

FCC 47 CFR PART 15 SUBPART C ISED RSS-247 ISSUE 2

CERTIFICATION TEST REPORT

For

WIFI+BT module

MODEL NUMBER: WCT0LR2201J

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Revision History

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	11/24/2017	Initial Issue		

Summary of Test Results Test Clause **Test Items** FCC/IC Rules Results FCC 15.247 (a) (2) 6dB Bandwidth and 99% Bandwidth **PASS** 1 RSS-247 Clause 5.2 (a) FCC 15.247 (b) (3) 2 Peak Conducted Output Power **PASS** RSS-247 Clause 5.4 (e) FCC 15.247 (e) 3 **Power Spectral Density PASS** RSS-247 Clause 5.2 (b) FCC 15.247 (d) Conducted Bandedge and Spurious 4 **PASS Emission** RSS-247 Clause 5.5 FCC 15.247 (d) FCC 15.209 Radiated Bandedge and Spurious 5 FCC 15.205 PASS **Emission RSS-247 Clause 5.5 RSS-GEN Clause 8.9** Conducted Emission Test For AC FCC 15.207 6 **PASS** Power Port **RSS-GEN Clause 8.8** FCC 15.203 7 Antenna Requirement **PASS RSS-GEN Clause 8.3**

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: Hui Zhou Gaoshengda Technology Co.,LTD

Address: HuaXing RD,NO 2,ZhongKai High Technology Development

Area, Huizhou, Guangdong, China

Manufacturer Information

Company Name: Hui Zhou Gaoshengda Technology Co.,LTD

Address: HuaXing RD,NO 2,ZhongKai High Technology Development

Area, Huizhou, Guangdong, China

EUT Description

Product Name WIFI+BT module

Brand Name GSD

Model Name WCT0LR2201J

Sample ID 1220986 Sample Status Good

Sample Received date October 20, 2017

Date Tested October 23~November 23, 2017

APPLICABLE STANDARDS

STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	PASS
ISED RSS-247 Issue 2	PASS
ISED RSS-GEN Issue 4	PASS

Tested By: Checked By:

Kebo Zhang

kelo. Thurs

Engineer

Approved By:

Shawn Wen

Laboratory Leader

Shemm les

Stephen Guo

Laboratory Manager

Sephenbuo

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC CFR 47 Part 2, FCC CFR 47 Part 15, KDB558074 D01 DTS Meas Guidance v04, KDB414788 D01 Radiated Test Site v01, ANSI C63.10-2013 and KDB 662911 D01 Multiple Transmitter Output v02r01.

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3. FACILITIES AND ACCREDITATION

Test Location	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
Address	Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China
Accreditation Certificate	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. The Certificate Registration Number is 4102.01. UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The Designation Number is CN1187. UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. EMC Laboratory has been registered and fully described in a report filed with Industry Canada. The Company Number is 21320.

Note: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognize national standards.

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4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Uncertainty		
Uncertainty for Conduction emission test	2.90dB		
Uncertainty for Radiation Emission test(include Fundamental emission) (9KHz-30MHz)	2.2dB		
Uncertainty for Radiation Emission test(include Fundamental emission) (30MHz-1GHz)	4.52dB		
Uncertainty for Radiation Emission test	5.04dB(1-6GHz)		
(1GHz to 26GHz)(include Fundamental	5.30dB (6GHz-18Gz)		
emission)	5.23dB (18GHz-26Gz)		
Note: This uncertainty represents an expanded uncertainty expressed at approximately			

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

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5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

Equipment	WIFI+BT module
Model Name	WCT0LR2201J
Radio Technology	IEEE802.11b/g/n HT20/n HT40
Operation frequency	IEEE 802.11b: 2412MHz—2472MHz IEEE 802.11g: 2412MHz—2472MHz IEEE 802.11n HT20: 2412MHz—2472MHz IEEE 802.11n HT40: 2422MHz—2462MHz
Modulation	IEEE 802.11b: DSSS(CCK) IEEE 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20: OFDM (64QAM, 16QAM, QPSK,BPSK) IEEE 802.11n HT40: OFDM (64QAM, 16QAM, QPSK,BPSK)
Power Supply	AC120V/60Hz
Hardware Version	V1.0
Software Version	V1.2

5.2. MAXIMUM OUTPUT POWER

Frequency Range (MHz)	Number of Transmit ANTs (NTX)	IEE Std. 802.11	Channel Number	Max Output Power (dBm)
2412-2472	1	b	1-13[13]	18.55
2412-2472	1	g	1-13[13]	22.15
2412-2472	2	n HT20	1-13[13]	24.25
2422-2462	2	n HT40	3-11[9]	24.10

Note: For 802.11n mode, the output power the same between SISO and MIMO mode.

5.3. CHANNEL LIST

	Channel List for 802.11b/g/n (20 MHz)						
Channel	Frequency (MHz)	Channel	Frequenc y(MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	5	2432	9	2452	13	2472
2	2417	6	2437	10	2457		
3	2422	7	2442	11	2462		
4	2427	8	2447	12	2467		

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	Channel List for 802.11n (40 MHz)							
Channel	Frequency (MHz)	Channel	Frequenc y(MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	
3	2422	7	2442	11	2462			
4	2427	8	2447					
5	2432	9	2452					
6	2437	10	2457					

5.4. TEST CHANNEL CONFIGURATION

Test Mode	Test Channel	Frequency			
WiFi TX(802.11b)	CH 1, CH 7, CH 13	2412MHz, 2442MHz, 2472MHz			
WiFi TX(802.11g)	CH 1, CH 7, CH 13	2412MHz, 2442MHz, 2472MHz			
WiFi TX(802.11n HT20)	CH 1, CH 7, CH 13	2412MHz, 2442MHz, 2472MHz			
WiFi TX(802.11n HT40)	CH 3, CH 7, CH 11	2422MHz, 2442MHz, 2462MHz			

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5.5. THE WORSE CASE CONFIGURATIONS

The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band								
Test Software		REALTEK						
NA 1 1 6	Transmit		Test Channel					
Modulation Mode	Antenna	١	NCB: 20MH	Z	١	NCB: 40MHz		
Wode	Number	CH 1	CH 7	CH 13	CH 3	CH 7	CH 11	
802.11b	1	46	52	50	N/A			
802.11g	1	52	54	46				
802.11n HT20	1	56	58	40				
802.11n HT40	1	N/A	N/A	N/A	54	58	44	
802.11b	2	49	49	51				
802.11g	2	50	50	50	N/A			
802.11n HT20	2	53	56	39				
802.11n HT40	2	N/A	N/A	N/A	54	58	44	

5.6. TEST ENVIRONMENT

Environment Parameter	Selected Values During Tests			
Relative Humidity	55 ~ 65%			
Atmospheric Pressure:	1025Pa			
Temperature	TN 23 ~ 28°C			
	VL	N/A		
Voltage :	VN	AC 120V/60Hz		
	VH	N/A		

Note: VL= Lower Extreme Test Voltage

VN= Nominal Voltage
VH= Upper Extreme Test Voltage
TN= Normal Temperature

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5.7. DESCRIPTION OF AVAILABLE ANTENNAS

Antenna	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)	
1	2412-2472	External Antenna	3.24	

Antenna	Frequency (MHz)	Antenna Type	Antenna Gain (dBi)
2	2412-2472	External Antenna	3.24

Test Mode	Transmit and Receive Mode	Description
IEEE 802.11b	⊠2TX, 2RX	ANT 1, 2 can be used as transmitting/receiving antenna.
IEEE 802.11g	⊠2TX, 2RX	ANT 1, 2 can be used as transmitting/receiving antenna.
IEEE 802.11n HT20	⊠2TX, 2RX	ANT 1, 2 can be used as transmitting/receiving antenna.
IEEE 802.11n HT40	⊠2TX, 2RX	ANT 1, 2 can be used as transmitting/receiving antenna.

Note: Only 802.11n HT20/HT40 support MIMO mode.

5.8. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	Model Name	P/N
1	PC	Dell	Vostro 3902	8KNDDB2
2	Debug	N/A	N/A	N/A

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I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	PCIEX	N/A	N/A	0.1	N/A

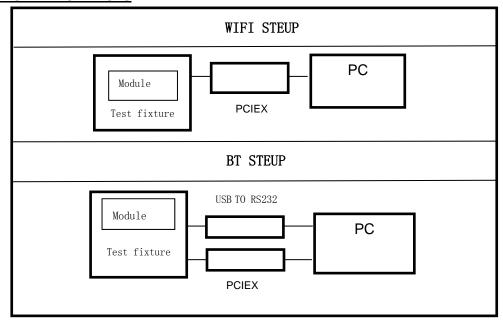
ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	N/A	N/A	N/A	N/A

TEST SETUP

The EUT can work in engineering mode with a software through a PC.

SETUP DIAGRAM FOR TESTS



5.9. MEASURING INSTRUMENT AND SOFTWARE USED

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	5.9. MEASURING INSTRUMENT AND SOFTWARE USED									
		Con	ducted	l Emissio	ns					
Used	Equipment	Manufacturer	er Model No. Seri				Last Cal.	Next Cal.		
	EMI Test Receiver	R&S	Е	SR3	101961		Dec.20, 2016	Dec.19, 2017		
\checkmark	Two-Line V-Network	R&S	EN	IV216	101	1983	Dec.20, 2016	Dec.19, 2017		
	Artificial Mains Networks	Schwarzbeck	NSL	.K 8126	812	6465	Feb.10, 2017	Feb.10, 2018		
			Soft	ware						
Used	Des	scription		Manu	ufactu	rer	Name	Version		
	Test Software for 0	Conducted disturb	oance		UL		Antenna port	Ver. 7.2		
		Rad	diated	Emission	าร					
Used Equipment Manufacturer Model No. Serial No. Last Cal.										
	MXE EMI Receiver	KESIGHT	N9	9038A		64000 36	Feb. 24, 2017	Feb. 24, 2018		
	Hybrid Log Periodic Antenna	TDK	HLP	-3003C		960	Jan.09, 2016	Jan.09, 2019		
	Preamplifier	HP	84	447D	I	A0909 9	Feb. 13, 2017	Feb. 13, 2018		
\square	EMI Measurement Receiver	R&S	ES	SR26	101	1377	Dec. 20, 2016	Dec. 20, 2017		
	Horn Antenna	TDK	HRI	N-0118	130	939	Jan. 09, 2016	Jan. 09, 2019		
	High Gain Horn Antenna	Schwarzbeck	BBH	IA-9170	6	91	Jan.06, 2016	Jan.06, 2019		
	Preamplifier	TDK	PA-0)2-0118		305- 066	Jan. 14, 2017	Jan. 14, 2018		
	Preamplifier	TDK	PA	N-02-2	I	3-307- 003	Dec. 20, 2016	Dec. 20, 2017		
\square	Loop antenna	Schwarzbeck	15	519B	00	800	Mar. 26, 2016	Mar. 26, 2019		
V	Band Reject Filter	Wainwright	2350 2483.5	CJV8- 0-2400- 5-2533.5- 0SS		4	Dec. 20, 2016	Dec. 20, 2017		
			Soft	ware						
Used	Descr	ription		Manufact	urer		Name	Version		
V	Test Software for R	adiated disturban	се	Farad			EZ-EMC	Ver. UL-3A1		
		Ot	her ins	struments	s					
Used	Equipment	Manufacturer	Model No.		Seria	al No.	Last Cal.	Next Cal.		
	Spectrum Analyzer	Keysight	N9030A		1	54105 12	Dec. 20, 2016	Dec. 20, 2017		
	Power Meter	Keysight	N9	9031A	2	54160 24	Feb. 13, 2017	Feb. 13, 2018		
	Power Sensor	Keysight	N9)323A	1	54400 13	Feb. 13, 2017	Feb. 13, 2018		
V	Power Sensor	Keysight	U20	021XA	I	70300)4	Feb. 13, 2017	Feb. 13, 2018		

6. MEASUREMENT METHODS

Port

KDB Name Section No. Test Item KDB 558074 D01 DTS Meas 1 6dB Bandwidth and 99% Bandwidth 8.0 Guidance v04 KDB 558074 D01 DTS Meas 2 Peak Output Power 9.1.1 Guidance v04 KDB 558074 D01 DTS Meas 3 10.2 Power Spectral Density Guidance v04 KDB 558074 D01 DTS Meas Out-of-band emissions in non-restricted 4 11.0 bands Guidance v04 Out-of-band emissions in restricted KDB 558074 D01 DTS Meas 5 12.1 bands Guidance v04 KDB 558074 D01 DTS Meas 6 Band-edge 13.3.2 Guidance v04 Conducted Emission Test For AC Power 7 7.3 ANSI C63.10-2013

DATE: November 24, 2017

7. ANTENNA PORT TEST RESULTS

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7.1. ON TIME AND DUTY CYCLE

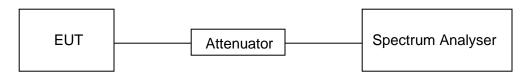
LIMITS

None; for reporting purposes only

PROCEDURE

KDB 558074 Zero-Span Spectrum Analyzer Method

TEST SETUP



RESULTS

ANTENNA1

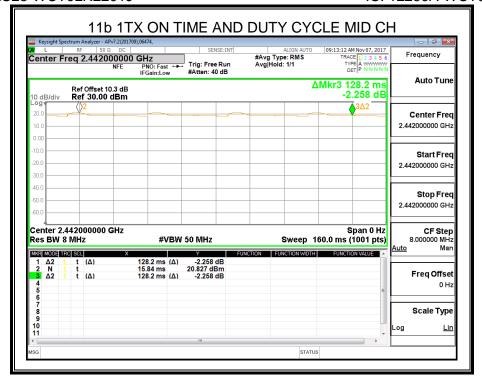
Mode	On Time (msec)	Period (msec)	Duty Cycle x (Linear)	Duty Cycle (%)	Duty Cycle Correction Factor (db)	1/B Minimum VBW (KHz)
11b 1TX	100	100	1	100	0	0.01
11g 1TX	100	100	1	100	0	0.01
11n20 CDD	100	100	1	100	0	0.01
11n40 CDD	100	100	1	100	0	0.01

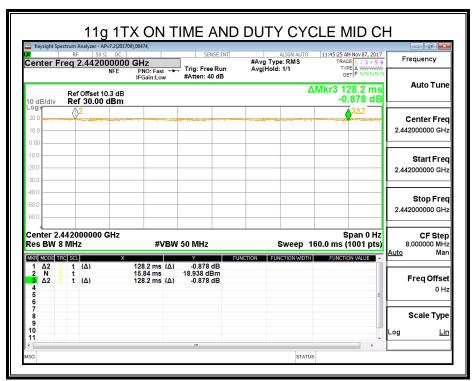
Note: Duty Cycle Correction Factor= $10\log(1/x)$.

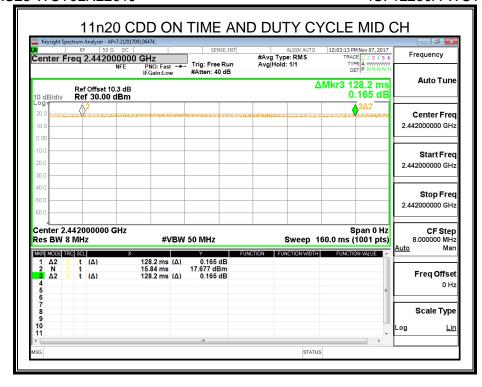
Where: x is Duty Cycle (Linear)

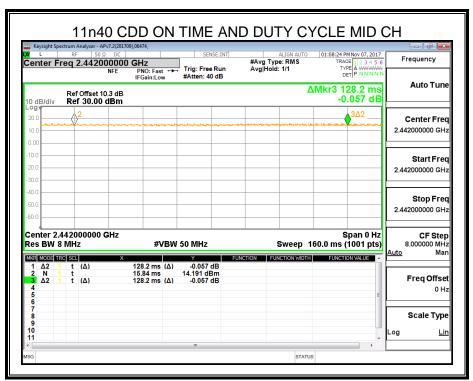
Where: B is On Time

Antenna 1 and Antenna 2 has the same duty cycle, only Antenna 1 data show here.









7.2. 6 dB DTS BANDWIDTH AND 99% BANDWIDTH

LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2						
Section Test Item Limit Frequency Range (MHz)						
FCC 15.247(a)(2) RSS-247 5.1 (a)	6 dB Bandwidth	>= 500KHz	2400-2483.5			
RSS-Gen Clause 6.6	99% Bandwidth	For reporting purposes only.	2400-2483.5			

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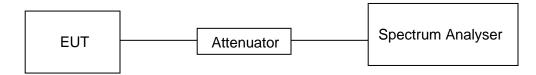
TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
IRRW	For 6dB Bandwidth :100K For 99% Bandwidth :1% to 5% of the occupied bandwidth
IV/BW/	For 6dB Bandwidth : ≥3 × RBW For 99% Bandwidth : approximately 3×RBW
Trace	Max hold
Sweep	Auto couple

Allow the trace to stabilize and measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB and 99% relative to the maximum level measured in the fundamental emission.

TEST SETUP



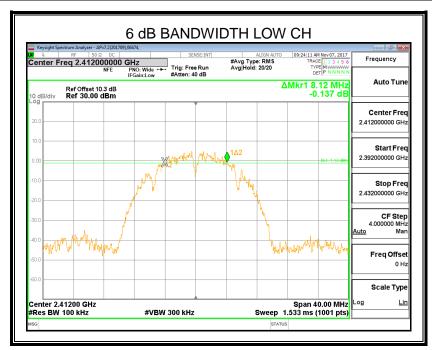
RESULTS

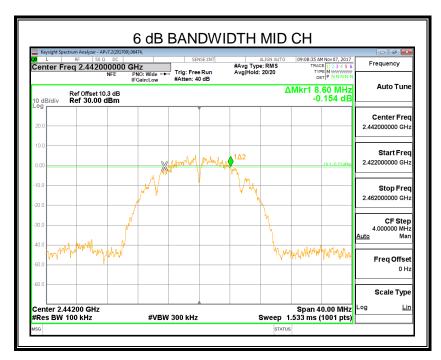
7.2.1. 802.11b SISO MODE

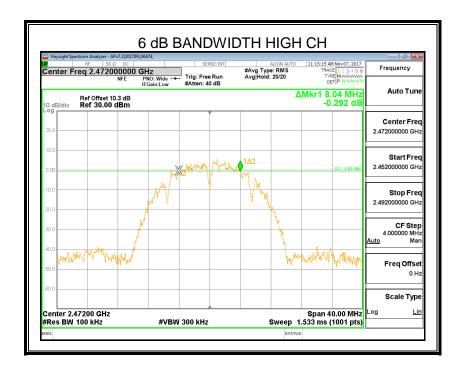
ANTENNA1

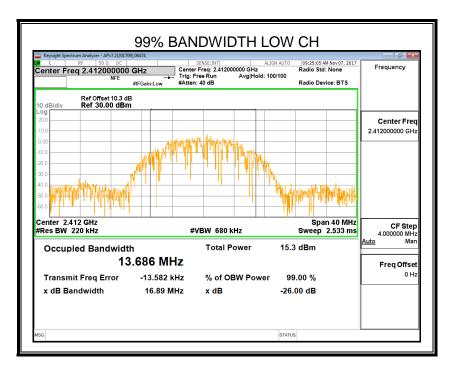
Frequency (MHz)	6dB bandwidth (MHz)	99% bandwidth (MHz)	Limit For 6dB (kHz)	Result
2412	8.12	13.686	500	Pass
2442	8.60	13.490	500	Pass
2472	8.04	13.569	500	Pass

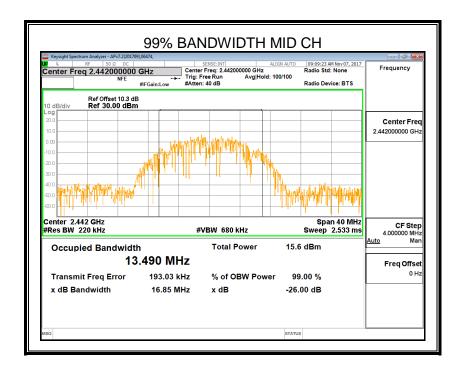
DATE: November 24, 2017

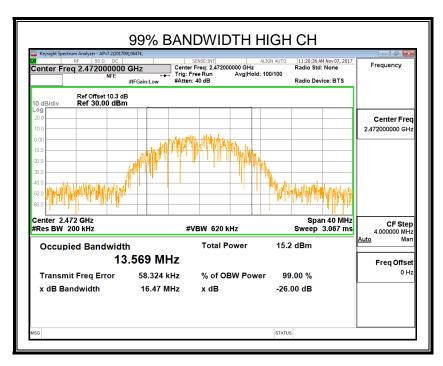








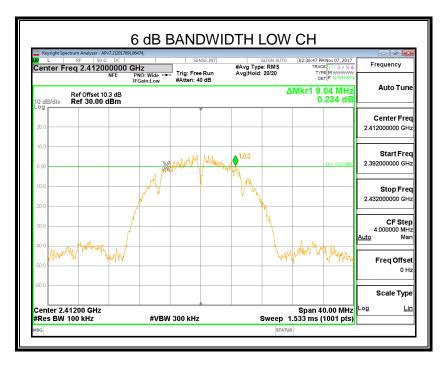


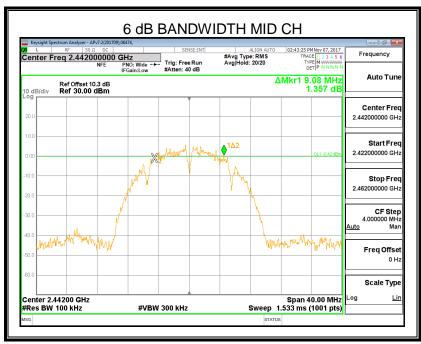


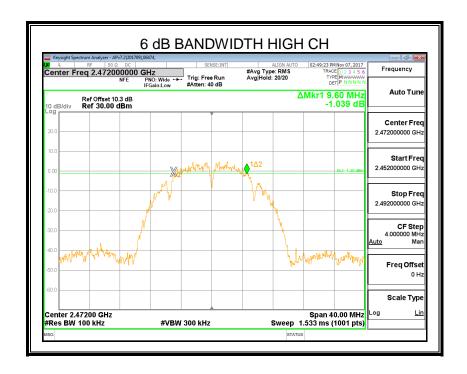
ANTENNA2

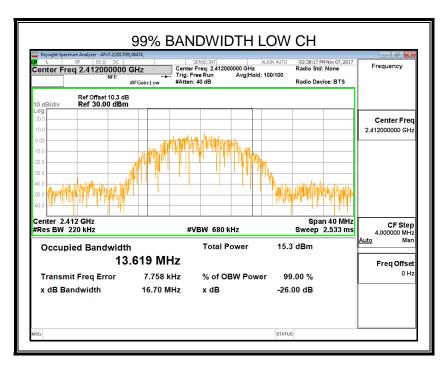
Frequency (MHz)	6dB bandwidth (MHz)	99% bandwidth (MHz)	Limit For 6dB (kHz)	Result
2412	9.04	13.619	500	Pass
2442	9.08	13.711	500	Pass
2472	9.60	13.456	500	Pass

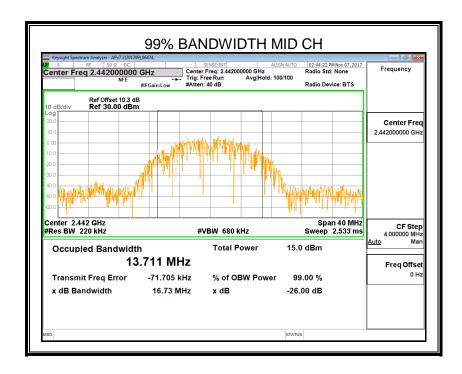
DATE: November 24, 2017

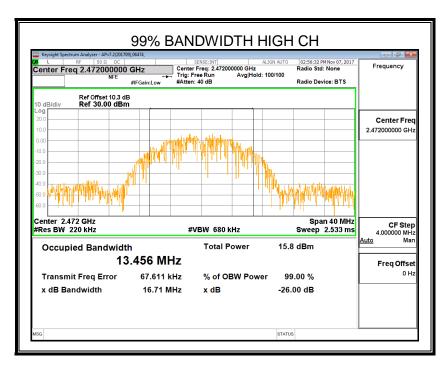










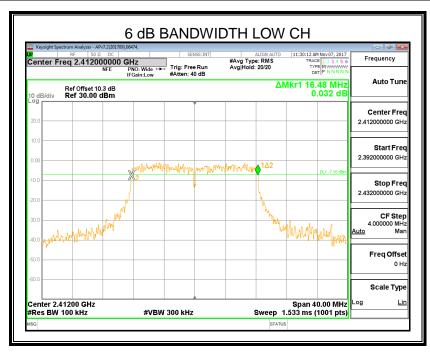


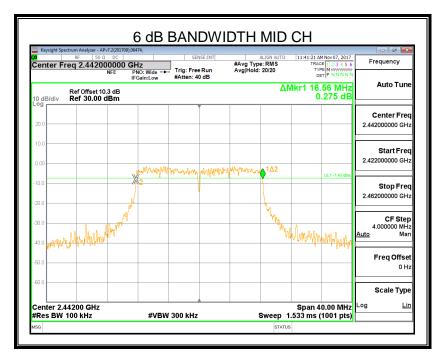
7.2.2. 802.11g SISO MODE

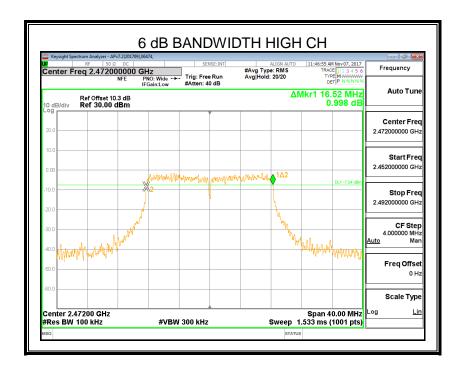
ANTENNA1

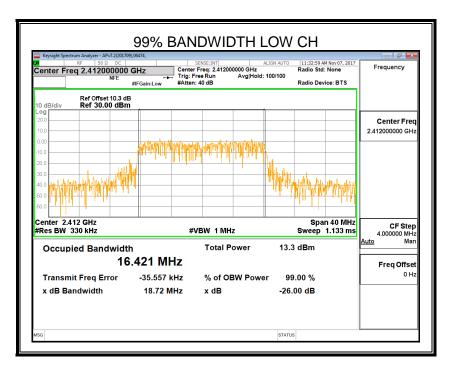
Frequency (MHz)	6dB bandwidth (MHz)	99% bandwidth (MHz)	Limit For 6dB (kHz)	Result
2412	16.48	16.421	500	Pass
2442	16.56	16.511	500	Pass
2472	16.52	16.471	500	Pass

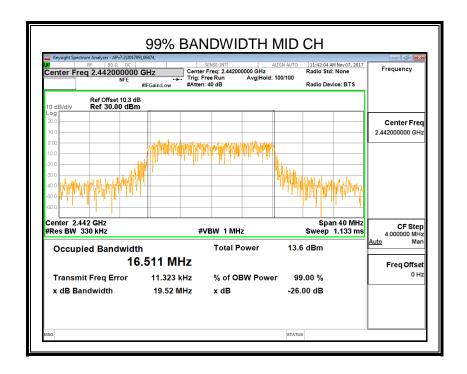
DATE: November 24, 2017

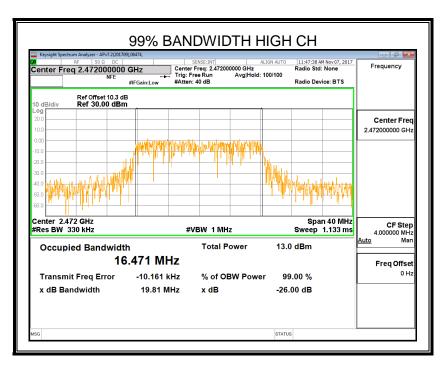








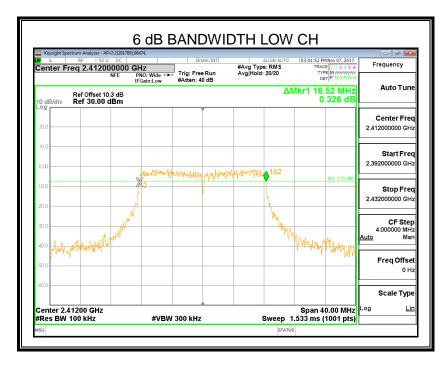


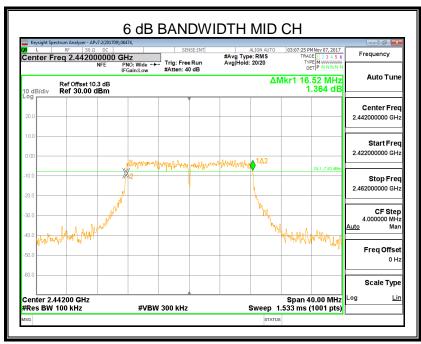


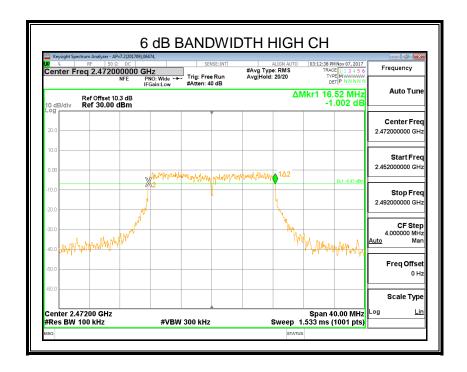
ANTENNA2

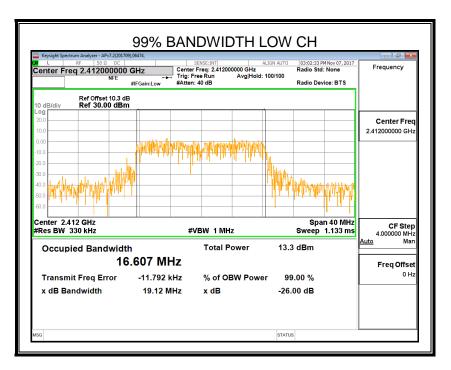
Frequency (MHz)	6dB bandwidth (MHz)	99% bandwidth (MHz)	Limit For 6dB (kHz)	Result
2412	16.52	16.607	500	Pass
2442	16.52	16.567	500	Pass
2472	16.52	16.522	500	Pass

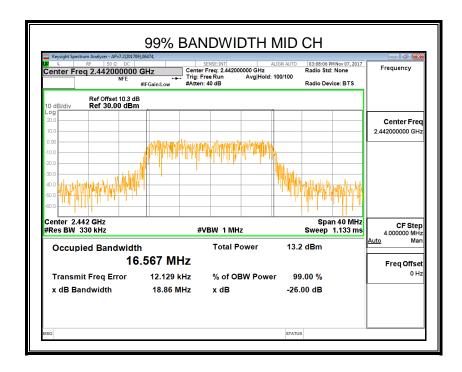
DATE: November 24, 2017

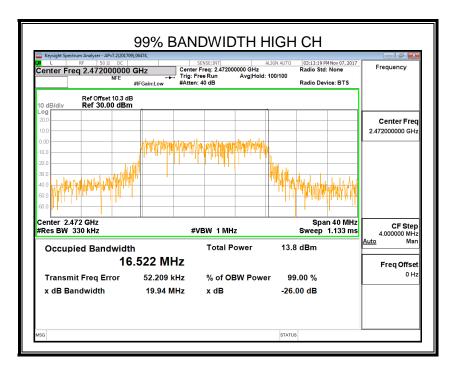










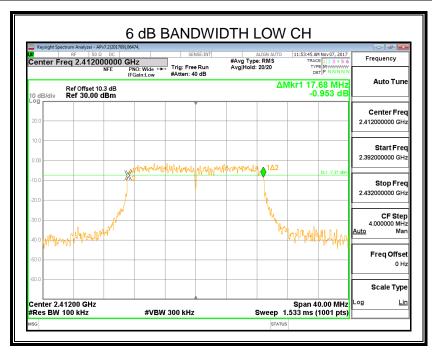


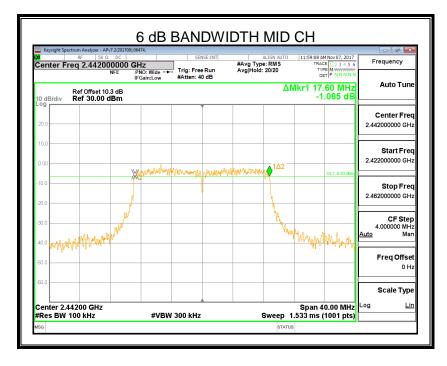
7.2.3. 802.11n20 CDD MODE

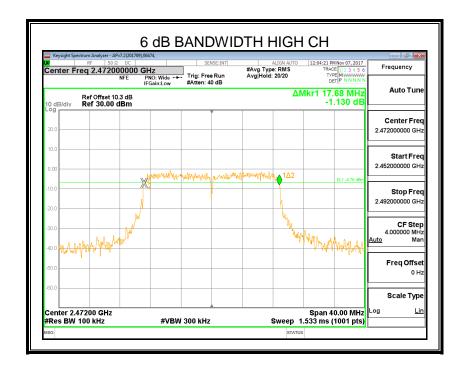
ANTENNA1

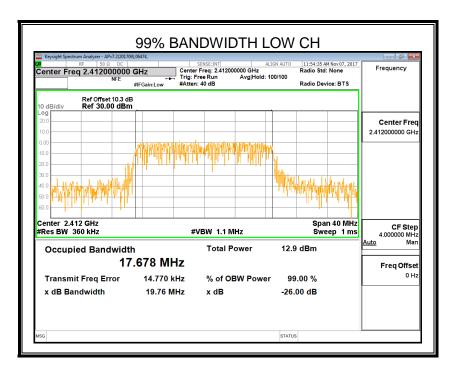
Frequency (MHz)	6dB bandwidth (MHz)	99% bandwidth (MHz)	Limit For 6dB (kHz)	Result
2412	17.68	17.678	500	Pass
2442	17.60	17.698	500	Pass
2472	17.68	17.636	500	Pass

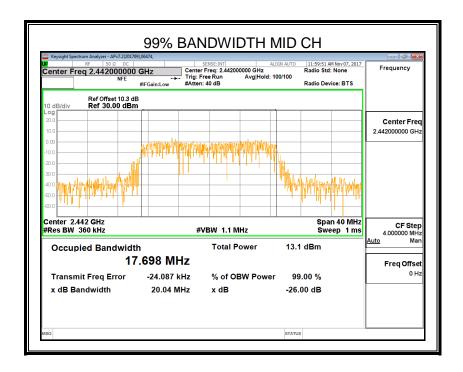
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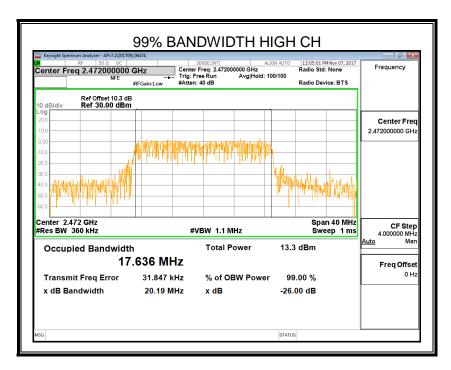








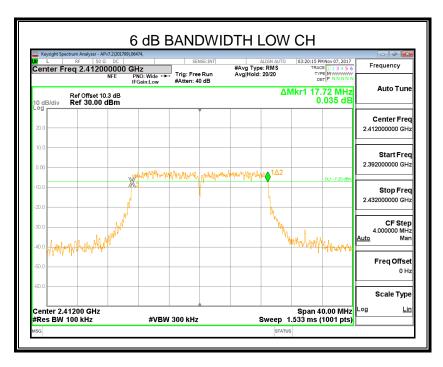


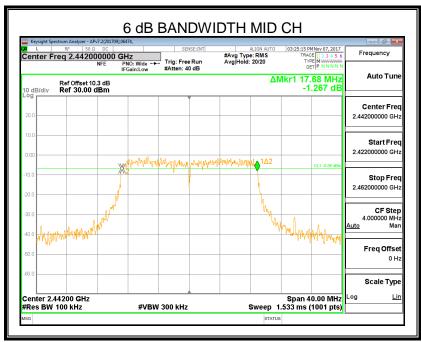


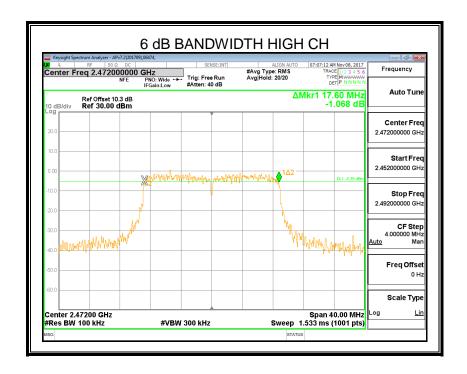
ANTENNA2

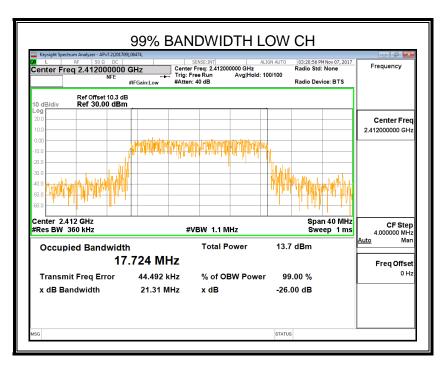
Frequency (MHz)	6dB bandwidth (MHz)	99% bandwidth (MHz)	Limit For 6dB (kHz)	Result
2412	17.72	17.724	500	Pass
2442	17.68	17.620	500	Pass
2472	17.60	17.585	500	Pass

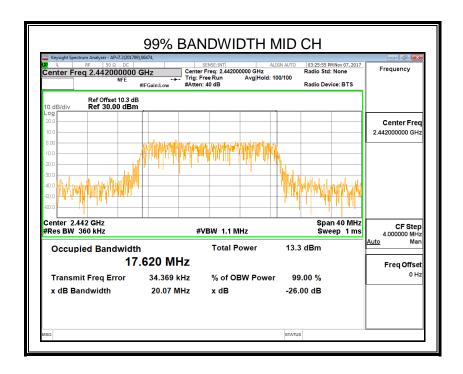
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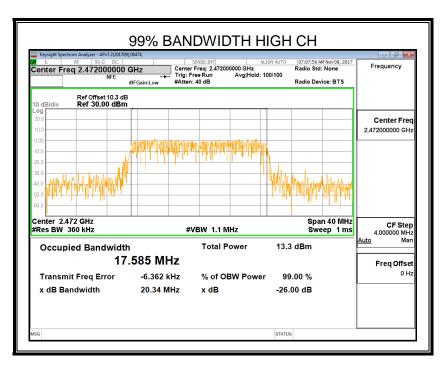










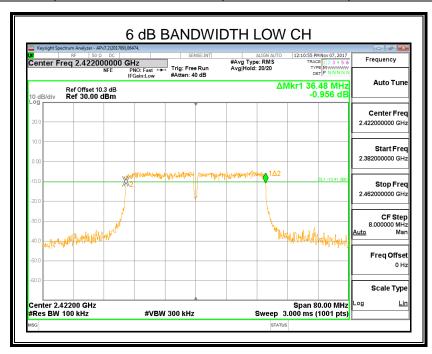


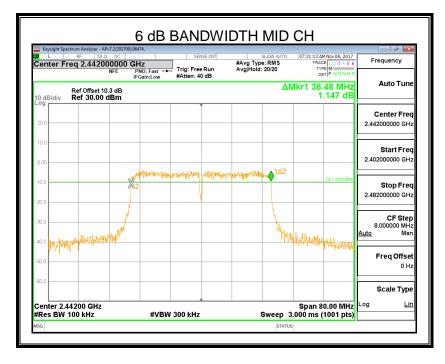
7.2.4. 802.11n40 CDD MODE

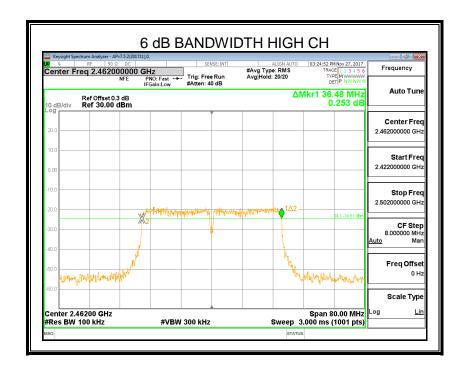
ANTENNA1

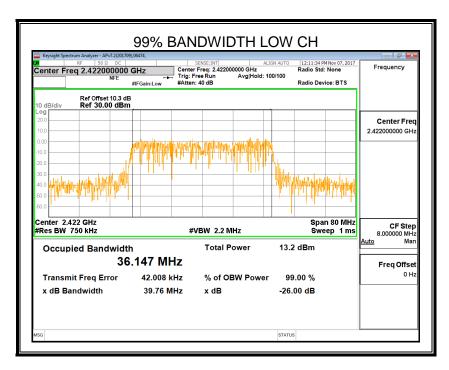
Frequency (MHz)	6dB bandwidth (MHz)	99% bandwidth (MHz)	Limit For 6dB (kHz)	Result
2422	36.48	36.15	500	Pass
2442	36.48	36.30	500	Pass
2462	36.48	36.41	500	Pass

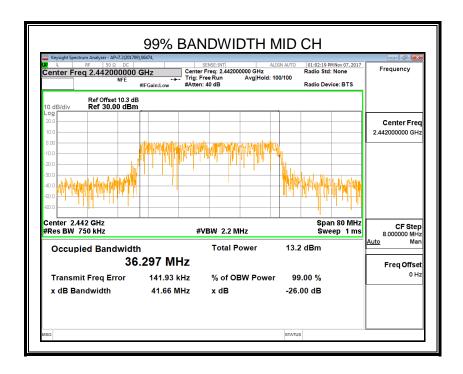
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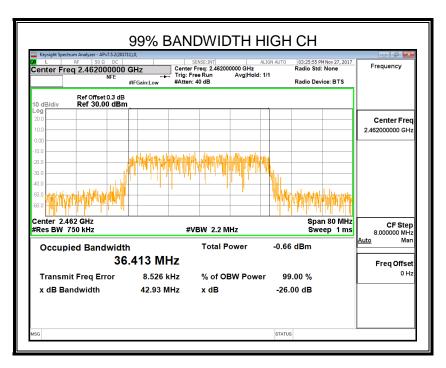








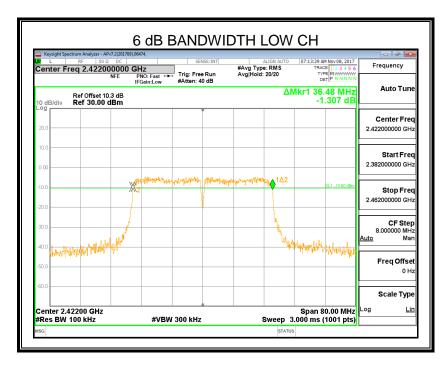


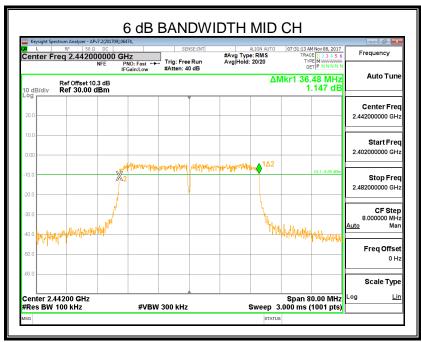


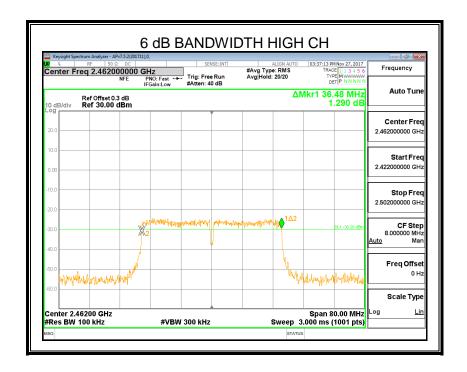
ANTENNA2

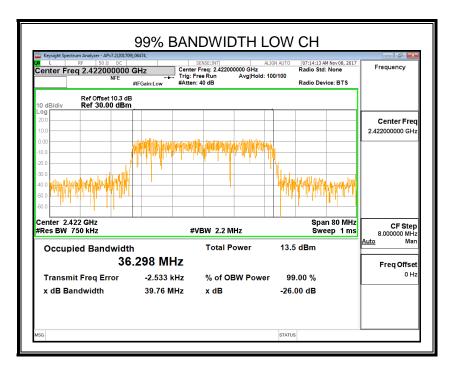
Frequency (MHz)	6dB bandwidth (MHz)	99% bandwidth (MHz)	Limit For 6dB (kHz)	Result
2422	36.48	36.30	500	Pass
2442	36.48	36.26	500	Pass
2462	36.48	36.25	500	Pass

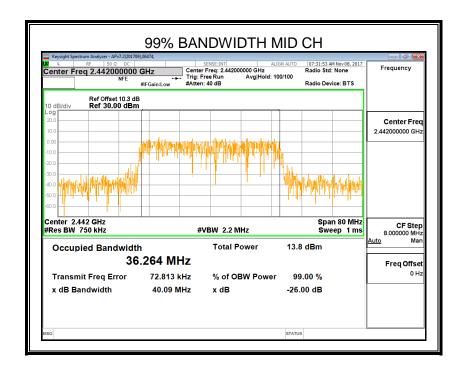
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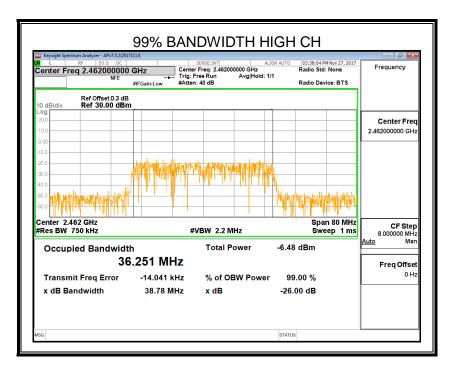












7.3. PEAK CONDUCTED OUTPUT POWER

LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2						
Section	Test Item	Limit	Frequency Range (MHz)			
FCC 15.247(b)(3) RSS-247 5.4 (e)	Peak Output Power	1 watt or 30dBm	2400-2483.5			

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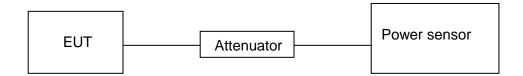
TEST PROCEDURE

Place the EUT on the table and set it in the transmitting mode.

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power sensor.

Measure peak power each channel.

TEST SETUP



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RESULTS

7.3.1. 802.11b SISO MODE

Mode	Frequency	ANT	Maximum PK Condu (dBı	Result	
	(MHz)		Single	Total	
	2412	1	16.19		
	2412	2	18.46		
	2442	1	18.16	N/A	PASS
	2442	2	18.25		
802.11b	2462	1	18.21		
002.110	2402	2	18.26		
	2467	1	17.73		
	2407	2	18.34		
	2472	1	17.86		
2472	2	18.55			

Mode	Frequency	ANT	Maximum AV Condu (dBı	Result		
	(MHz)		Single	Total		
	2412	1	13.45			
	2412	2	15.23		PASS	
	2442	1	15.44	N/A		
	2442	2	15.26			
802.11b	0.400	1	15.50			
002.110	2462	2	15.27			
	2467	1	15.01			
	2467	2	15.46			
	2472	1	14.95			
	2472	2472	2	15.55		

7.3.2. 802.11g SISO MODE

Mode	Frequency	ANT	Maximum PK Condu (dBr	Result		
	(MHz)		Single	Total		
	2412	1	20.79			
	2412	2	22.15			
	2442	1	21.61	N/A		
		2	21.87		PASS	
902 11a	2462	1	21.73			
802.11g	2402	2	21.90			
	2467	1	18.67			
	2407	2	18.61			
	2472	1	18.54			
	2472	2472	2	18.54		

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Mode Frequency		ANT	Maximum AV Condu (dBı	Result	
	(MHz)		Single	Total	
	2412	1	12.81		
	2412	2	13.17		30
	2442	1	13.52	N/A	
	2442	2	12.86		
000 110	2462	1	13.45		
802.11g	2402	2	12.97		
	2467	1	10.92		
2472	2407	2	10.87		
	2472	1	10.66		
	2	10.80			

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7.3.1. 802.11n HT20 SISO MODE

Mode	Frequency	ANT	Maximum PK Condu (dBi	Result	
	(MHz)		Single	Total	
	2412	1	20.67	24.33	
	2412	2	21.88	24.33	
	0.440	1	21.24	24.03	PASS
244	2442	2	20.78		
802.11n20	2462	1	20.89		
802.111120	2402	2	20.94		
	2467	1	15.82	19.60	
2467	2407	2	15.34	18.60	_
	2472	1	15.54	40.50	
	2472	2	15.42	18.58	

Mode	Frequency	ANT	Maximum AV Condu (dBi	Result	
	(MHz)		Single	Total	
	2412	1	12.77	15.70	
	2412	2	12.60	15.70	
	2442	1	13.00	15.81	PASS
		2	12.58		
802.11n20	2462	1	12.67	15.61	
002.111120	2402	2	12.52		
2467 2472	2467	1	7.56	10.70	
	2407	2	7.83		
	2472	1	7.67	40.70	
	2472 2		7.87	10.78	

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7.3.2. 802.11n HT20 CDD MODE

Mode	Frequency	ANT	Maximum PK Condu (dBi	Result	
	(MHz)		Single	Total	
	2412	1	21.23	24.25	
	2412	2	22.80	24.25	
	2442	1	21.25	24.00	PASS
2		2	21.16		
802.11n20	2462	1	20.21		
002.111120	2402	2	19.99		
	2467	1	15.32	10.27	
24	2407	2	15.39	18.37	_
	2472	1	15.54	40.40	
	2412	2	15.42	18.49	

Mode	Frequency	ANT	Maximum AV Condu (dBı	Result	
	(MHz)		Single	Total	
	2412	1	12.65	15.77	PASS
	2412	2	12.87	15.77	
	2442	1	12.98	15.99	
	2442	2	12.95		
802.11n20	2462	1	12.61	15.60	
802.111120	2402	2	12.60	15.62	
2467 2472	2467	1	7.76	10.50	
	2407	2	7.21		
	2472	1	7.49	10.40	
	24/2	7.34	10.43		

7.3.1.	802.11	n HT40) SISO	MODE

Mode	Frequency	ANT	Maximum PK Conducted Output Power (dBm)		Result
	(MHz)		Single	Total	
	2422	1	20.84	23.87	PASS
		2	20.88		
802.11n40	2442	1	20.79	23.80	
802.11N40		2	21.15		
	2462	1	16.99	20.39	
		2	17.74		

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Mode	Frequency	Y ANT (UDIII)			Result	
	(MHz)		Single	Total		
	2422	1	12.53	15.59	PASS	
	2422	2	12.63			
902 11540	2442	1	12.71	15.73		
802.11n40		2	12.73	15.73	PASS	
	2462	1	9.12	12.86		
		2	9.62	12.00		

7.3.2. 802.11n HT40 CDD MODE

Mode	Frequency (MHz)	ANT	Maximum PK Conducted Output Power (dBm)		Result
			Single	Total	
	2422	1	21.02	24.10	
		2	21.16		PASS
902 11540	2442	1	20.85	24.01	
802.11n40		2	21.15		
	2462	1	17.77	20.80	
	2462	2	17.80		

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Mode	Frequency	ANI		Maximum AV Conducted Output Power (dBm)		Result
	(MHz)		Single	Total		
	2422	1	12.65	15.72		
		2	12.76		PASS	
802.11n40	2442	1	12.96	15.98		
802.11N40		2	13.11			
	2462	1	9.78	10.06		
		2	9.92	12.86		

7.4. POWER SPECTRAL DENSITY

LIMITS

FCC Part15 (15.247) Subpart C RSS-247 ISSUE 2						
Section Test Item Limit Frequency Range (MHz)						
FCC §15.247 (e) RSS-247 5.2 (b)	Power Spectral Density	8 dBm in any 3 kHz band	2400-2483.5			

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TEST PROCEDURE

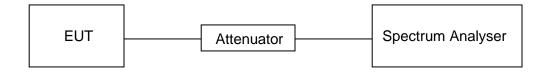
Connect the UUT to the spectrum analyser and use the following settings:

Center Frequency	The center frequency of the channel under test
Detector	Peak
RBW	3 kHz ≤ RBW ≤ 100 kHz.
VBW	≥3 × RBW
Span	1.5 x DTS bandwidth
Trace	Max hold
Sweep time	Auto couple.

Allow trace to fully stabilize and use the peak marker function to determine the maximum amplitude level within the RBW.

If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST SETUP

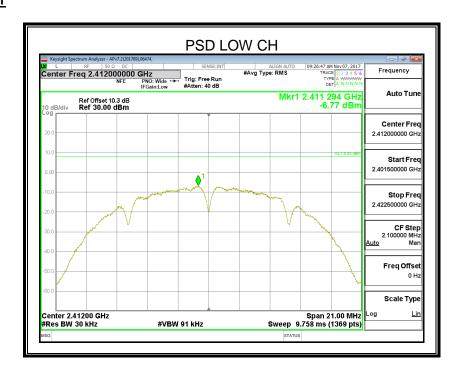


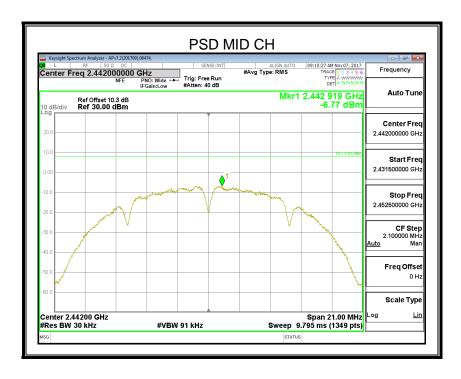
RESULTS

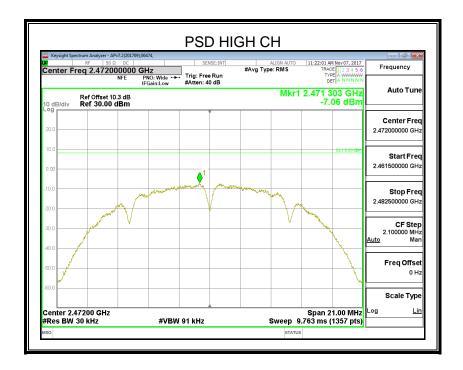
7.4.1. 802.11b SISO MODE

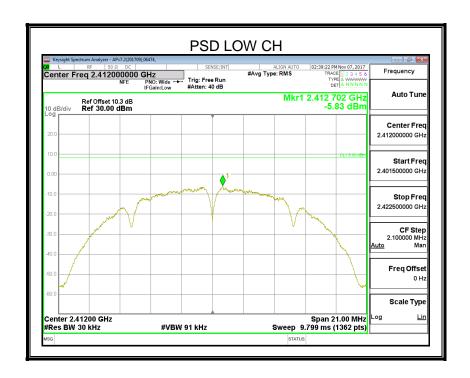
Frequency	ANT	Power Spectr (dBm/3	Limit		
(MHz)		Single	Total	(dBm/3kHz)	
2412	1 -6.77	1 -6.77	NI/A		
2412	2	-5.83			
2442	1	-6.77		0	
2442	2	-6.72	N/A	8	
2472	1	-7.06]	
	2	-6.40			

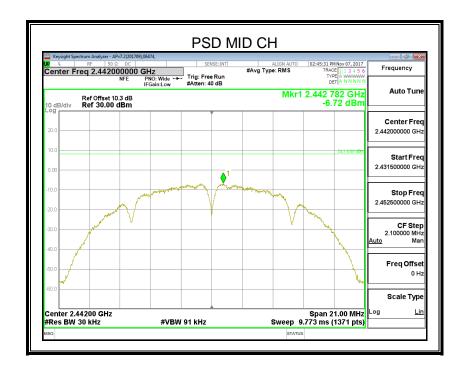
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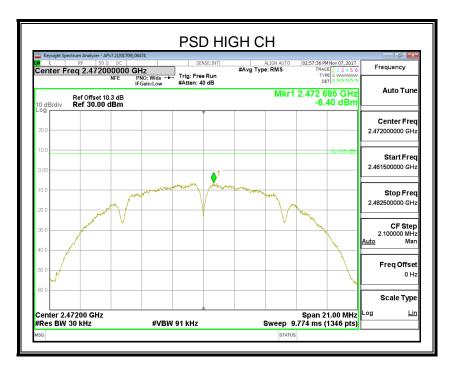








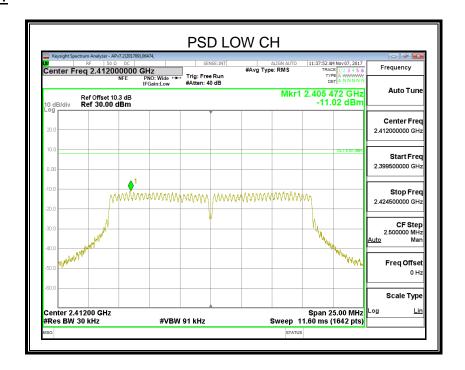


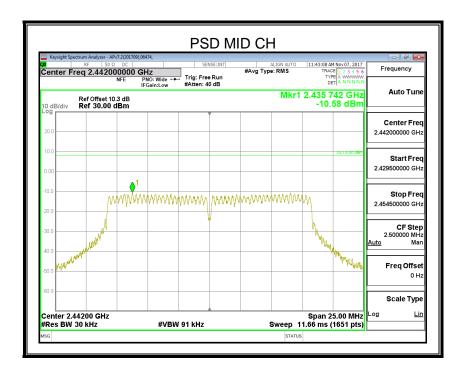


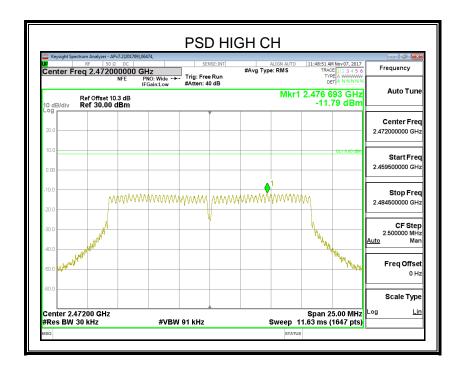
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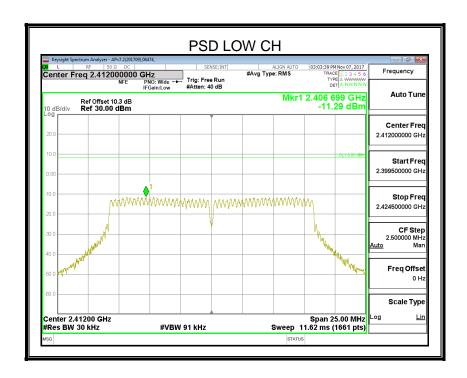
7.4.2. 802.11g SISO MODE

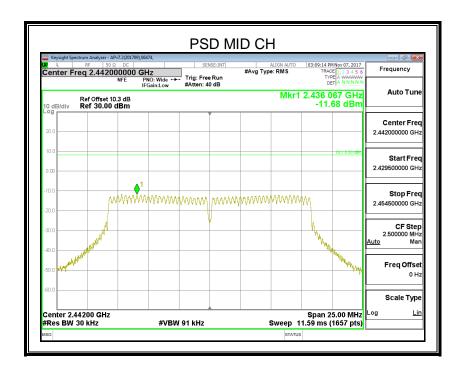
Frequency	ANT	Power Spectr (dBm/3	Limit	
(MHz)		Single	Total	(dBm/3kHz)
2412	1	-11.02	N/A	
2412	2	-11.29		
2442	1	-10.85		8
2442	2	-11.68	IN/A	0
2472	1	-11.79		
	2	-10.52		

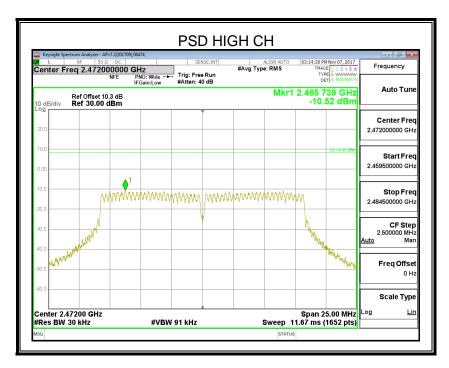










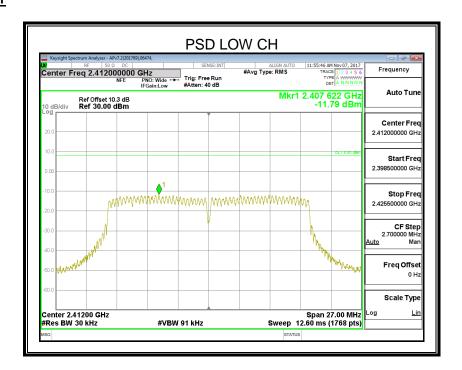


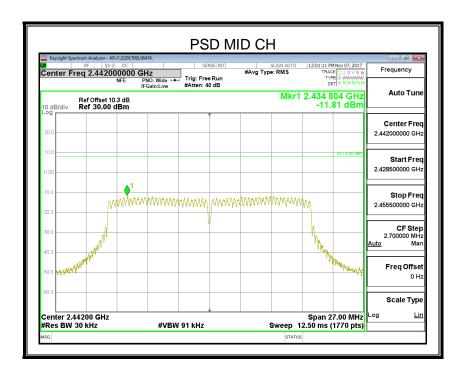
REPORT NO: 4788196596.1-3

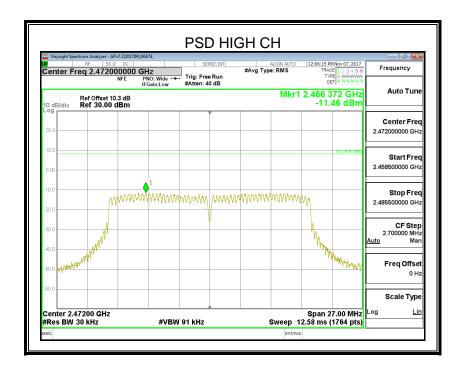
DATE: November 24, 2017 FCC ID: 2AC23-WCT0LR2201J IC: 12290A-WCT0LR2201J

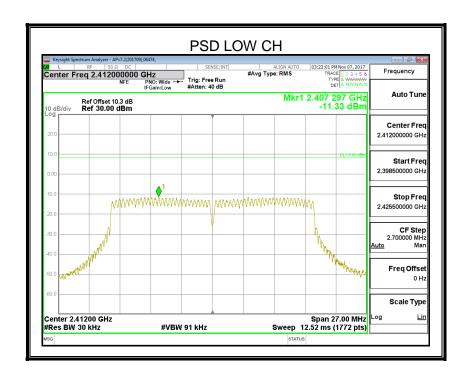
7.4.3. 802.11n20 CDD MODE

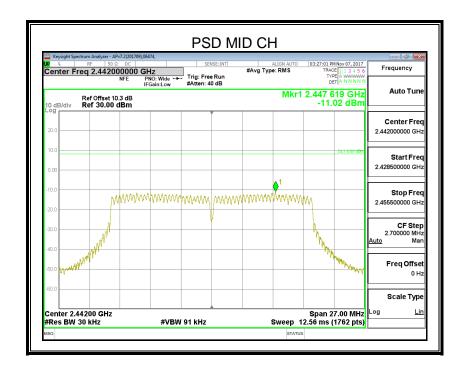
Frequency	ANT	Power Specti (dBm/3	Limit	
(MHz)		Single	Total	(dBm/3kHz)
2412	1	-11.79	-8.54	
2412	2	-11.33	-0.54	
2442	1	-11.81	0.00	8
2442	2	-11.02	-8.39	0
2472	1	-11.46	9.46	
2472	2	-11.48	-8.46	

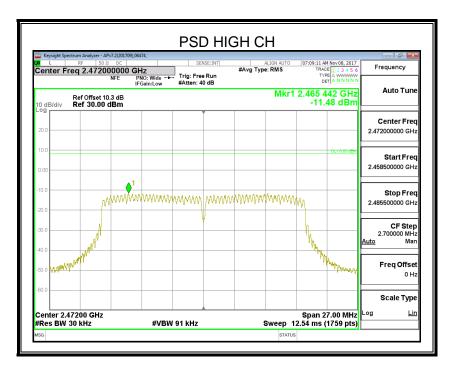












7.4.4. 802.11n40 CDD MODE

Frequency	ANT	Power Spectr (dBm/3	Limit	
(MHz)		Single	Total	(dBm/3kHz)
2422	1	-14.24	-11.17	
2422	2	-14.12		
2442	1	-14.39	44.05	8
2442	2	-14.34	-11.35	0
2462	1	-31.60	20.44	
	2	-36.74	-30.44	

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