.76	PASS
11N20MIMO	Ant1	HCH	20.71	PASS
11N20MIMO	Ant2	HCH	22.51	PASS
11N20MIMO	Ant1+2	HCH	24.71	PASS
11N40SISO	Ant1	LCH	20.75	PASS
11N40SISO	Ant2	LCH	21.68	PASS
11N40SISO	Ant1	MCH	20.87	PASS
11N40SISO	Ant2	MCH	21.8	PASS
11N40SISO	Ant1	HCH	20.65	PASS

11N40SISO	Ant2	HCH	21.82	PASS
11N40MIMO	Ant1	LCH	20.97	PASS
11N40MIMO	Ant2	LCH	22.62	PASS
11N40MIMO	Ant1+2	LCH	24.88	PASS
11N40MIMO	Ant1	MCH	20.99	PASS
11N40MIMO	Ant2	MCH	22.46	PASS
11N40MIMO	Ant1+2	MCH	24.80	PASS
11N40MIMO	Ant1	HCH	21.09	PASS
11N40MIMO	Ant2	HCH	22.43	PASS
11N40MIMO	Ant1+2	HCH	24.82	PASS

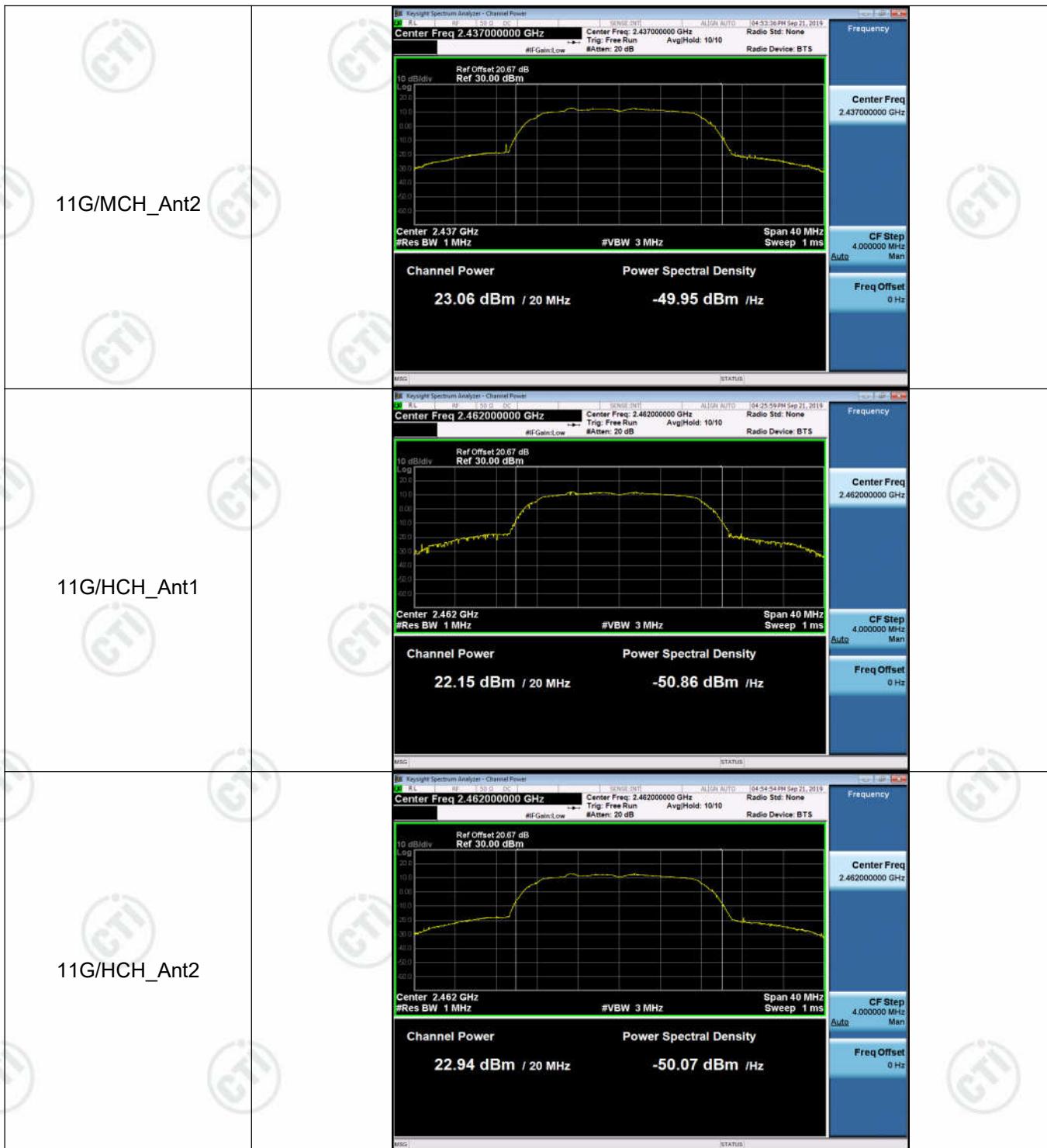


Test Graph







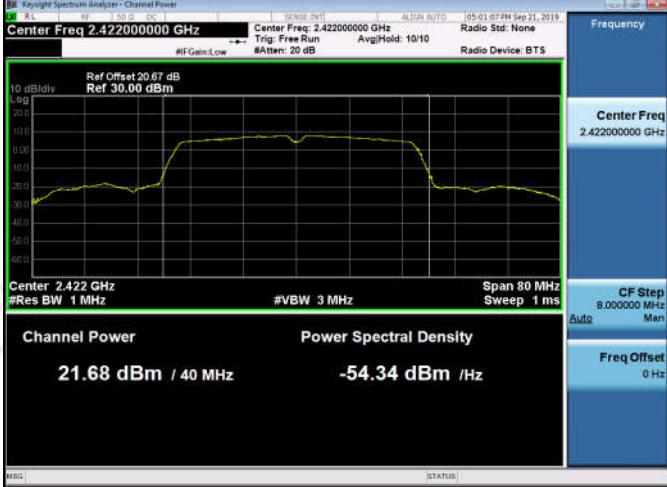
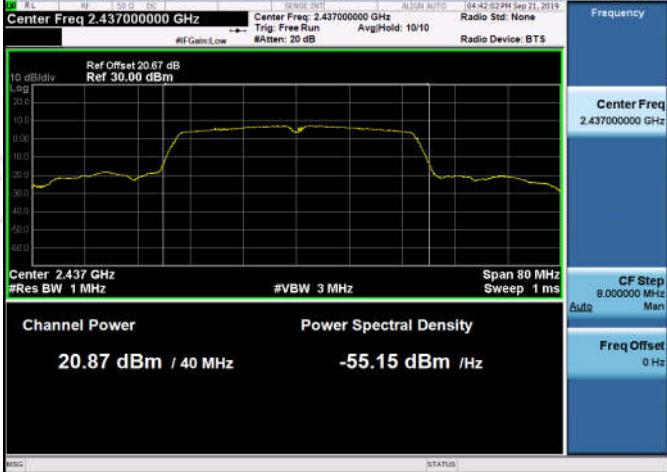


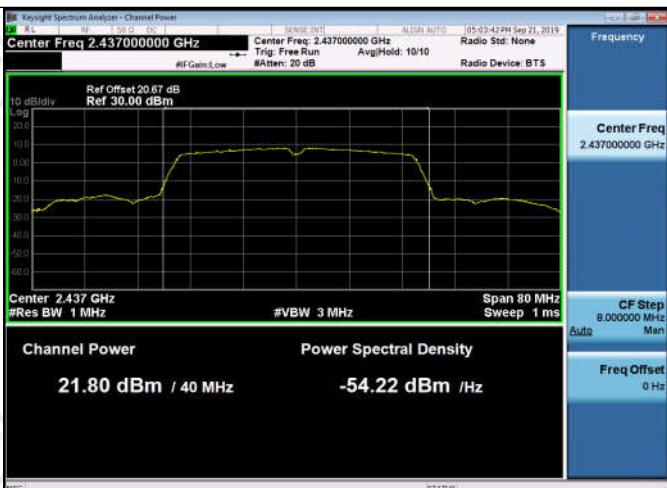
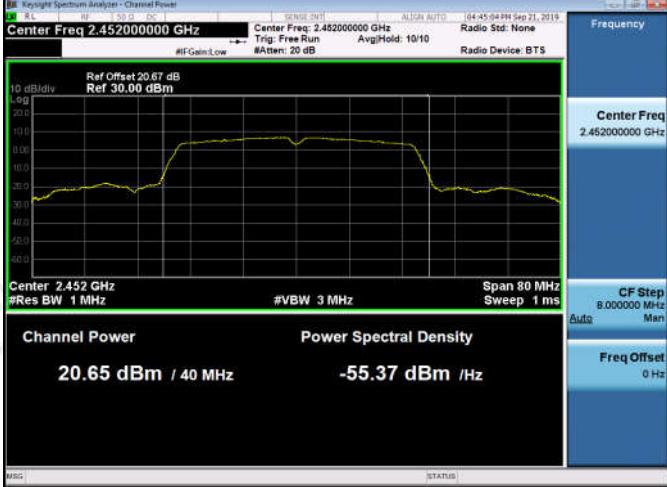




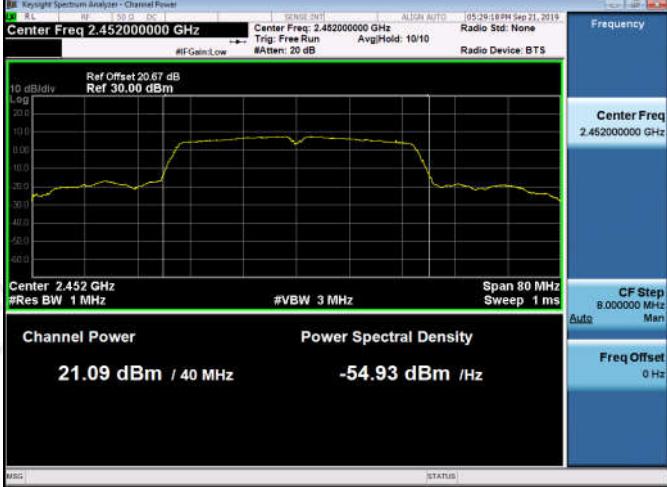




11N40SISO/LCH_Ant1	
11N40SISO/LCH_Ant2	
11N40SISO/MCH_Ant1	

11N40SISO/MCH_Ant2	
11N40SISO/HCH_Ant1	
11N40SISO/HCH_Ant2	



11N40MIMO/MCH_Ant2	
11N40MIMO/HCH_Ant1	
11N40MIMO/HCH_Ant2	

Appendix B): 6dB Occupied Bandwidth

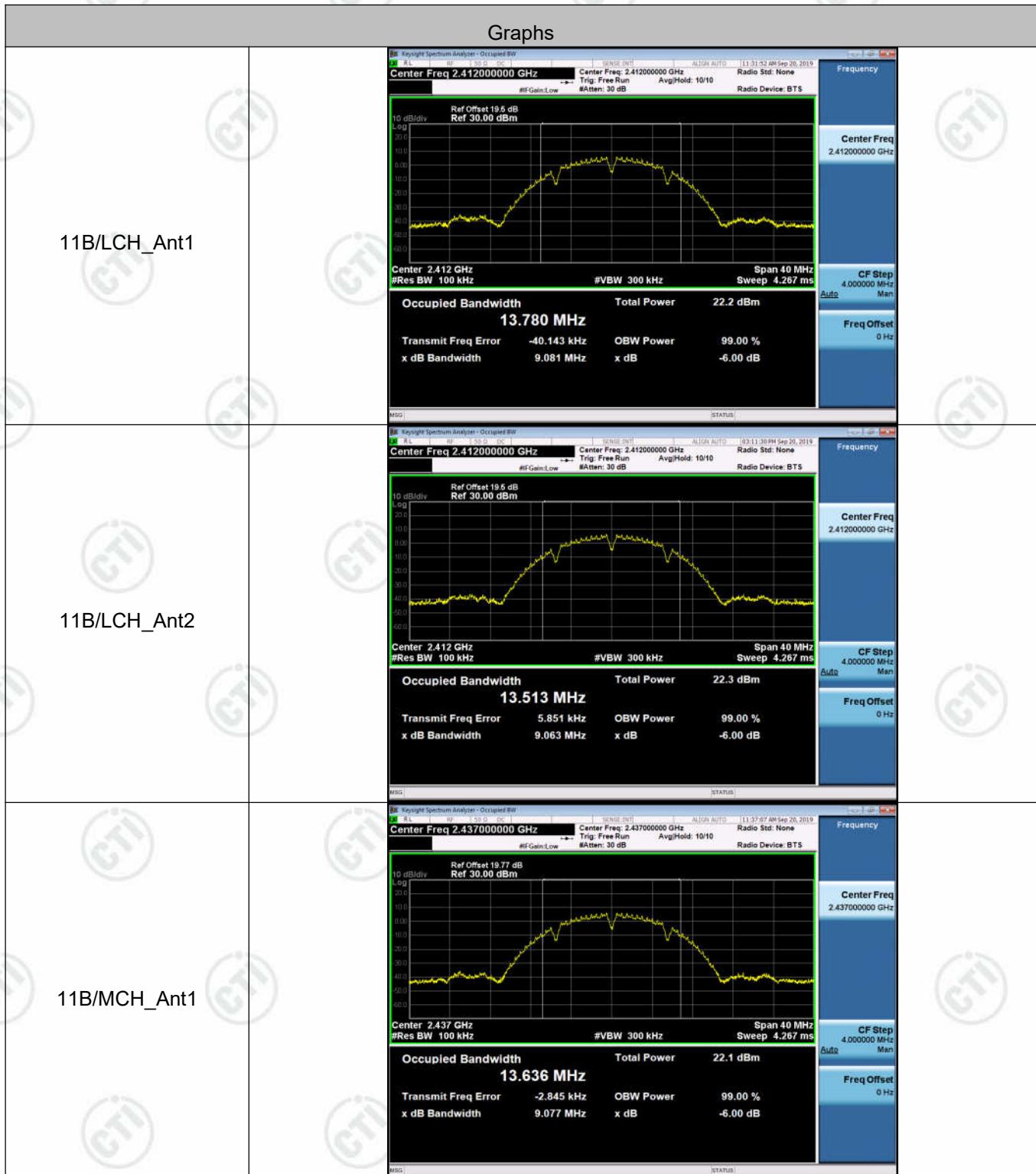
Result Table For 6dB Occupied Bandwidth

Mode	Antenna	Channel	6dB Bandwidth [MHz]	Verdict
11B	Ant1	LCH	9.081	PASS
11B	Ant2	LCH	9.063	PASS
11B	Ant1	MCH	9.077	PASS
11B	Ant2	MCH	9.072	PASS
11B	Ant1	HCH	9.082	PASS
11B	Ant2	HCH	9.079	PASS
11G	Ant1	LCH	15.06	PASS
11G	Ant2	LCH	15.13	PASS
11G	Ant1	MCH	15.14	PASS
11G	Ant2	MCH	15.02	PASS
11G	Ant1	HCH	15.09	PASS
11G	Ant2	HCH	15.33	PASS
11N20SISO	Ant1	LCH	15.10	PASS
11N20SISO	Ant2	LCH	15.29	PASS
11N20SISO	Ant1	MCH	13.87	PASS
11N20SISO	Ant2	MCH	15.12	PASS
11N20SISO	Ant1	HCH	15.08	PASS
11N20SISO	Ant2	HCH	15.13	PASS
11N40SISO	Ant1	LCH	35.11	PASS
11N40SISO	Ant2	LCH	35.11	PASS
11N40SISO	Ant1	MCH	35.12	PASS
11N40SISO	Ant2	MCH	35.13	PASS
11N40SISO	Ant1	HCH	35.09	PASS
11N40SISO	Ant2	HCH	35.13	PASS

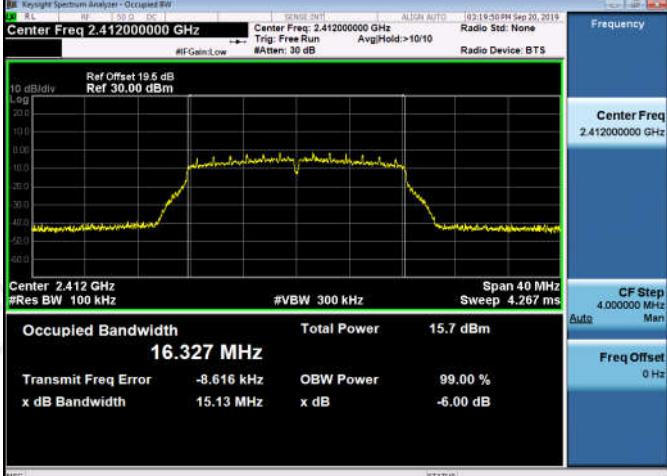
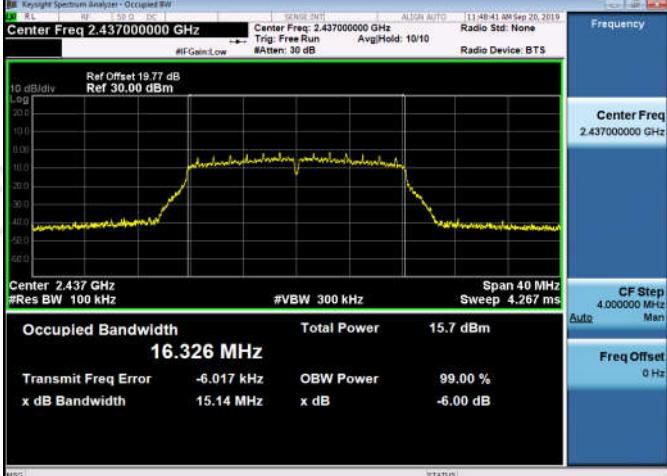
Result Table For 99% Occupied Bandwidth

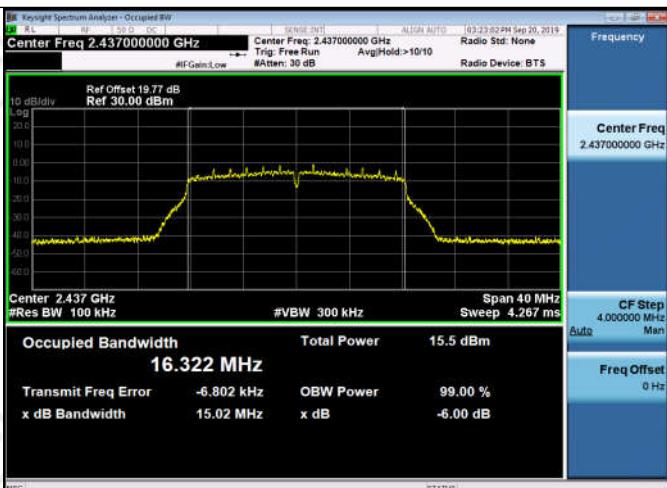
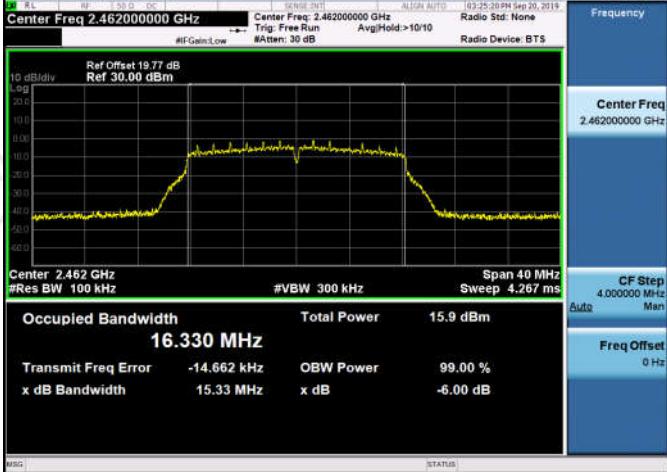
Mode	Antenna	Channel	99%OBW[MHz]	Verdict
11B	Ant1	LCH	13.813	PASS
11B	Ant2	LCH	13.512	PASS
11B	Ant1	MCH	13.718	PASS
11B	Ant2	MCH	13.503	PASS
11B	Ant1	HCH	13.802	PASS
11B	Ant2	HCH	13.605	PASS
11G	Ant1	LCH	16.482	PASS
11G	Ant2	LCH	16.447	PASS
11G	Ant1	MCH	16.462	PASS
11G	Ant2	MCH	16.458	PASS
11G	Ant1	HCH	16.465	PASS
11G	Ant2	HCH	16.478	PASS
11N20SISO	Ant1	LCH	17.532	PASS
11N20SISO	Ant2	LCH	17.546	PASS
11N20SISO	Ant1	MCH	17.538	PASS
11N20SISO	Ant2	MCH	17.527	PASS
11N20SISO	Ant1	HCH	17.543	PASS
11N20SISO	Ant2	HCH	17.568	PASS
11N40SISO	Ant1	LCH	36.090	PASS
11N40SISO	Ant2	LCH	36.097	PASS
11N40SISO	Ant1	MCH	36.054	PASS
11N40SISO	Ant2	MCH	36.071	PASS
11N40SISO	Ant1	HCH	36.050	PASS
11N40SISO	Ant2	HCH	36.087	PASS

Test Graph For 6dB Occupied Bandwidth



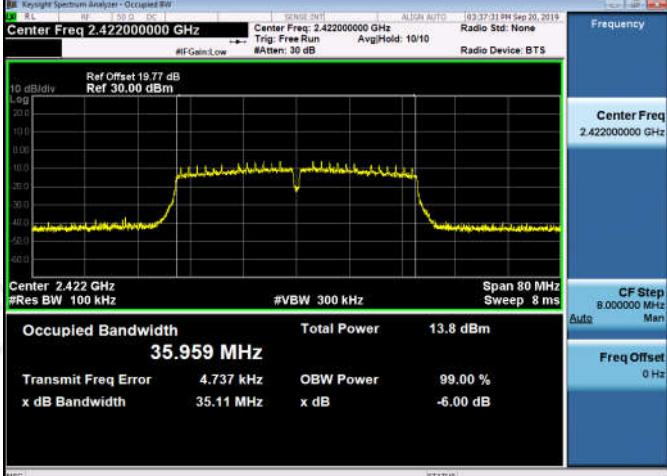
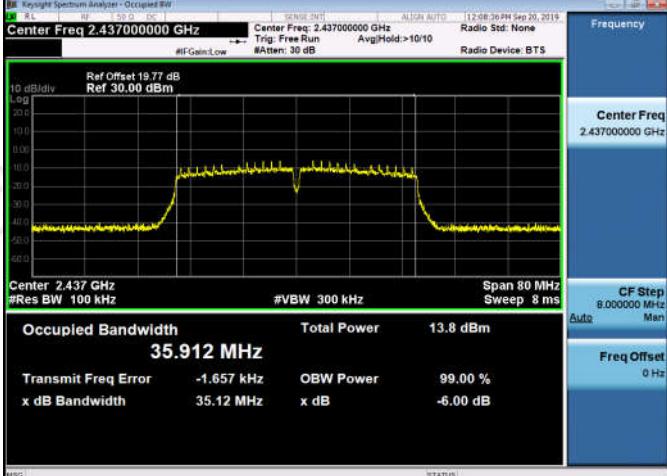


11G/LCH_Ant1	
11G/LCH_Ant2	
11G/MCH_Ant1	

11G/MCH_Ant2	
11G/HCH_Ant1	
11G/HCH_Ant2	

		<p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.412000000 GHz</p> <p>Ref Offset 19.5 dB Ref 30.00 dBm</p> <p>Occupied Bandwidth 17.502 MHz</p> <p>Total Power 14.4 dBm</p> <p>Transmit Freq Error -4.014 kHz</p> <p>x dB Bandwidth 15.10 MHz</p> <p>OBW Power 99.00 %</p> <p>Sweep 4.267 ms</p> <p>#VBW 300 kHz</p> <p>#Res BW 100 kHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p> <p>Center Freq 2.412000000 GHz</p> <p>Span 40 MHz</p> <p>Autos</p> <p>IF Gain: Low</p> <p>Trig: Free Run</p> <p>#Aver: 30 dB</p> <p>Avg/Hold: 10/10</p> <p>Radio Device: BTS</p> <p>05:16:47 PM Sep 20, 2019</p>
		<p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.412000000 GHz</p> <p>Ref Offset 19.5 dB Ref 30.00 dBm</p> <p>Occupied Bandwidth 17.511 MHz</p> <p>Total Power 14.6 dBm</p> <p>Transmit Freq Error -5.877 kHz</p> <p>x dB Bandwidth 15.29 MHz</p> <p>OBW Power 99.00 %</p> <p>Sweep 4.267 ms</p> <p>#VBW 300 kHz</p> <p>#Res BW 100 kHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p> <p>Center Freq 2.412000000 GHz</p> <p>Span 40 MHz</p> <p>Autos</p> <p>IF Gain: Low</p> <p>Trig: Free Run</p> <p>#Aver: 30 dB</p> <p>Avg/Hold: >10/10</p> <p>Radio Device: BTS</p> <p>05:28:13 PM Sep 20, 2019</p>
		<p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.437000000 GHz</p> <p>Ref Offset 19.77 dB Ref 30.00 dBm</p> <p>Occupied Bandwidth 17.501 MHz</p> <p>Total Power 14.4 dBm</p> <p>Transmit Freq Error -890 Hz</p> <p>x dB Bandwidth 13.87 MHz</p> <p>OBW Power 99.00 %</p> <p>Sweep 4.267 ms</p> <p>#VBW 300 kHz</p> <p>#Res BW 100 kHz</p> <p>CF Step 4.000000 MHz</p> <p>Freq Offset 0 Hz</p> <p>Center Freq 2.437000000 GHz</p> <p>Span 40 MHz</p> <p>Autos</p> <p>IF Gain: Low</p> <p>Trig: Free Run</p> <p>#Aver: 30 dB</p> <p>Avg/Hold: >10/10</p> <p>Radio Device: BTS</p> <p>05:18:37 PM Sep 20, 2019</p>

		<p>11N20SISO/HCH_Ant1</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz ALIGN AUTO 03:32:54 PM Sep 20, 2019</p> <p>#IF Gain:Low Trig: Free Run Avg/Hold:>10/10 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 19.77 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Span 40 MHz Sweep 4.267 ms</p> <p>Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz</p> <p>Occupied Bandwidth: 17.516 MHz Total Power: 14.5 dBm</p> <p>Transmit Freq Error: -15.035 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 15.08 MHz x dB: -6.00 dB</p>
		<p>11N20SISO/HCH_Ant2</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz ALIGN AUTO 03:34:53 PM Sep 20, 2019</p> <p>#IF Gain:Low Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 19.77 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Span 40 MHz Sweep 4.267 ms</p> <p>Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz</p> <p>Occupied Bandwidth: 17.500 MHz Total Power: 14.7 dBm</p> <p>Transmit Freq Error: -13.876 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 15.13 MHz x dB: -6.00 dB</p>

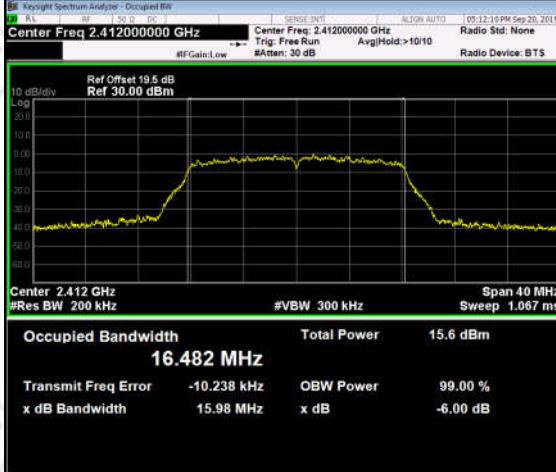
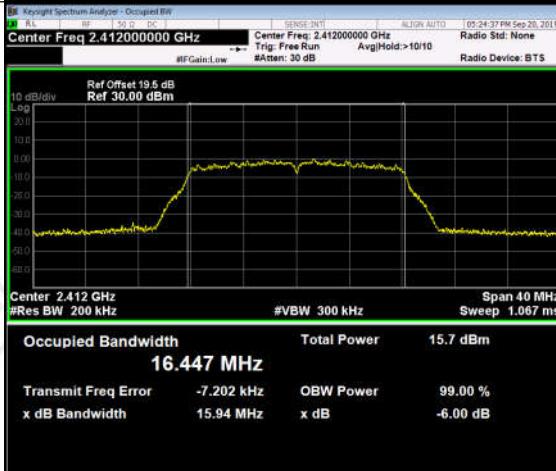
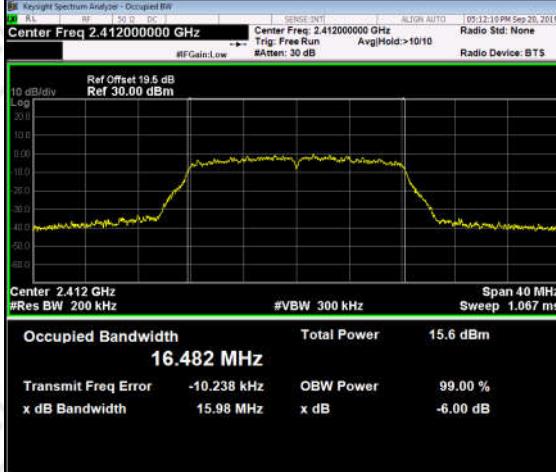
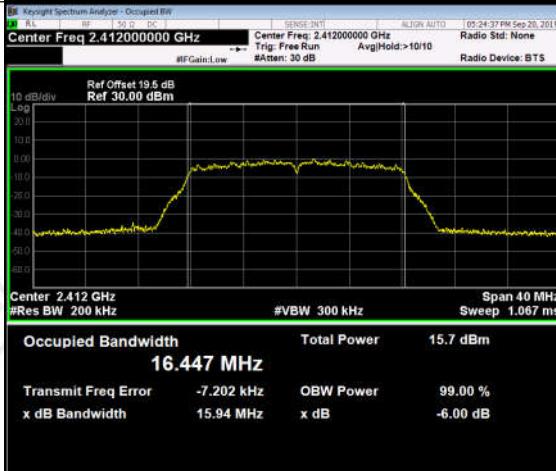
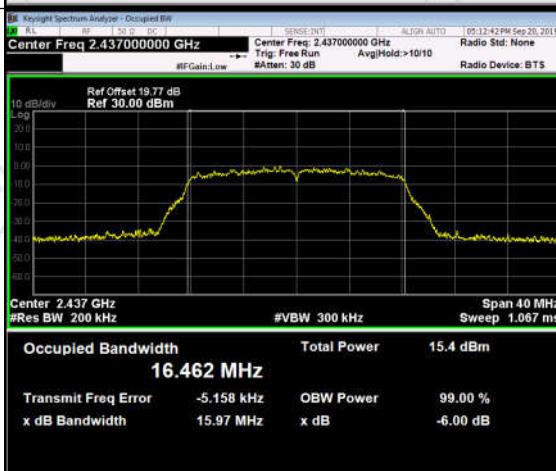
		 <p>11N40SISO/LCH_Ant1</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.422000000 GHz SENSE INTL ALIGN AUTO 12:06:59 PM Sep 20, 2019</p> <p>#IF Gain:Low Center Freq: 2.422000000 GHz Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 19.77 dB Ref 30.00 dBm</p> <p>10 dB/div Log 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100</p> <p>Center 2.422 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms</p> <p>Occupied Bandwidth 35.930 MHz Total Power 13.5 dBm</p> <p>Transmit Freq Error 11.819 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 35.11 MHz x dB -6.00 dB</p> <p>MSG STATUS </p>
		 <p>11N40SISO/LCH_Ant2</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.422000000 GHz SENSE INTL ALIGN AUTO 12:37:31 PM Sep 20, 2019</p> <p>#IF Gain:Low Center Freq: 2.422000000 GHz Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 19.77 dB Ref 30.00 dBm</p> <p>10 dB/div Log 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100</p> <p>Center 2.422 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms</p> <p>Occupied Bandwidth 35.959 MHz Total Power 13.8 dBm</p> <p>Transmit Freq Error 4.737 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 35.11 MHz x dB -6.00 dB</p> <p>MSG STATUS </p>
		 <p>11N40SISO/MCH_Ant1</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.437000000 GHz SENSE INTL ALIGN AUTO 12:08:39 PM Sep 20, 2019</p> <p>#IF Gain:Low Center Freq: 2.437000000 GHz Trig: Free Run Avg/Hold: >10/10 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 19.77 dB Ref 30.00 dBm</p> <p>10 dB/div Log 20 10 0 -10 -20 -30 -40 -50 -60 -70 -80 -90 -100</p> <p>Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms</p> <p>Occupied Bandwidth 35.912 MHz Total Power 13.8 dBm</p> <p>Transmit Freq Error -1.657 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 35.12 MHz x dB -6.00 dB</p> <p>MSG STATUS </p>

		<p>11N40SISO/MCH_Ant2</p>
		<p>11N40SISO/HCH_Ant1</p>
		<p>11N40SISO/HCH_Ant2</p>

Test Graph For 99% Occupied Bandwidth





11G/LCH_Ant1		
11G/LCH_Ant2		
11G/MCH_Ant1		









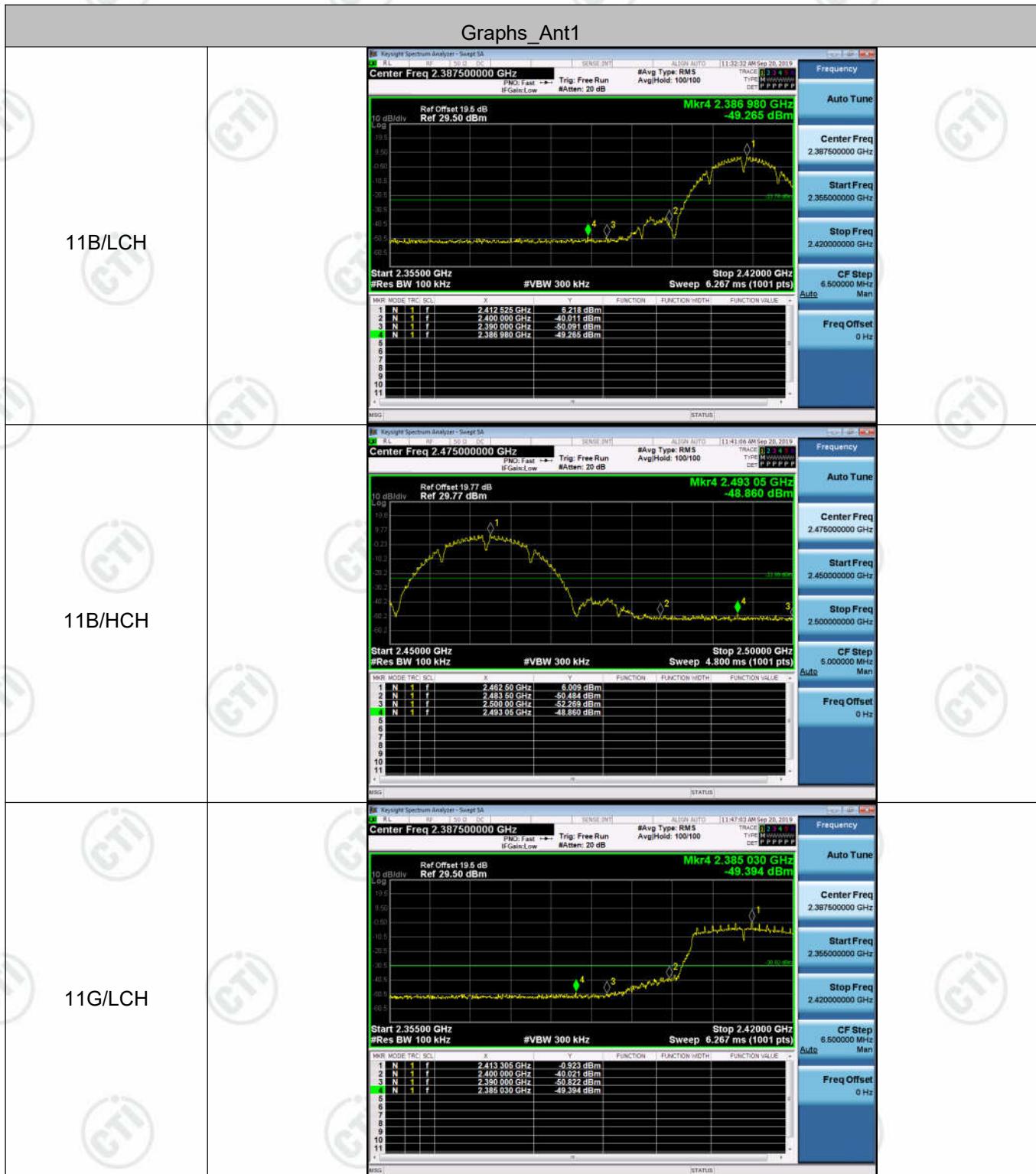


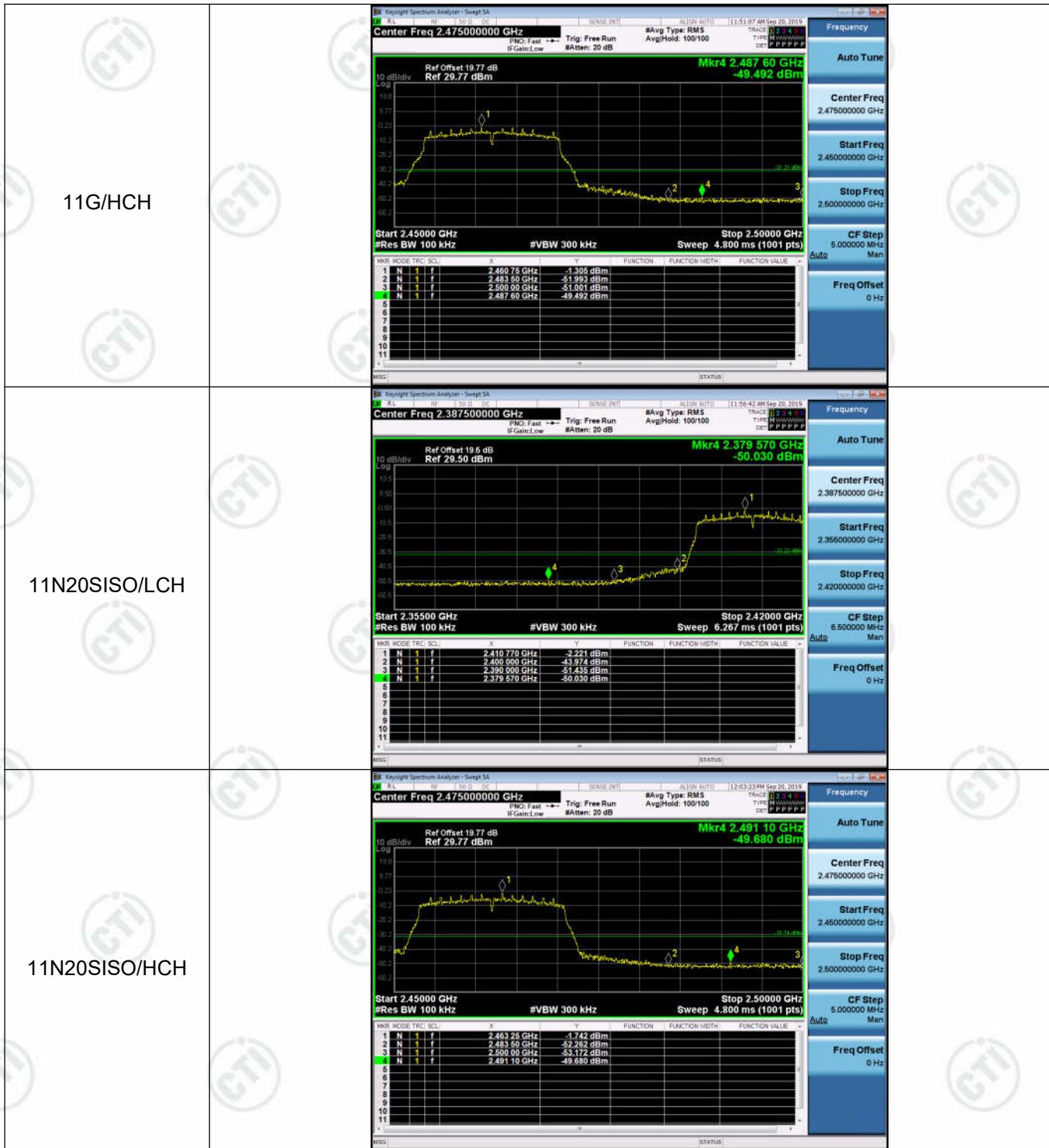
Appendix C): Band-edge for RF Conducted Emissions

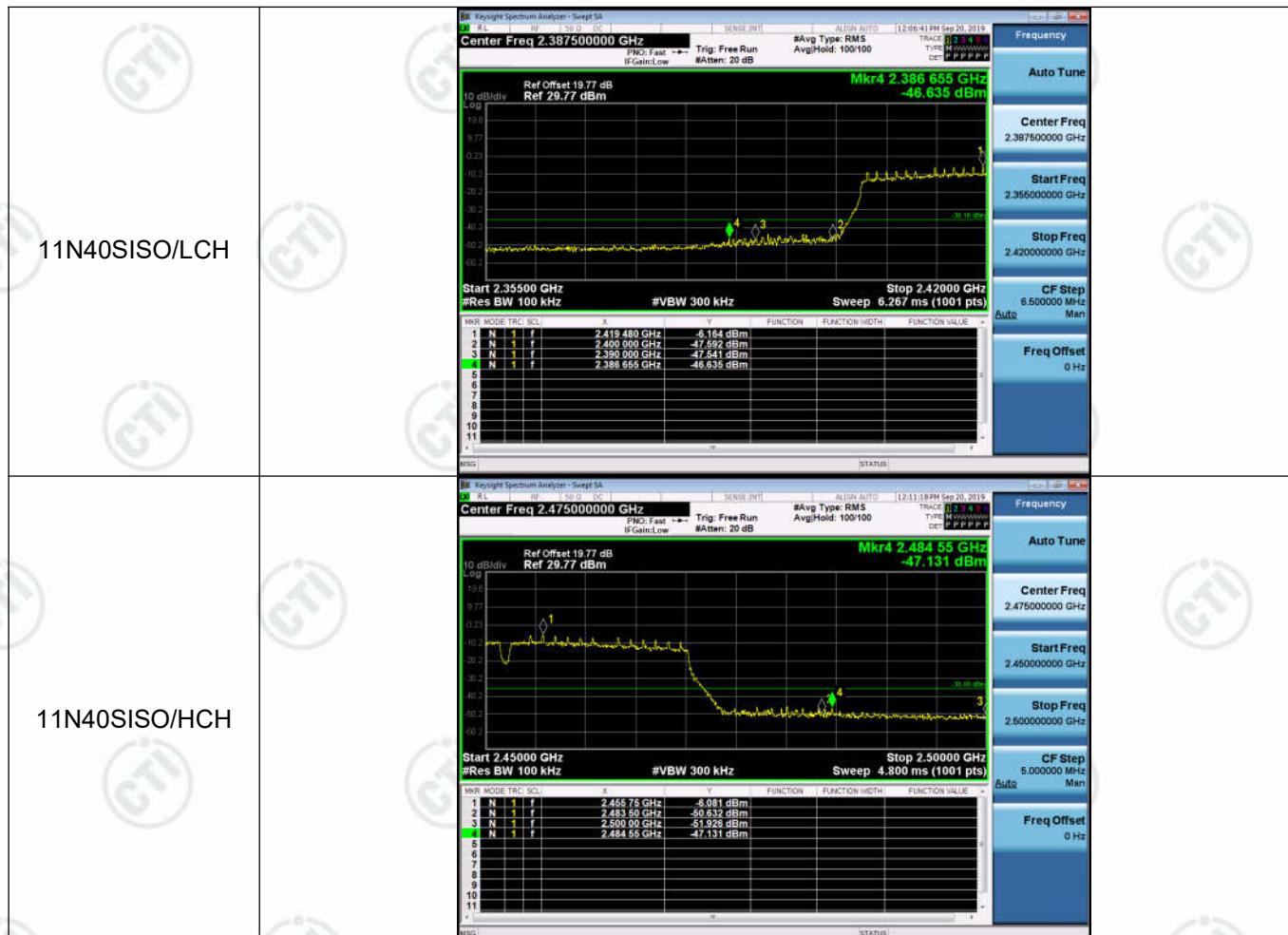
Result Table

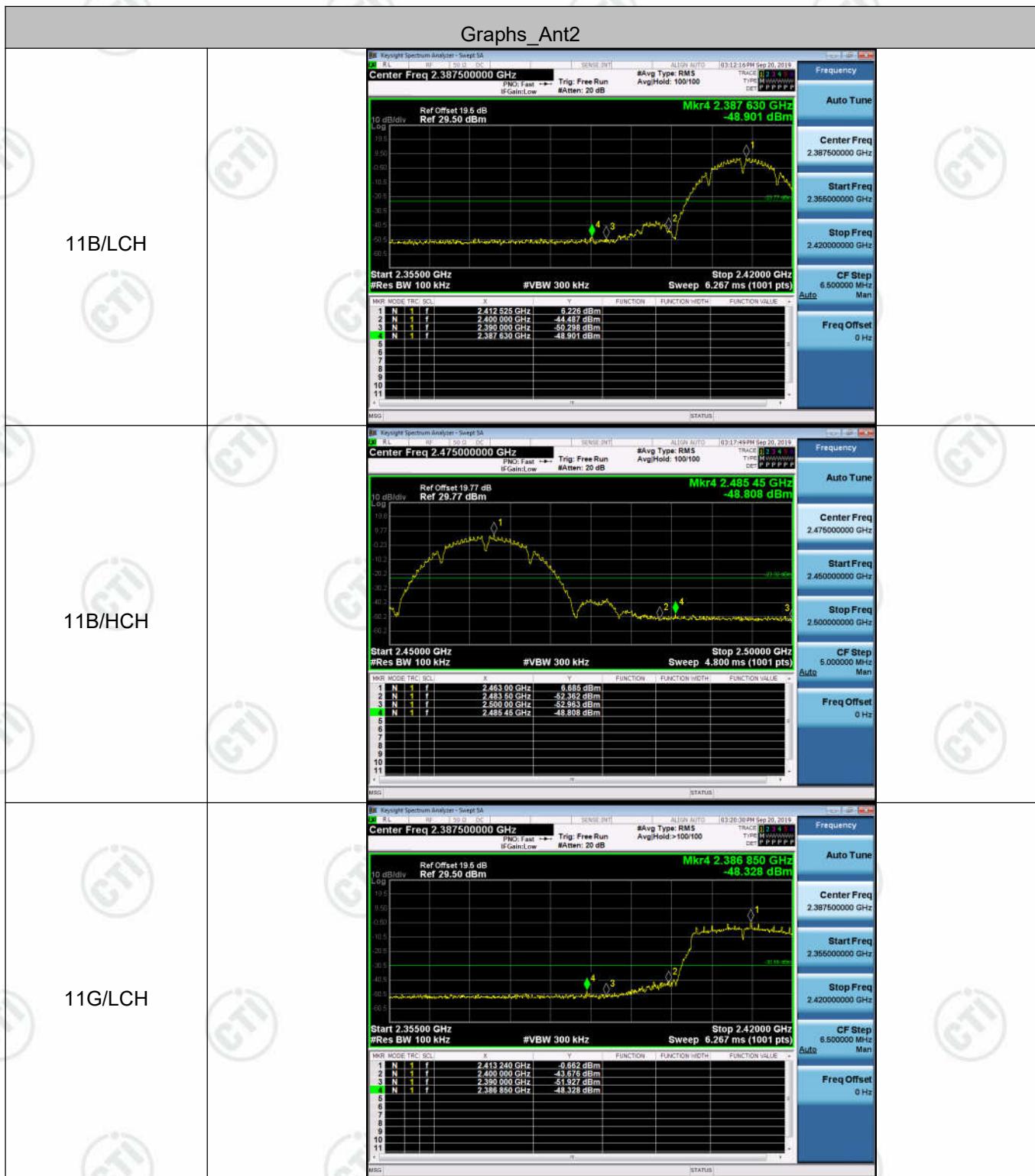
Mode	Antenna	Channel	Carrier Power[dBm]	Max.Spurious Level [dBm]	Limit [dBm]	Verdict
11B	Ant1	LCH	6.218	-49.265	-23.78	PASS
11B	Ant2	LCH	6.226	-48.901	-23.77	PASS
11B	Ant1	HCH	6.009	-48.860	-23.99	PASS
11B	Ant2	HCH	6.685	-48.808	-23.32	PASS
11G	Ant1	LCH	-0.923	-49.394	-30.92	PASS
11G	Ant2	LCH	-0.662	-48.328	-30.66	PASS
11G	Ant1	HCH	-1.305	-49.492	-31.31	PASS
11G	Ant2	HCH	-0.360	-49.883	-30.36	PASS
11N20SISO	Ant1	LCH	-2.221	-50.030	-32.22	PASS
11N20SISO	Ant2	LCH	-1.966	-49.601	-31.97	PASS
11N20SISO	Ant1	HCH	-1.742	-49.680	-31.74	PASS
11N20SISO	Ant2	HCH	-1.829	-49.349	-31.83	PASS
11N40SISO	Ant1	LCH	-6.164	-46.635	-36.16	PASS
11N40SISO	Ant2	LCH	-6.352	-42.953	-36.35	PASS
11N40SISO	Ant1	HCH	-6.081	-47.131	-36.08	PASS
11N40SISO	Ant2	HCH	-6.104	-42.853	-36.1	PASS

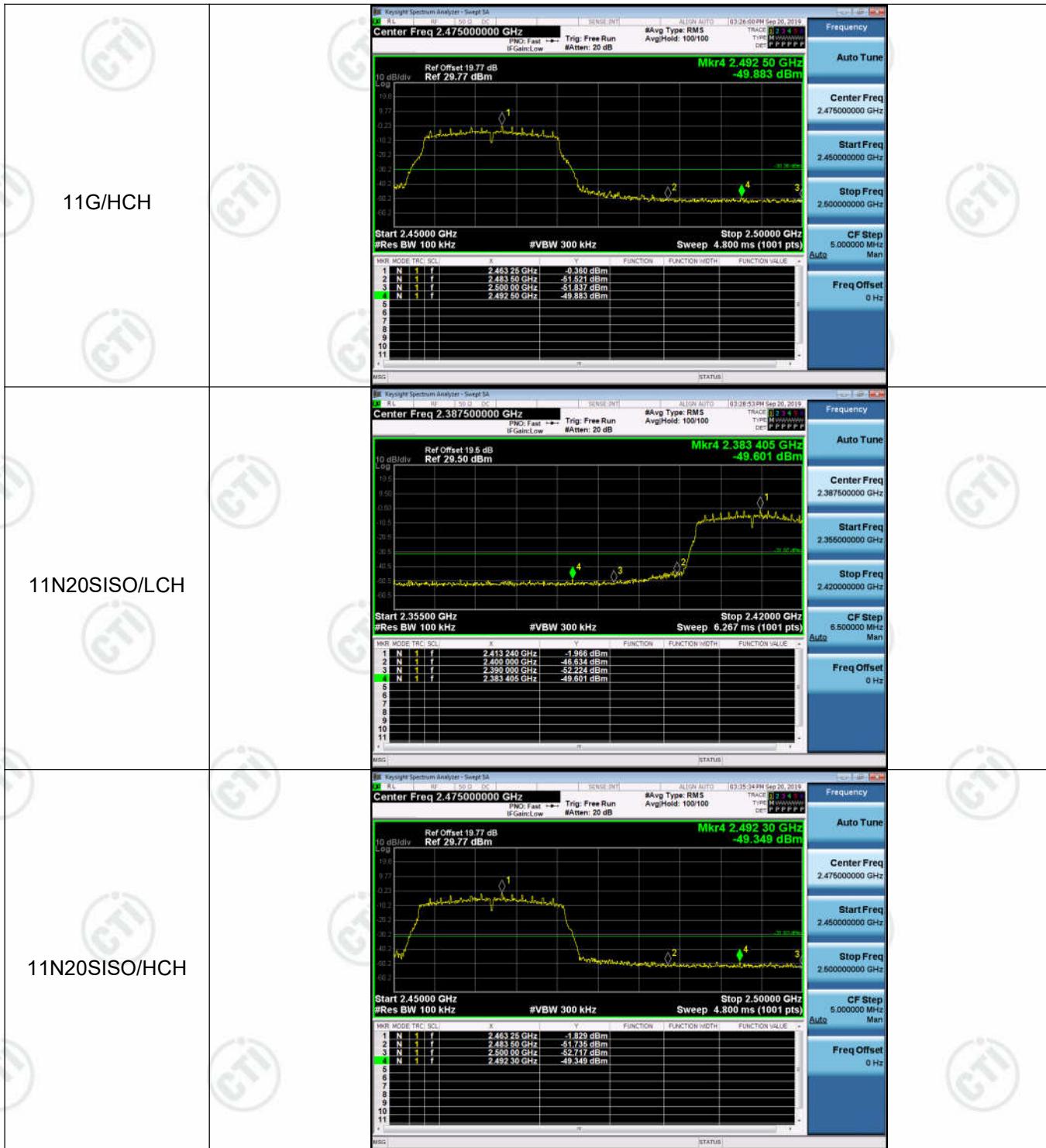
Test Graph













Appendix D): RF Conducted Spurious Emissions

Result Table

Mode	Antenna	Channel	Pref [dBm]	Puw[dBm]	Verdict
11B	Ant1	LCH	6.279	<Limit	PASS
11B	Ant2	LCH	6.198	<Limit	PASS
11B	Ant1	MCH	5.984	<Limit	PASS
11B	Ant2	MCH	6.133	<Limit	PASS
11B	Ant1	HCH	6.135	<Limit	PASS
11B	Ant2	HCH	6.311	<Limit	PASS
11G	Ant1	LCH	-1.052	<Limit	PASS
11G	Ant2	LCH	-0.625	<Limit	PASS
11G	Ant1	MCH	-1.512	<Limit	PASS
11G	Ant2	MCH	-0.759	<Limit	PASS
11G	Ant1	HCH	-1.299	<Limit	PASS
11G	Ant2	HCH	-1.194	<Limit	PASS
11N20SISO	Ant1	LCH	-1.703	<Limit	PASS
11N20SISO	Ant2	LCH	-2.527	<Limit	PASS
11N20SISO	Ant1	MCH	-2.087	<Limit	PASS
11N20SISO	Ant2	MCH	-2.408	<Limit	PASS
11N20SISO	Ant1	HCH	-1.738	<Limit	PASS
11N20SISO	Ant2	HCH	-1.582	<Limit	PASS
11N40SISO	Ant1	LCH	-6.069	<Limit	PASS
11N40SISO	Ant2	LCH	-6.053	<Limit	PASS
11N40SISO	Ant1	MCH	-5.915	<Limit	PASS
11N40SISO	Ant2	MCH	-5.868	<Limit	PASS
11N40SISO	Ant1	HCH	-5.931	<Limit	PASS
11N40SISO	Ant2	HCH	-5.98	<Limit	PASS

Test Graph

