

TEST REPORT

Product : WIFI+BT Module
Trade mark : GSD
Model/Type reference : WCT1BR2201D, WCT1BR2701T
Serial Number : N/A
Report Number : EED32K00249903
FCC ID : 2AC23-WCT1B
Date of Issue : Nov. 16, 2018
Test Standards : 47 CFR Part 15Subpart C
Test result : PASS

Prepared for:

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Nov. 16, 2018

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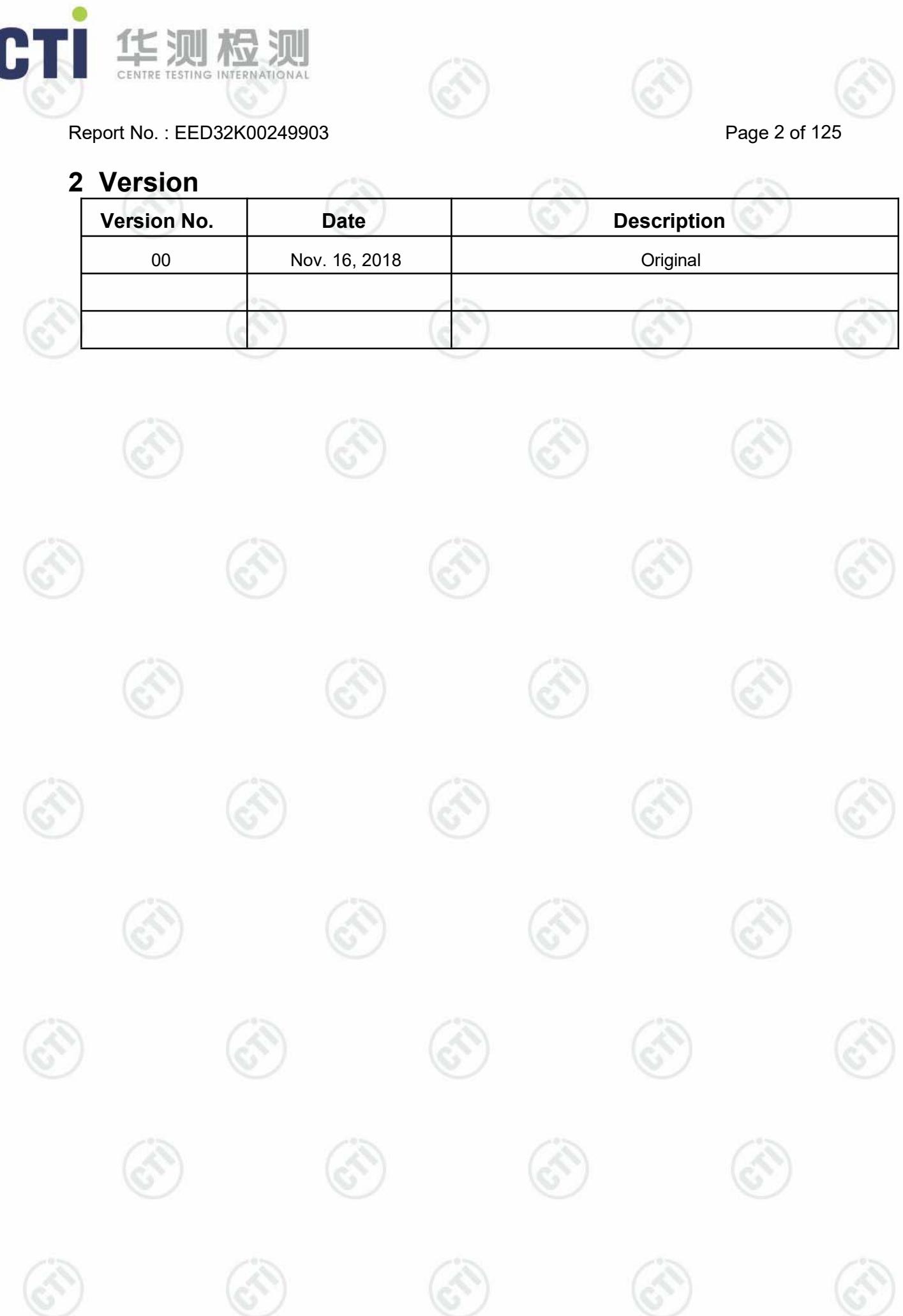
Approved by:

Kevin yang

Check No.:3096372854

2 Version

Version No.	Date	Description
00	Nov. 16, 2018	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.

Model No.: WCT1BR2201D, WCT1BR2701T

Only the model WCT1BR2701T was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being of the antenna connection.

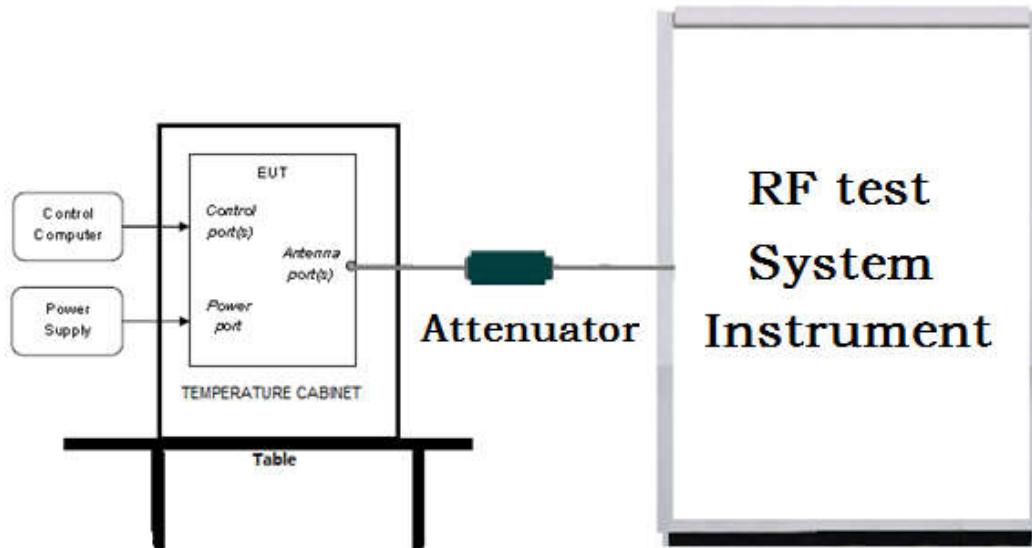
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5 Test Requirement

5.1 Test setup

5.1.1 For Conducted test setup



5.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

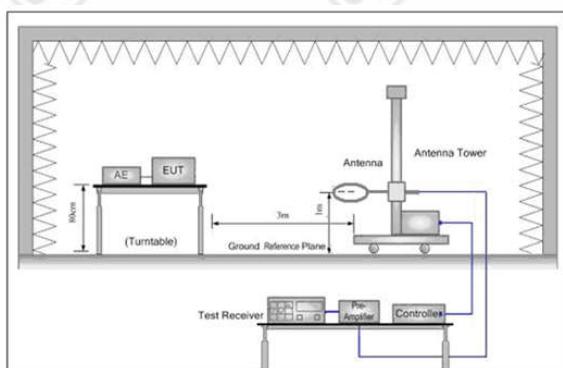


Figure 1. Below 30MHz

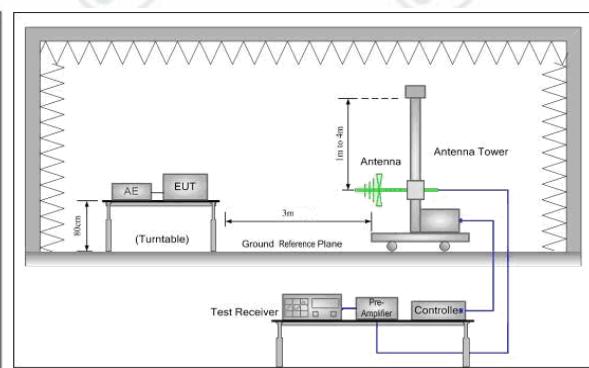


Figure 2. 30MHz to 1GHz

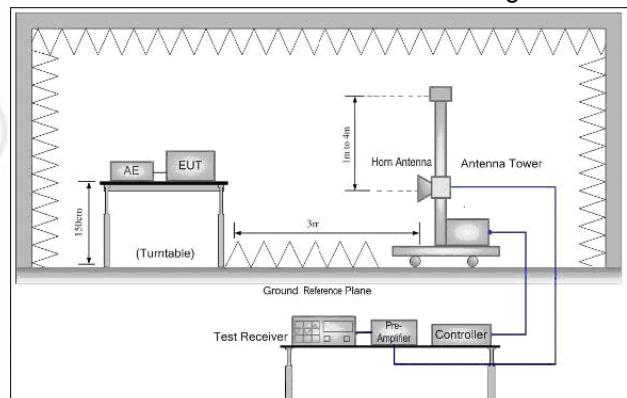
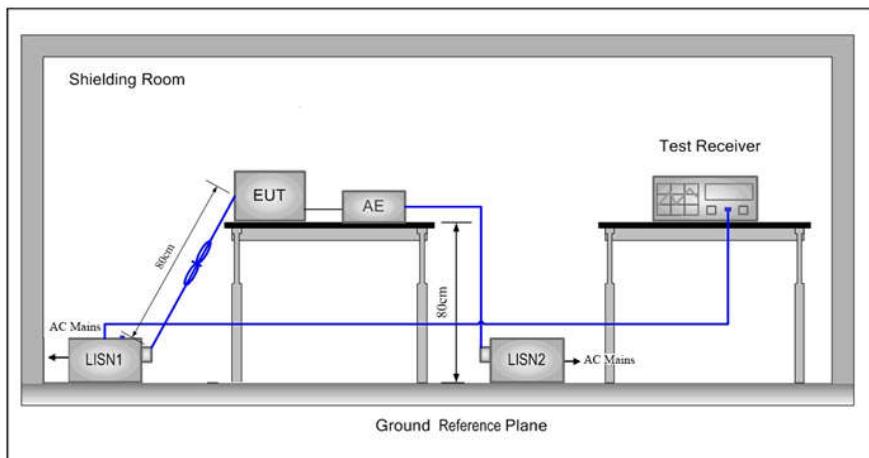


Figure 3. Above 1GHz

5.1.3 For Conducted Emissions test setup

Conducted Emissions setup



5.2 Test Environment

Operating Environment:

Temperature:	24°C
Humidity:	56 % 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:		The EUT transmitted the continuous signal at the specific channel(s).		

Test mode:

Pre-scan under all rate at lowest channel 1 for Ant1

Mode	802.11b								
Data Rate	1Mbps	2Mbps	5.5Mbps	11Mbps					
Power(dBm)	15.85	16.07	16.41	16.72					
Mode	802.11g								
Data Rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps	
Power(dBm)	15.22	15.02	14.87	14.72	14.63	14.61	14.55	14.41	
Mode	802.11n (HT20)								
Data Rate	6.5Mbps	13Mbps	19.5Mbps	26Mbps	39Mbps	52Mbps	58.5Mbps	65Mbps	
Power(dBm)	13.31	13.01	12.95	12.84	12.73	12.61	12.52	12.41	
Mode	802.11n (HT40)								
Data Rate	13.5Mbps	27Mbps	40.5Mbps	54Mbps	81Mbps	108Mbps	121.5Mbps	135Mbps	
Power(dBm)	12.47	12.21	12.01	11.87	11.66	11.54	11.43	11.37	

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:	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):	WCT1BR2201D, WCT1BR2701T
Add Model No.:	WCT1BR2701T
Trade Mark:	GSD
EUT Supports Radios application:	BT 4.2 Dual mode, 2402-2480MHz 2.4G WiFi, 802.11b/g/n(20MHz)/n(40MHz) ,2412-2462MHz 5G WiFi, 802.11a/n(HT20)/n(HT40)/ac(HT20)/ac(HT40)/ac(HT80) 5G WiFi, 5150-5250MHz; 5725-5850MHz
Power Supply:	DC 3.3V
Sample Received Date:	Sep. 12, 2018
Sample tested Date:	Sep. 12, 2018 to Nov. 14, 2018

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)
Firmware version of the sample:	V1.0(manufacturer declare)
Hardware version of the sample:	V1.0(manufacturer declare)
Sample Type:	mobile production
Test Power Grade:	N/A
Test Software of EUT:	Realtek 11ac 8822B USB WLAN MP Diagnostic Program 0.0005.01.20180205(manufacturer declare)
Antenna Type:	PIFA Antenna
Antenna gain:	2.72dBi
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	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	Laptop	HP	430 G3	CTI	FCC
AE2	Mouse	L.Selectron	OP-308	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 8NM12-0398-0 02	---	01-10-2018	01-09-2019
High-pass filter	MICRO-TRO NICS	SPA-F-63029-4	---	01-10-2018	01-09-2019
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

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	05-25-2018	05-24-2019
Temperature/ Humidity Indicator	Defu	TH128	/	07-02-2018	07-01-2019
Communication test set	Agilent	E5515C	GB47050 534	03-16-2018	03-15-2019
Communication test set	R&S	CMW500	152394	03-16-2018	03-15-2019
LISN	R&S	ENV216	100098	05-10-2018	05-10-2019
LISN	schwarzbeck	NNLK8121	8121-529	05-10-2018	05-10-2019
Voltage Probe	R&S	ESH2-Z3 0299.7810.5 6	100042	06-13-2017	06-11-2020
Current Probe	R&S	EZ-17 816.2063.03	100106	05-30-2018	05-29-2019
ISN	TESEQ	ISN T800	30297	02-06-2018	02-05-2019
Barometer	changchun	DYM3	1188	07-02-2018	07-01-2019

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	04-26-2018	04-25-2019
TRILOG Broadband Antenna	Schwarzbeck	VULB9163	9163-618	07-30-2018	07-29-2019
Microwave Preamplifier	Agilent	8449B	3008A024 25	08-21-2018	08-20-2019
Microwave Preamplifier	Tonscend	EMC051845 SE	980380	01-19-2018	01-18-2019
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-18 69	04-25-2018	04-23-2021
Loop Antenna	ETS	6502	00071730	06-22-2017	06-21-2019
Spectrum Analyzer	R&S	FSP40	100416	05-11-2018	05-10-2019
Receiver	R&S	ESCI	100435	05-25-2018	05-24-2019
Multi device Controller	maturo	NCD/070/107 11112	---	01-10-2018	01-09-2019
LISN	schwarzbeck	NNBM8125	81251547	05-11-2018	05-10-2019
LISN	schwarzbeck	NNBM8125	81251548	05-11-2018	05-10-2019
Signal Generator	Agilent	E4438C	MY45095 744	03-13-2018	03-12-2019
Signal Generator	Keysight	E8257D	MY53401 106	03-13-2018	03-12-2019
Temperature/ Humidity Indicator	TAYLOR	1451	1905	05-02-2018	05-01-2019
Communication test set	Agilent	E5515C	GB47050 534	03-16-2018	03-15-2019
Cable line	Fulai(7M)	SF106	5219/6A	01-10-2018	01-09-2019
Cable line	Fulai(6M)	SF106	5220/6A	01-10-2018	01-09-2019
Cable line	Fulai(3M)	SF106	5216/6A	01-10-2018	01-09-2019
Cable line	Fulai(3M)	SF106	5217/6A	01-10-2018	01-09-2019
Communication test set	R&S	CMW500	104466	02-05-2018	02-04-2019
High-pass filter	Sinoscite	FL3CX03WG 18NM12-039 8-002	---	01-10-2018	01-09-2019
High-pass filter	MICRO- TRONICS	SPA-F-63029 -4	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX01CA0 9CL12-0395- 001	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX01CA0 8CL12-0393- 001	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX02CA0 4CL12-0396- 002	---	01-10-2018	01-09-2019
band rejection filter	Sinoscite	FL5CX02CA0 3CL12-0394- 001	---	01-10-2018	01-09-2019

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

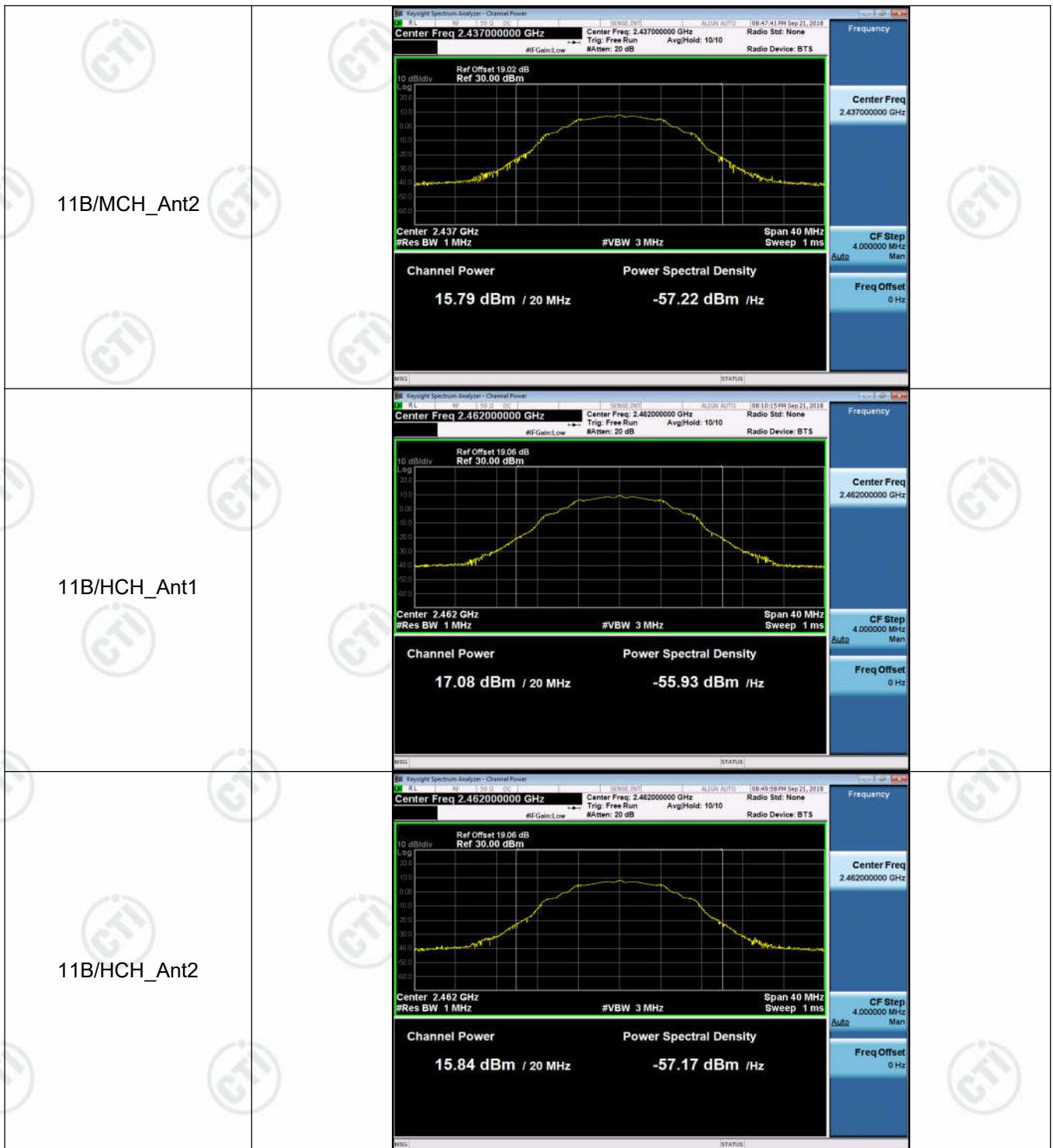
Mode	Antenna	Channel	Conducted Peak Output Power [dBm]	Verdict
11B	Ant1	LCH	16.72	PASS
11B	Ant2	LCH	15.44	PASS
11B	Ant1	MCH	16.87	PASS
11B	Ant2	MCH	15.79	PASS
11B	Ant1	HCH	17.08	PASS
11B	Ant2	HCH	15.84	PASS
11G	Ant1	LCH	15.22	PASS
11G	Ant2	LCH	13.71	PASS
11G	Ant1	MCH	15.3	PASS
11G	Ant2	MCH	13.62	PASS
11G	Ant1	HCH	15.48	PASS
11G	Ant2	HCH	13.92	PASS
11N20SISO	Ant1	LCH	13.31	PASS
11N20SISO	Ant2	LCH	11.73	PASS
11N20SISO	Ant1	MCH	13.2	PASS
11N20SISO	Ant2	MCH	11.99	PASS
11N20SISO	Ant1	HCH	13.94	PASS
11N20SISO	Ant2	HCH	12.17	PASS
11N20MIMO	Ant1	LCH	11.05	PASS
11N20MIMO	Ant2	LCH	10.36	PASS
11N20MIMO	Ant1+2	LCH	13.73	PASS
11N20MIMO	Ant1	MCH	10.98	PASS
11N20MIMO	Ant2	MCH	10.38	PASS
11N20MIMO	Ant1+2	MCH	13.70	PASS
11N20MIMO	Ant1	HCH	11.5	PASS
11N20MIMO	Ant2	HCH	10.46	PASS
11N20MIMO	Ant1+2	HCH	14.02	PASS
11N40SISO	Ant1	LCH	12.47	PASS
11N40SISO	Ant2	LCH	11.11	PASS
11N40SISO	Ant1	MCH	12.46	PASS
11N40SISO	Ant2	MCH	11.44	PASS
11N40SISO	Ant1	HCH	13	PASS

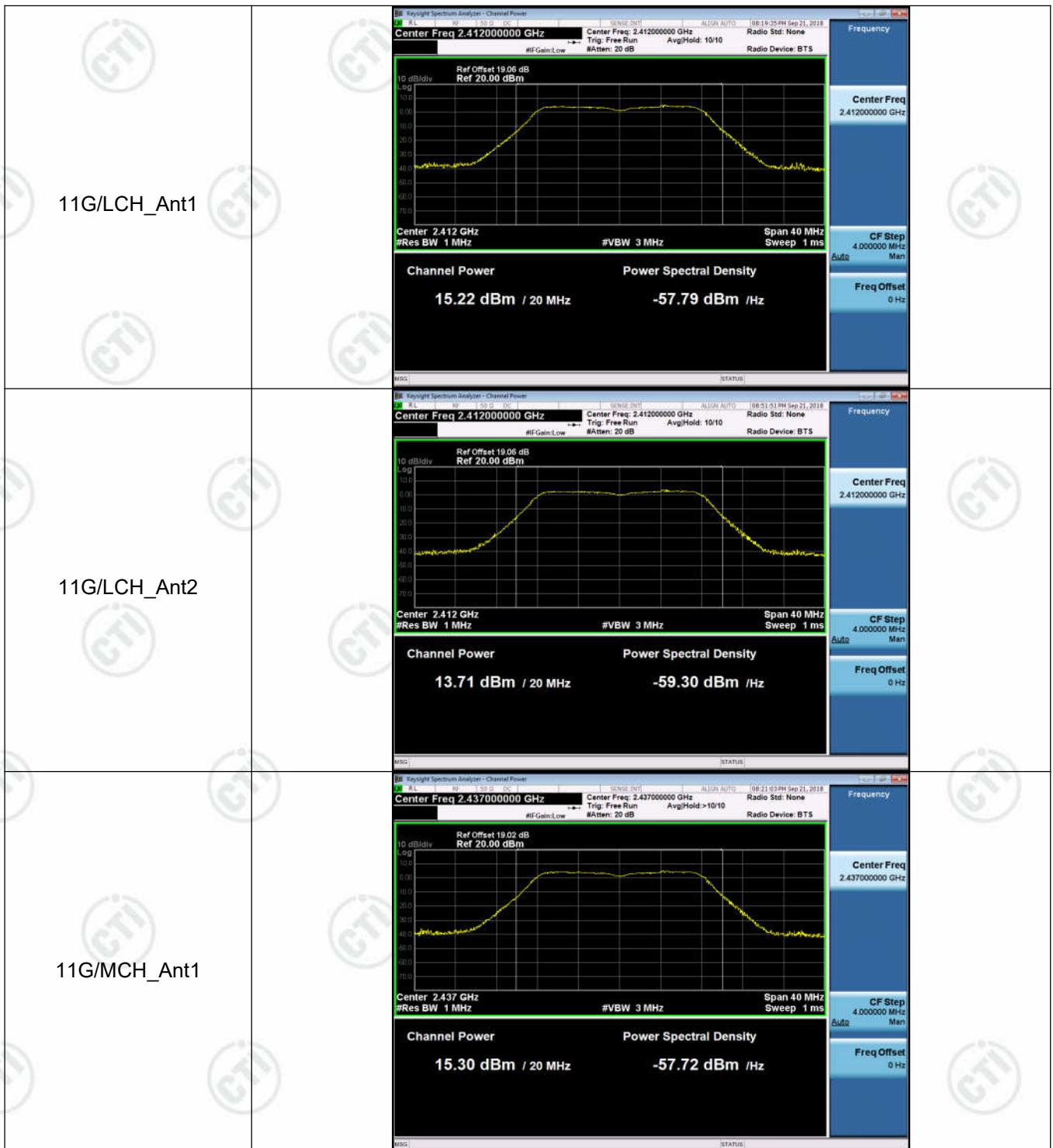
11N40SISO	Ant2	HCH	11.6	PASS
11N40MIMO	Ant1	LCH	10.55	PASS
11N40MIMO	Ant2	LCH	10.38	PASS
11N40MIMO	Ant1+2	LCH	13.48	PASS
11N40MIMO	Ant1	MCH	10.56	PASS
11N40MIMO	Ant2	MCH	10.21	PASS
11N40MIMO	Ant1+2	MCH	13.40	PASS
11N40MIMO	Ant1	HCH	10.03	PASS
11N40MIMO	Ant2	HCH	10.08	PASS
11N40MIMO	Ant1+2	HCH	13.07	PASS



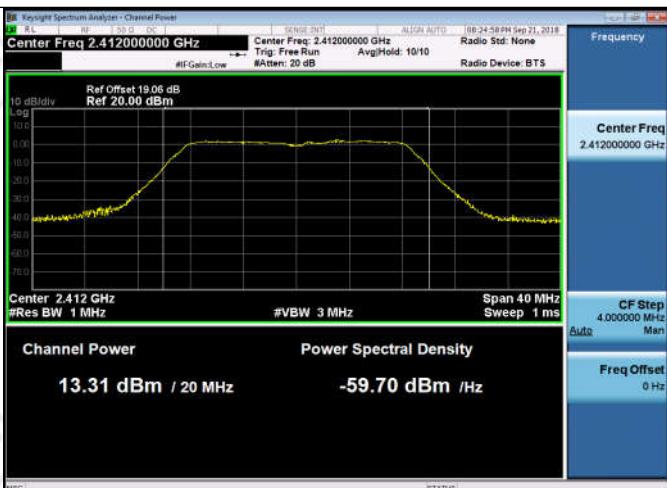
Test Graph

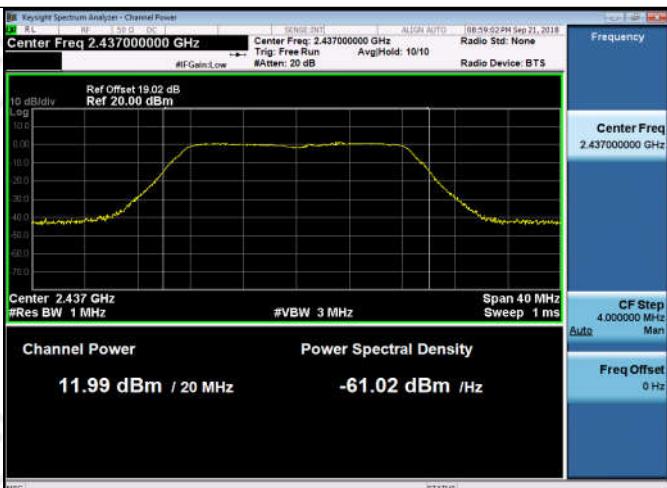
Graphs	
11B/LCH_Ant1	<p>Key parameters for 11B/LCH_Ant1:</p> <ul style="list-style-type: none"> Center Freq: 2.412000000 GHz Channel Power: 16.72 dBm / 20 MHz Power Spectral Density: -56.29 dBm / Hz
11B/LCH_Ant2	<p>Key parameters for 11B/LCH_Ant2:</p> <ul style="list-style-type: none"> Center Freq: 2.412000000 GHz Channel Power: 15.44 dBm / 20 MHz Power Spectral Density: -57.57 dBm / Hz
11B/MCH_Ant1	<p>Key parameters for 11B/MCH_Ant1:</p> <ul style="list-style-type: none"> Center Freq: 2.437000000 GHz Channel Power: 16.87 dBm / 20 MHz Power Spectral Density: -56.15 dBm / Hz

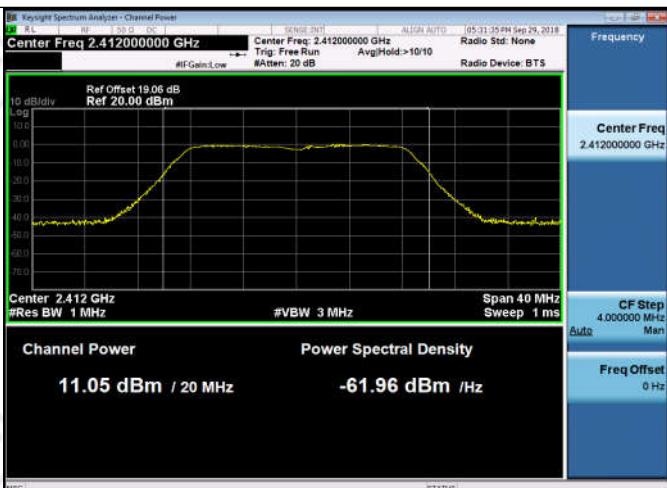


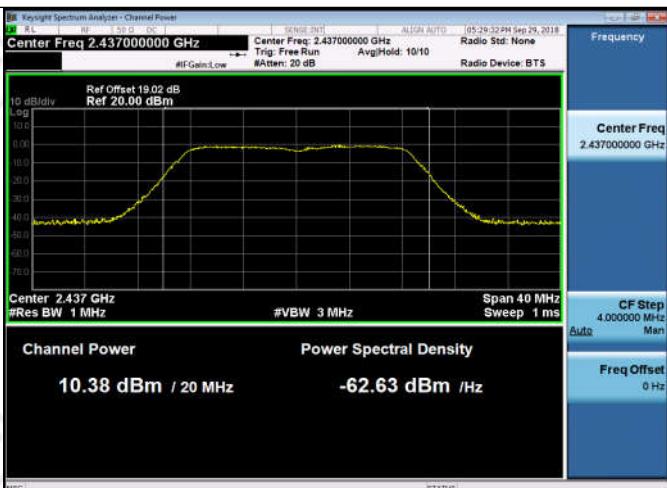


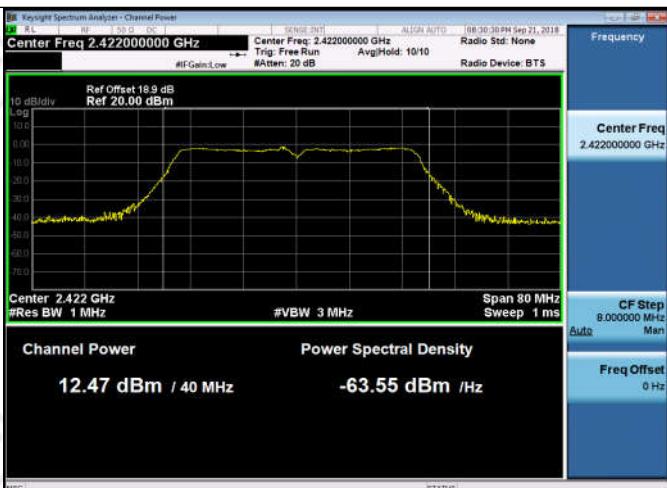


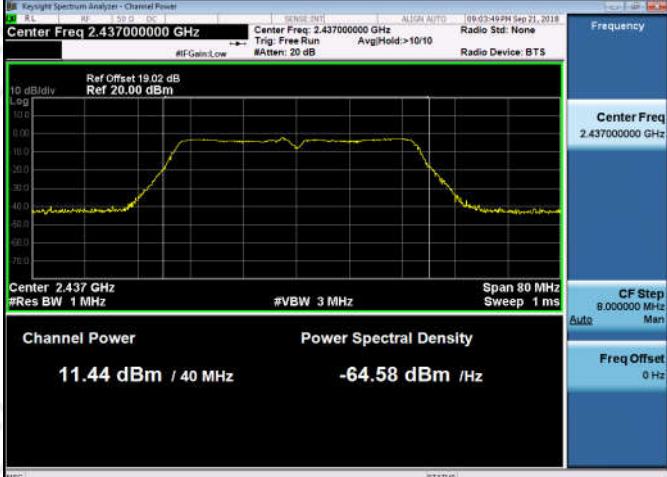
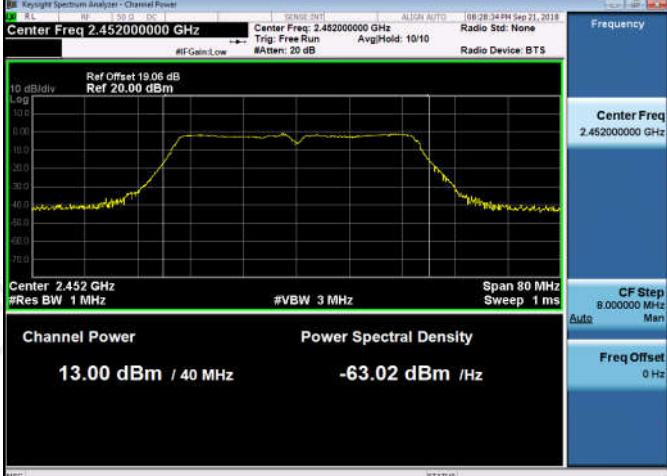
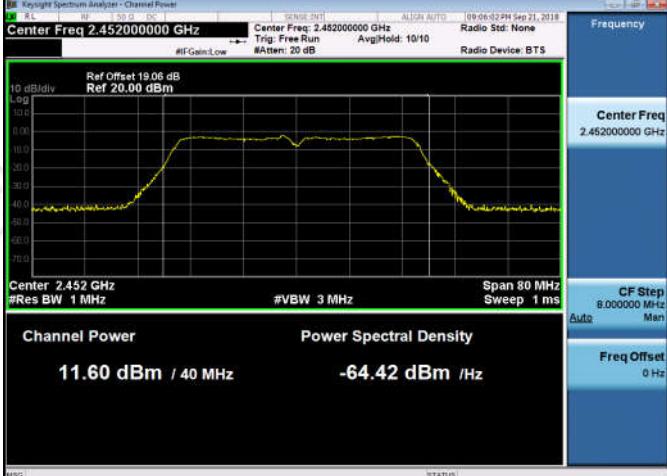
11N20SISO/LCH_Ant1	
11N20SISO/LCH_Ant2	
11N20SISO/MCH_Ant1	

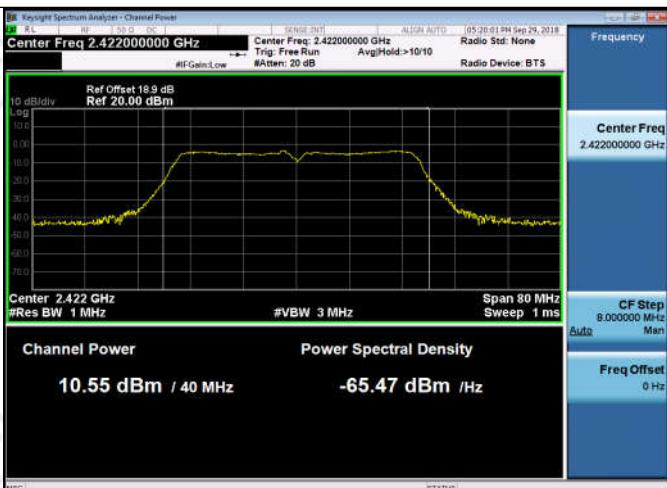
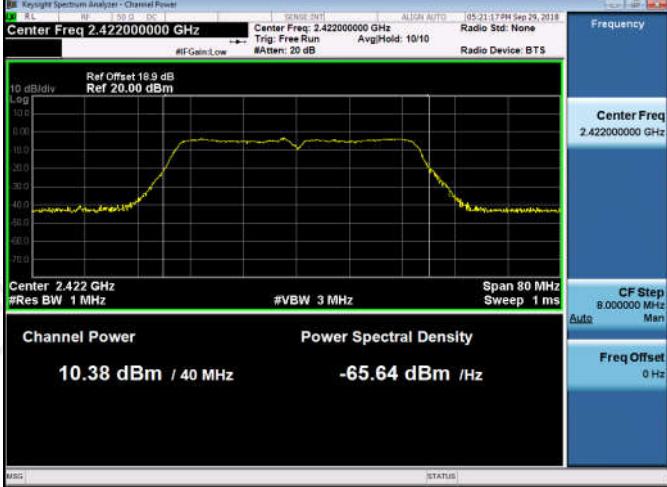
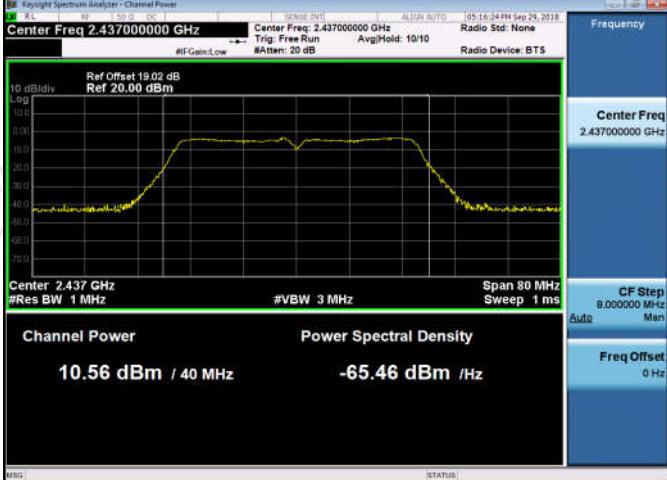
11N20SISO/MCH_Ant2	
11N20SISO/HCH_Ant1	
11N20SISO/HCH_Ant2	

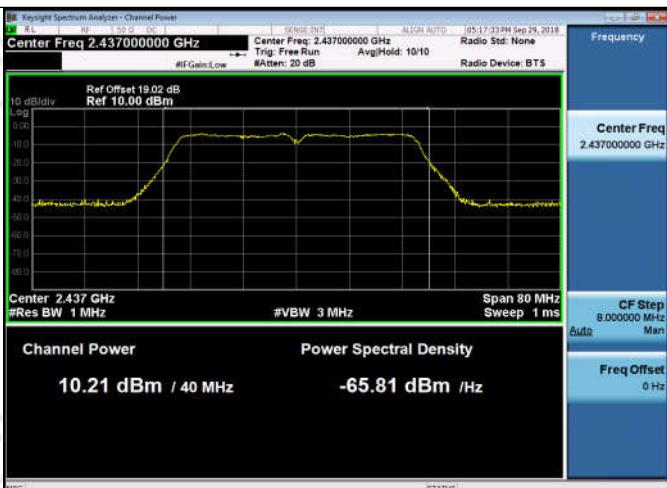
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11N20MIMO/MCH_Ant1	

11N20MIMO/MCH_Ant2	
11N20MIMO/HCH_Ant1	
11N20MIMO/HCH_Ant2	

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

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

11N40MIMO/LCH_Ant1	
11N40MIMO/LCH_Ant2	
11N40MIMO/MCH_Ant1	

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

Appendix B): 6dB Occupied Bandwidth

Result Table

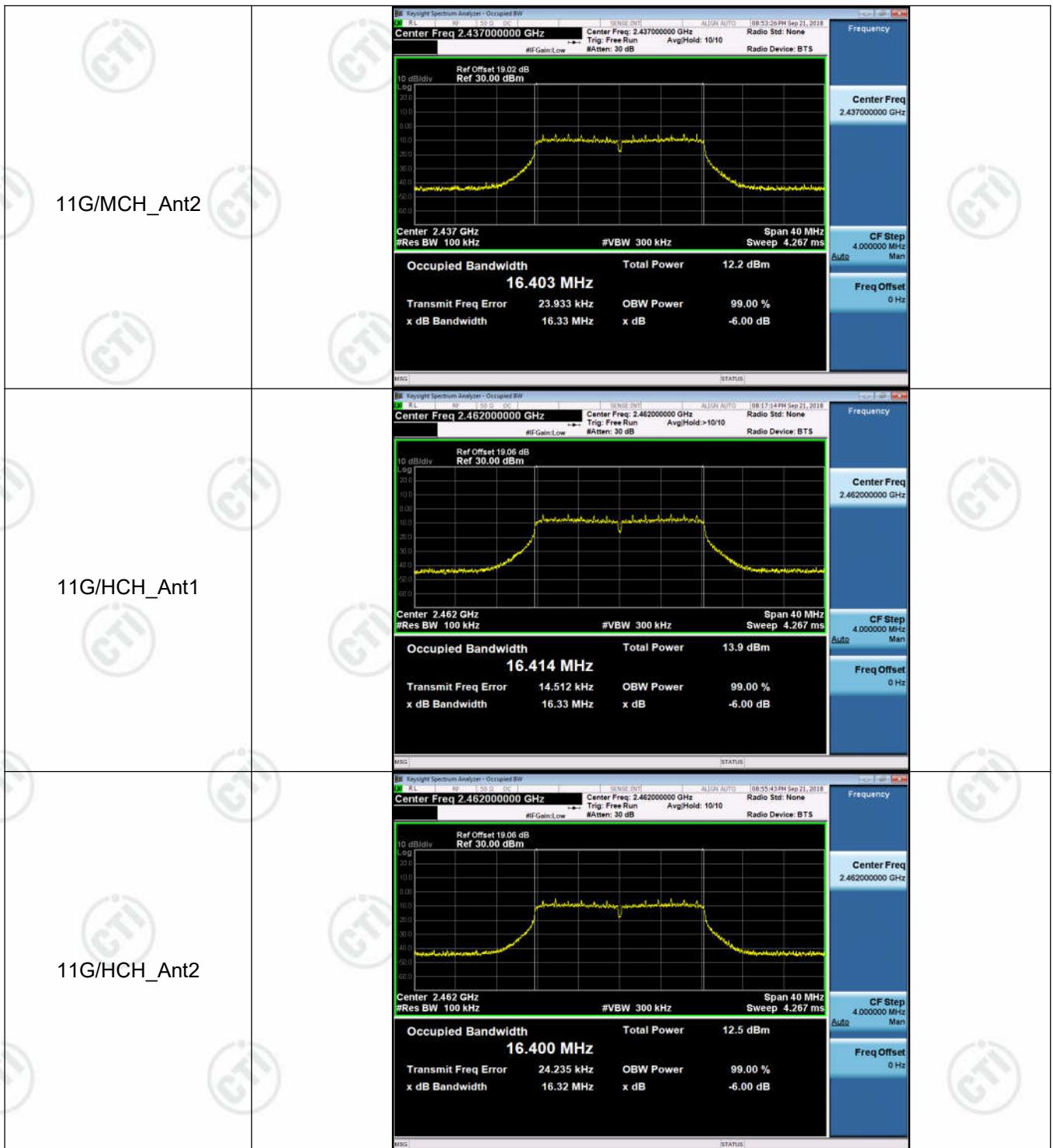
Mode	Antenna	Channel	6dB Bandwidth [MHz]	99% OBW [MHz]	Verdict	Remark
11B	Ant1	LCH	8.586	13.515	PASS	Peak detector
11B	Ant2	LCH	9.074	13.506	PASS	
11B	Ant1	MCH	9.018	13.505	PASS	
11B	Ant2	MCH	9.064	13.495	PASS	
11B	Ant1	HCH	9.064	13.523	PASS	
11B	Ant2	HCH	9.082	13.569	PASS	
11G	Ant1	LCH	16.33	16.421	PASS	
11G	Ant2	LCH	16.31	16.400	PASS	
11G	Ant1	MCH	16.33	16.427	PASS	
11G	Ant2	MCH	16.33	16.403	PASS	
11G	Ant1	HCH	16.33	16.414	PASS	
11G	Ant2	HCH	16.32	16.400	PASS	
11N20SISO	Ant1	LCH	17.38	17.575	PASS	
11N20SISO	Ant2	LCH	17.01	17.564	PASS	
11N20SISO	Ant1	MCH	17.14	17.584	PASS	
11N20SISO	Ant2	MCH	16.93	17.565	PASS	
11N20SISO	Ant1	HCH	17.14	17.570	PASS	
11N20SISO	Ant2	HCH	17.06	17.571	PASS	
11N20MIMO	Ant1	LCH	16.89	17.555	PASS	
11N20MIMO	Ant2	LCH	16.69	17.550	PASS	
11N20MIMO	Ant1	MCH	16.92	17.554	PASS	
11N20MIMO	Ant2	MCH	16.17	17.532	PASS	
11N20MIMO	Ant1	HCH	16.87	17.546	PASS	
11N20MIMO	Ant2	HCH	16.87	17.530	PASS	
11N40SISO	Ant1	LCH	36.07	36.237	PASS	Peak detector
11N40SISO	Ant2	LCH	36.06	36.231	PASS	
11N40SISO	Ant1	MCH	35.84	36.247	PASS	
11N40SISO	Ant2	MCH	36.07	36.217	PASS	
11N40SISO	Ant1	HCH	36.04	36.216	PASS	
11N40SISO	Ant2	HCH	36.05	36.215	PASS	
11N40MIMO	Ant1	LCH	36.29	36.246	PASS	
11N40MIMO	Ant2	LCH	35.64	36.209	PASS	
11N40MIMO	Ant1	MCH	35.80	36.239	PASS	

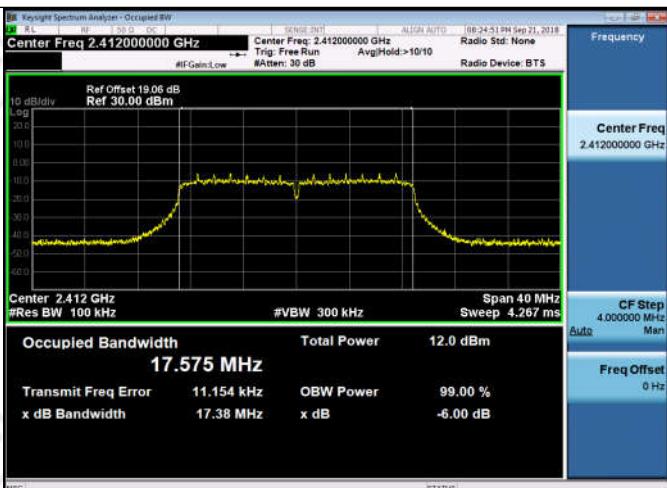
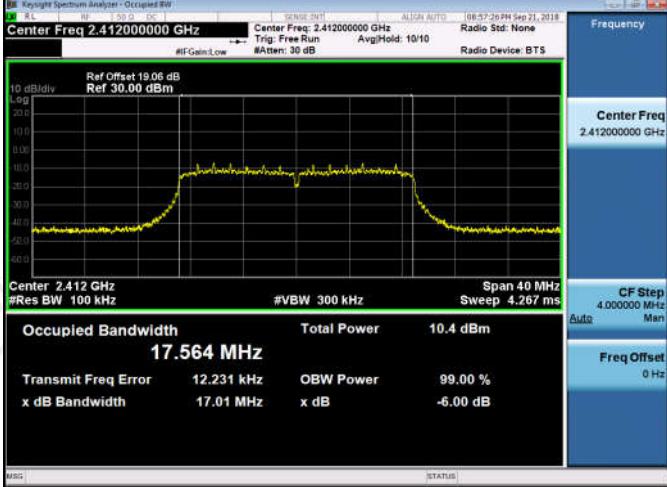
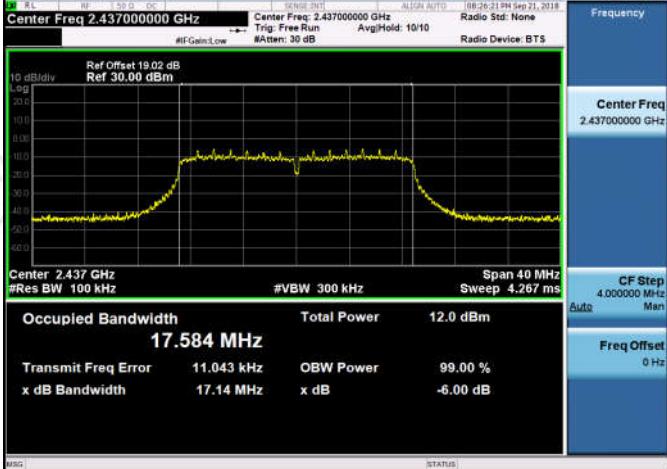
11N40MIMO	Ant2	MCH	35.79	36.206	PASS	
11N40MIMO	Ant1	HCH	35.75	36.243	PASS	
11N40MIMO	Ant2	HCH	36.04	36.214	PASS	

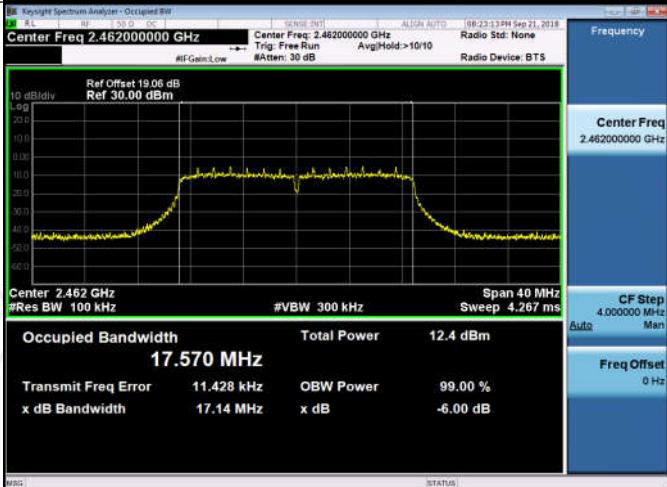
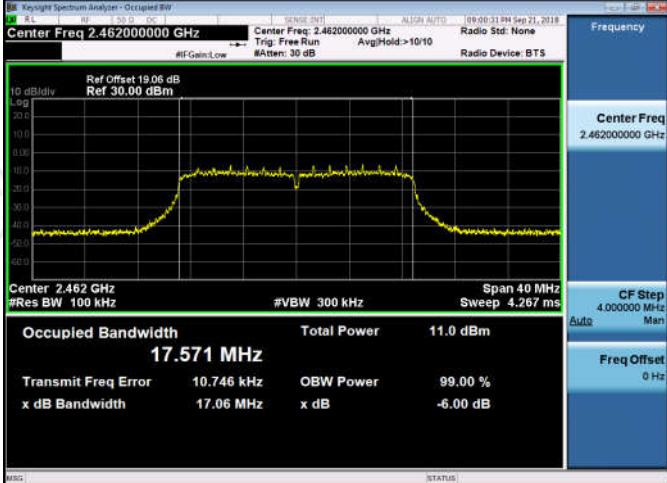
Test Graph

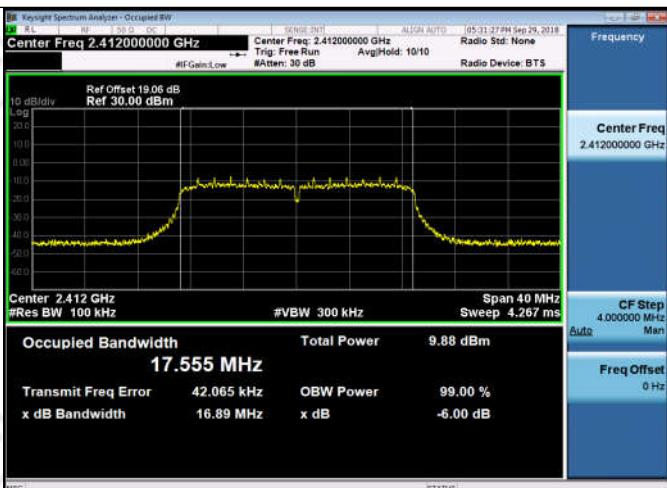
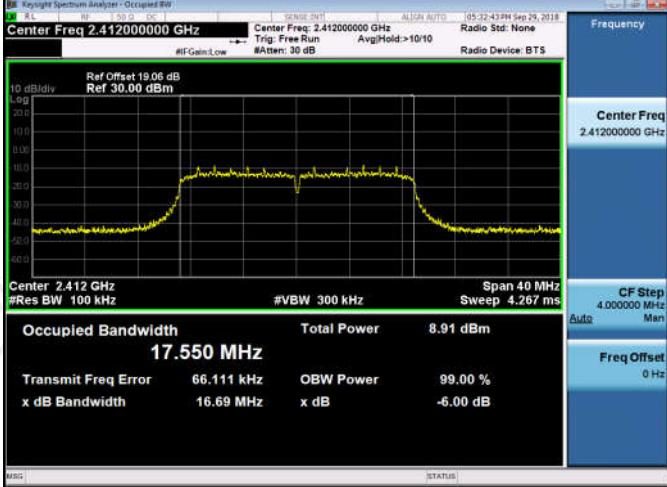
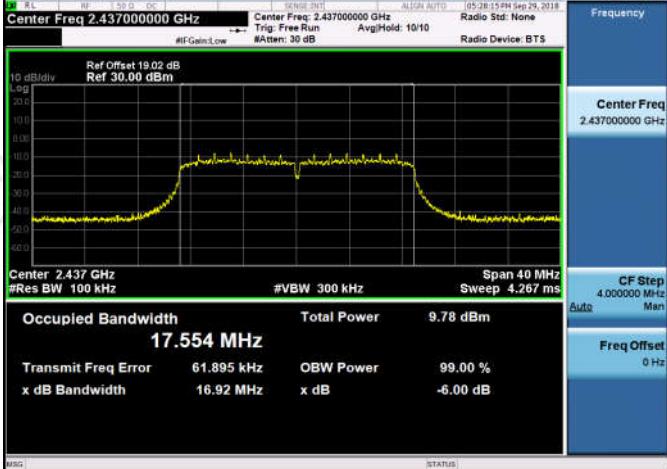
		<p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.437000000 GHz</p> <p>Ref Offset 19.02 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth 13.495 MHz</p> <p>Total Power 19.7 dBm</p> <p>Transmit Freq Error 68.008 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 9.064 MHz x dB -6.00 dB</p>
11B/HCH_Ant1		<p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.462000000 GHz</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth 13.523 MHz</p> <p>Total Power 20.9 dBm</p> <p>Transmit Freq Error 20.450 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 9.064 MHz x dB -6.00 dB</p>
11B/HCH_Ant2		<p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.462000000 GHz</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth 13.569 MHz</p> <p>Total Power 19.6 dBm</p> <p>Transmit Freq Error 36.832 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 9.082 MHz x dB -6.00 dB</p>

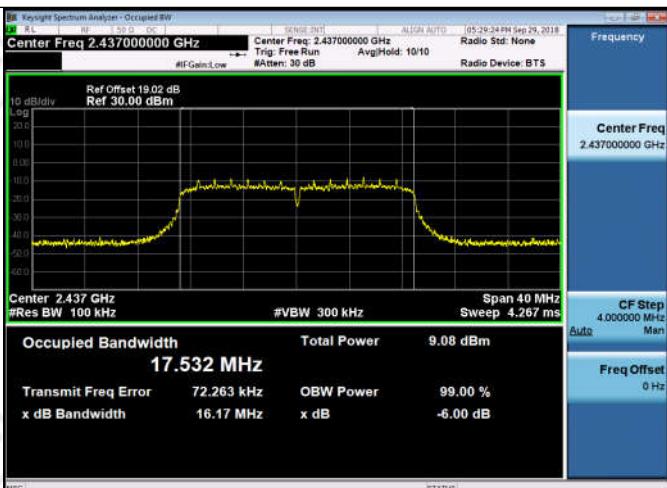
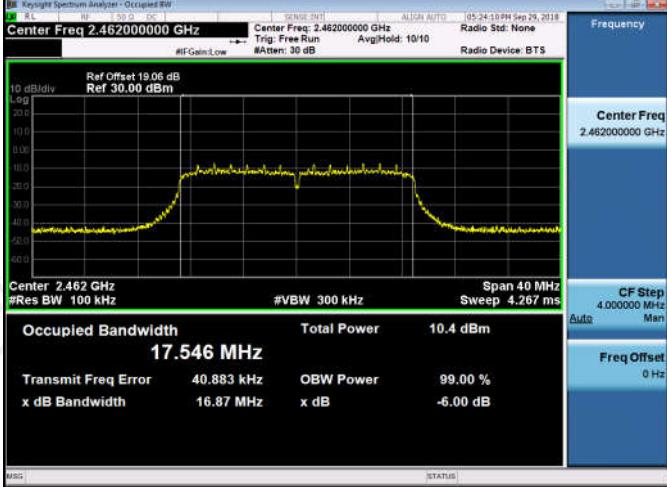
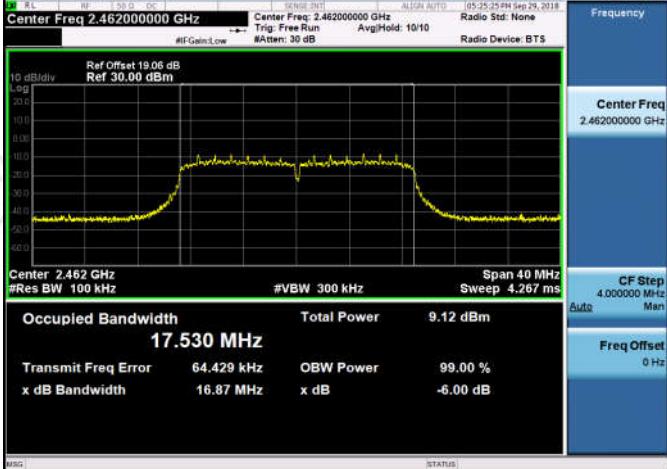


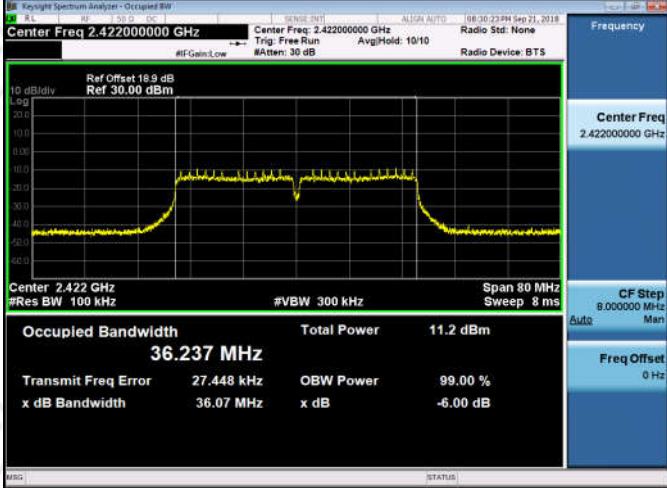
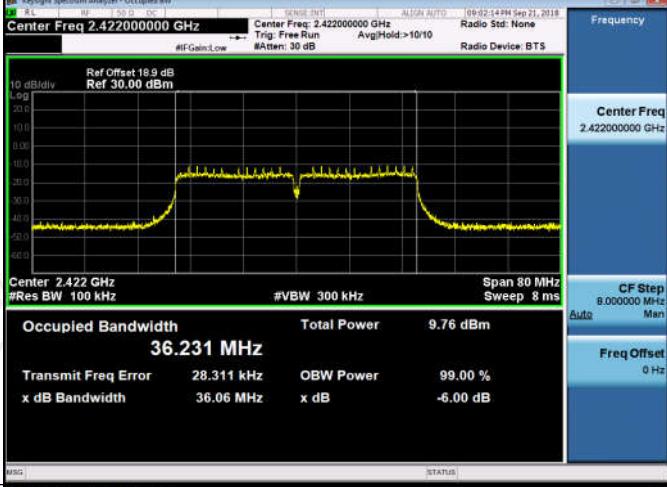
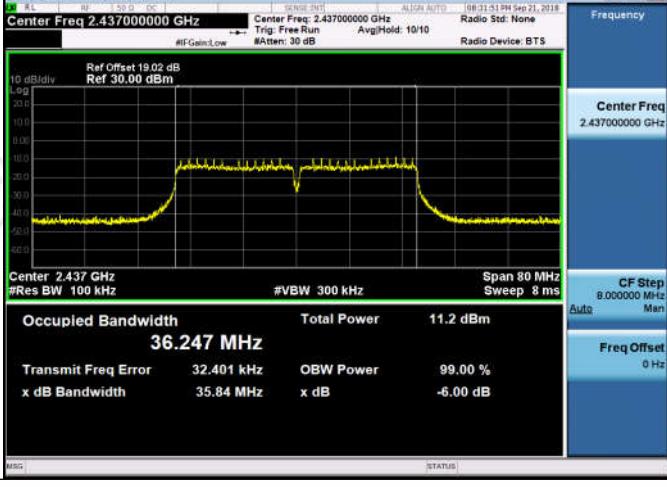


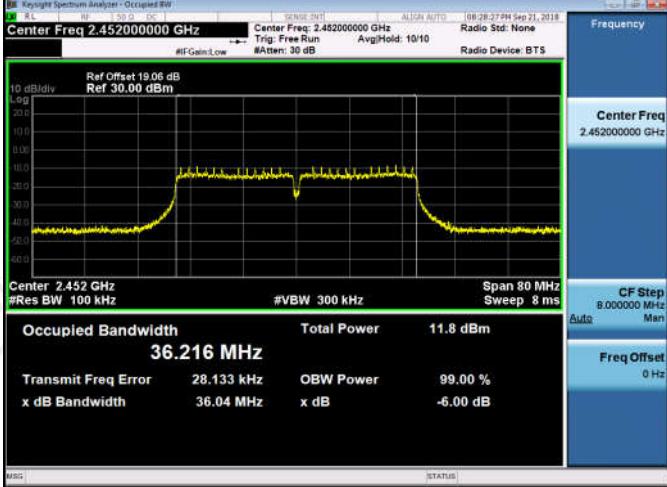
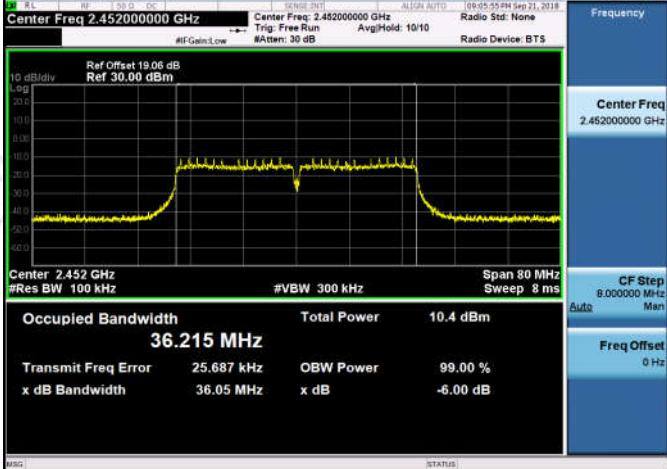
		 <p>11N20SISO/LCH_Ant1</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.412000000 GHz SENSE INTL ALIGN AUTO 08:24:51 PM Sep 21, 2018</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>20.0</p> <p>10.0</p> <p>0.0</p> <p>-10.0</p> <p>-20.0</p> <p>-30.0</p> <p>-40.0</p> <p>-50.0</p> <p>Center 2.412 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth 17.575 MHz Total Power 12.0 dBm</p> <p>Transmit Freq Error 11.154 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 17.38 MHz x dB -6.00 dB</p> <p>CF Step 4.000000 MHz Auto: Man</p> <p>Freq Offset 0 Hz</p> <p>MSO STATUS</p>
		 <p>11N20SISO/LCH_Ant2</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.412000000 GHz SENSE INTL ALIGN AUTO 08:57:26 PM Sep 21, 2018</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>20.0</p> <p>10.0</p> <p>0.0</p> <p>-10.0</p> <p>-20.0</p> <p>-30.0</p> <p>-40.0</p> <p>Center 2.412 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth 17.564 MHz Total Power 10.4 dBm</p> <p>Transmit Freq Error 12.231 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 17.01 MHz x dB -6.00 dB</p> <p>CF Step 4.000000 MHz Auto: Man</p> <p>Freq Offset 0 Hz</p> <p>MSO STATUS</p>
		 <p>11N20SISO/MCH_Ant1</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.437000000 GHz SENSE INTL ALIGN AUTO 08:26:21 PM Sep 21, 2018</p> <p>Ref Offset 19.02 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>20.0</p> <p>10.0</p> <p>0.0</p> <p>-10.0</p> <p>-20.0</p> <p>-30.0</p> <p>-40.0</p> <p>Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms</p> <p>Occupied Bandwidth 17.584 MHz Total Power 12.0 dBm</p> <p>Transmit Freq Error 11.043 kHz OBW Power 99.00 %</p> <p>x dB Bandwidth 17.14 MHz x dB -6.00 dB</p> <p>CF Step 4.000000 MHz Auto: Man</p> <p>Freq Offset 0 Hz</p> <p>MSO STATUS</p>

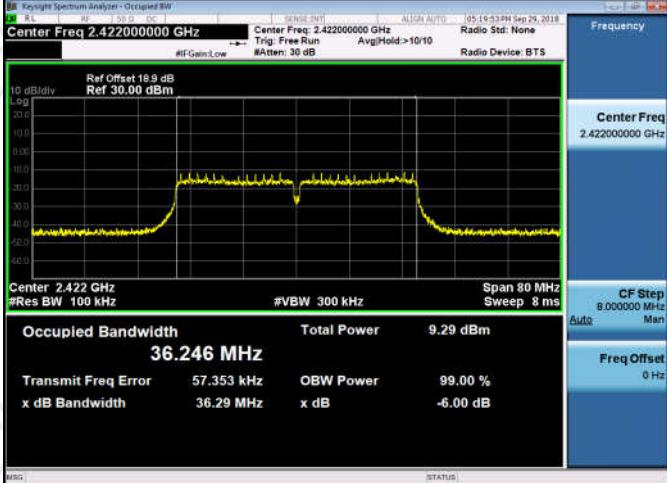
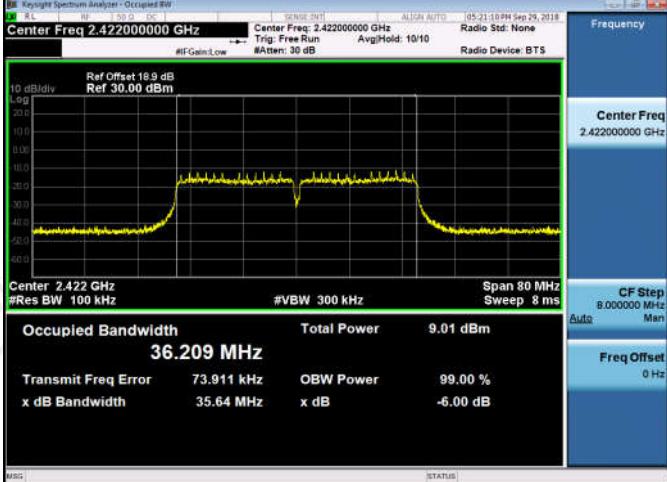
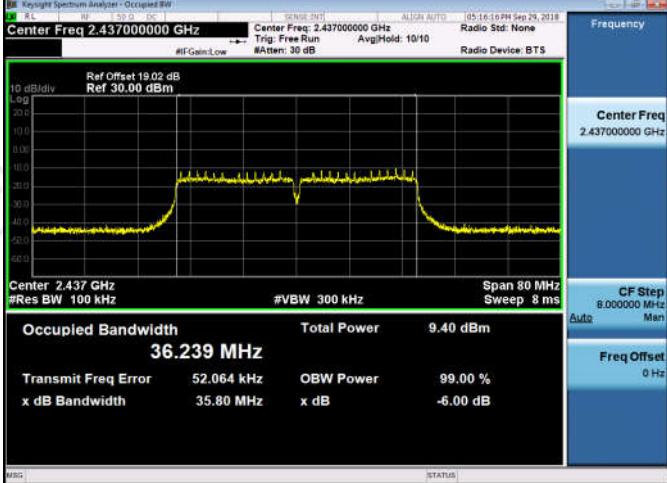
		 <p>11N20SISO/HCH_Ant1</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.462000000 GHz SENSE:INT ALIGN: AUTO 08:23:13 PM Sep 21, 2018</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>20.0 10.0 0.0 -10.0 -20.0 -30.0 -40.0 -50.0</p> <p>40.0 30.0 20.0 10.0 0.0 -10.0 -20.0 -30.0 -40.0 -50.0</p> <p>Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Radio Device: BTS</p> <p>Occupied Bandwidth: 17.570 MHz Total Power: 12.4 dBm</p> <p>Transmit Freq Error: 11.428 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 17.14 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 SENSE:INT ALIGN: AUTO 09:00:31 PM Sep 21, 2018</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>20.0 10.0 0.0 -10.0 -20.0 -30.0 -40.0 -50.0</p> <p>40.0 30.0 20.0 10.0 0.0 -10.0 -20.0 -30.0 -40.0 -50.0</p> <p>Center 2.462 GHz #Res BW 100 kHz #VBW 300 kHz Span 40 MHz Sweep 4.267 ms Radio Device: BTS</p> <p>Occupied Bandwidth: 17.571 MHz Total Power: 11.0 dBm</p> <p>Transmit Freq Error: 10.746 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 17.06 MHz x dB: -6.00 dB</p>

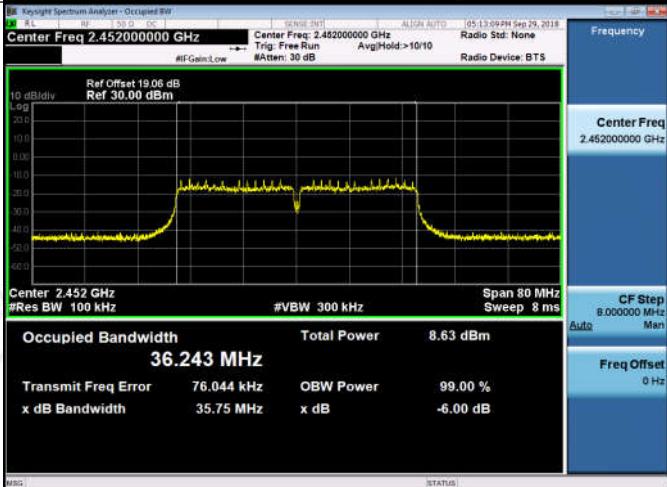
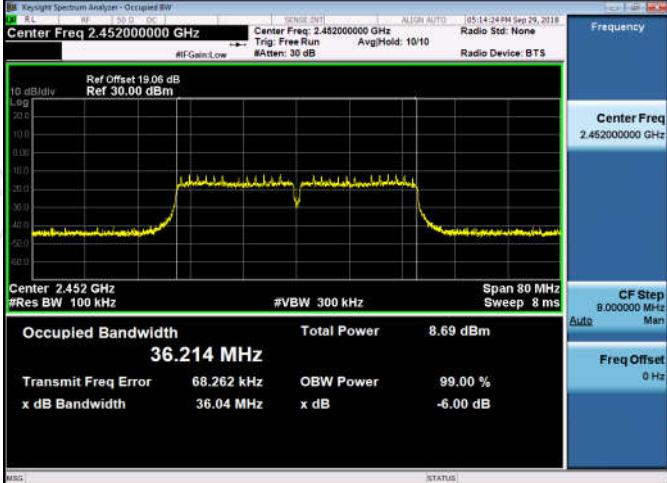
		 <p>11N20MIMO/LCH_Ant1</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.412000000 GHz SENSE INT: 0.000000000 GHz ALIGN AUTO: 05-31-27 09 Sep 29, 2018</p> <p>#IF Gain: Low Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Occupied Bandwidth: 17.555 MHz Total Power: 9.88 dBm</p> <p>Transmit Freq Error: 42.065 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 16.89 MHz x dB: -6.00 dB</p>
		 <p>11N20MIMO/LCH_Ant2</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.412000000 GHz SENSE INT: 0.000000000 GHz ALIGN AUTO: 05-31-27 09 Sep 29, 2018</p> <p>#IF Gain: Low Trig: Free Run Avg/Hold: >10/10 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Occupied Bandwidth: 17.550 MHz Total Power: 8.91 dBm</p> <p>Transmit Freq Error: 66.111 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 16.69 MHz x dB: -6.00 dB</p>
		 <p>11N20MIMO/MCH_Ant1</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.437000000 GHz SENSE INT: 0.000000000 GHz ALIGN AUTO: 05-28-15 04 Sep 29, 2018</p> <p>#IF Gain: Low Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS</p> <p>Ref Offset 19.02 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Occupied Bandwidth: 17.554 MHz Total Power: 9.78 dBm</p> <p>Transmit Freq Error: 61.895 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 16.92 MHz x dB: -6.00 dB</p>

11N20MIMO/MCH_Ant2	
11N20MIMO/HCH_Ant1	
11N20MIMO/HCH_Ant2	

		 <p>11N40SISO/LCH_Ant1</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.422000000 GHz SENSE INT: 2.422000000 GHz ALIGN AUTO: 08:30:23 PM Sep 21, 2018</p> <p>Ref Offset 18.9 dB Ref 30.00 dBm #IF Gain: Low Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS</p> <p>10 dB/div Log 20.0 10.0 0.0 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0 -70.0 -80.0 -90.0 -100.0</p> <p>Center 2.422 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms</p> <p>Occupied Bandwidth: 36.237 MHz Total Power: 11.2 dBm</p> <p>Transmit Freq Error: 27.448 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 36.07 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 INT: 2.422000000 GHz ALIGN AUTO: 08:42:14 PM Sep 21, 2018</p> <p>Ref Offset 18.9 dB Ref 30.00 dBm #IF Gain: Low Trig: Free Run Avg/Hold: >10/10 Radio Std: None Radio Device: BTS</p> <p>10 dB/div Log 20.0 10.0 0.0 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0 -70.0 -80.0 -90.0 -100.0</p> <p>Center 2.422 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms</p> <p>Occupied Bandwidth: 36.231 MHz Total Power: 9.76 dBm</p> <p>Transmit Freq Error: 28.311 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 36.06 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 INT: 2.437000000 GHz ALIGN AUTO: 08:31:51 PM Sep 21, 2018</p> <p>Ref Offset 19.02 dB Ref 30.00 dBm #IF Gain: Low Trig: Free Run Avg/Hold: 10/10 Radio Std: None Radio Device: BTS</p> <p>10 dB/div Log 20.0 10.0 0.0 -10.0 -20.0 -30.0 -40.0 -50.0 -60.0 -70.0 -80.0 -90.0 -100.0</p> <p>Center 2.437 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms</p> <p>Occupied Bandwidth: 36.247 MHz Total Power: 11.2 dBm</p> <p>Transmit Freq Error: 32.401 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 35.84 MHz x dB: -6.00 dB</p> <p>MSG STATUS </p>

		 <p>11N40SISO/HCH_Ant1</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.452000000 GHz SENSE INT: 0.000000000 GHz ALIGN AUTO: 08:28:27 PM Sep 21, 2018</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Span 80 MHz Sweep 8 ms</p> <p>Occupied Bandwidth: 36.216 MHz Total Power: 11.8 dBm</p> <p>Transmit Freq Error: 28.133 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 36.04 MHz x dB: -6.00 dB</p>
		 <p>11N40SISO/HCH_Ant2</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.452000000 GHz SENSE INT: 0.000000000 GHz ALIGN AUTO: 09:05:55 PM Sep 21, 2018</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>Span 80 MHz Sweep 8 ms</p> <p>Occupied Bandwidth: 36.215 MHz Total Power: 10.4 dBm</p> <p>Transmit Freq Error: 25.687 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 36.05 MHz x dB: -6.00 dB</p>

11N40MIMO/LCH_Ant1	
11N40MIMO/LCH_Ant2	
11N40MIMO/MCH_Ant1	

		 <p>11N40MIMO/HCH_Ant1</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.452000000 GHz SENSE INT: 05-13-09 PM Sep 29, 2018 ALIGN AUTO: Radio Std: None</p> <p>#IF Gain: Low Trig: Free Run Avg/Hold: >10/10 Radio Device: BTS</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>20.0</p> <p>10.0</p> <p>0.0</p> <p>-10.0</p> <p>-20.0</p> <p>-30.0</p> <p>-40.0</p> <p>-50.0</p> <p>Center 2.452 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms</p> <p>Occupied Bandwidth: 36.243 MHz Total Power: 8.63 dBm</p> <p>Transmit Freq Error: 76.044 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 35.75 MHz x dB: -6.00 dB</p> <p>MSG STATUS</p>
		 <p>11N40MIMO/HCH_Ant2</p> <p>Keystream Spectrum Analyzer - Occupied BW</p> <p>Center Freq 2.452000000 GHz SENSE INT: 05-14-24 PM Sep 29, 2018 ALIGN AUTO: Radio Std: None</p> <p>#IF Gain: Low Trig: Free Run Avg/Hold: 10/10 Radio Device: BTS</p> <p>Ref Offset 19.06 dB Ref 30.00 dBm</p> <p>10 dB/div Log</p> <p>20.0</p> <p>10.0</p> <p>0.0</p> <p>-10.0</p> <p>-20.0</p> <p>-30.0</p> <p>-40.0</p> <p>-50.0</p> <p>Center 2.452 GHz #Res BW 100 kHz #VBW 300 kHz Span 80 MHz Sweep 8 ms</p> <p>Occupied Bandwidth: 36.214 MHz Total Power: 8.69 dBm</p> <p>Transmit Freq Error: 68.262 kHz OBW Power: 99.00 %</p> <p>x dB Bandwidth: 36.04 MHz x dB: -6.00 dB</p> <p>MSG STATUS</p>

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	4.640	-49.674	-25.36	PASS
11B	Ant2	LCH	3.452	-50.458	-26.55	PASS
11B	Ant1	HCH	5.099	-50.291	-24.9	PASS
11B	Ant2	HCH	3.778	-50.686	-26.22	PASS
11G	Ant1	LCH	-4.251	-49.793	-34.25	PASS
11G	Ant2	LCH	-5.884	-50.475	-35.88	PASS
11G	Ant1	HCH	-3.684	-50.798	-33.68	PASS
11G	Ant2	HCH	-5.135	-50.056	-35.14	PASS
11N20SISO	Ant1	LCH	-5.890	-50.902	-35.89	PASS
11N20SISO	Ant2	LCH	-7.642	-50.195	-37.64	PASS
11N20SISO	Ant1	HCH	-5.348	-50.219	-35.35	PASS
11N20SISO	Ant2	HCH	-7.226	-50.162	-37.23	PASS
11N20MIMO	Ant1	LCH	-8.413	-50.716	-38.41	PASS
11N20MIMO	Ant2	LCH	-8.071	-50.835	-38.07	PASS
11N20MIMO	Ant1	HCH	-7.754	-49.443	-37.75	PASS
11N20MIMO	Ant2	HCH	-8.318	-50.755	-38.32	PASS
11N40SISO	Ant1	LCH	-9.730	-49.585	-39.73	PASS
11N40SISO	Ant2	LCH	-11.033	-50.699	-41.03	PASS
11N40SISO	Ant1	HCH	-8.805	-50.358	-38.81	PASS
11N40SISO	Ant2	HCH	-10.462	-50.412	-40.46	PASS
11N40MIMO	Ant1	LCH	-11.892	-50.807	-41.89	PASS
11N40MIMO	Ant2	LCH	-11.768	-50.883	-41.77	PASS
11N40MIMO	Ant1	HCH	-11.719	-50.356	-41.72	PASS
11N40MIMO	Ant2	HCH	-11.408	-50.518	-41.41	PASS

Test Graph

