

TEST REPORT

Applicant: Dals Lighting Inc.

Address of Applicant: 80 boul. De La Seigneurie Est, Blainville, QC, J7C 4N1, Canada

Manufacturer/Factory: HANGZHOU LIJIACHENG ELECTRIC CO., LTD.

Address of Manufacturer/Factory: NO.35 YANGSHAN ROAD,GAOHONG ZONE,LINAN, HANGZHOU ZHEJIANG 311307 China (Peoples Republic Of)

Equipment Under Test (EUT)

Product Name: Smart wall control

Model No.: SM-WLCT

Trade Mark: DAL'S, ILLUME

FCC ID: 2AQSN-SMWLCT

IC: 10733A-SMWLCT

HVIN: SM-WLCT

Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247
ANSI C63.10:2013
RSS-Gen Issue 5
RSS-247 Issue 2

Date of sample receipt: December 30,2021

Date of Test: December 31,2021-January 10,2022

Date of report issued: January 10,2022

Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:



Robinson Luo

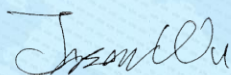
Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	2022-1-10	Original

Prepared By:

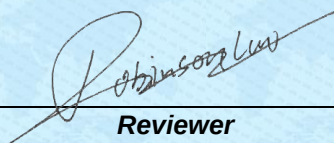


Project Engineer

Date:

2022-1-10

Check By:



Reviewer

Date:

2022-1-10

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4 Test Summary

Test Item	Section	Result
Antenna requirement	FCC part 15.203/15.247 (b)(4) RSS-Gen Section 6.8	Pass
AC Power Line Conducted Emission	FCC part 15.207 RSS-Gen Section 8.8	Pass
Conducted Max Average Output Power	FCC part 15.247 (b)(3) RSS-247 Section 5.4(d)	Pass
Channel Bandwidth & 99% OCB	FCC part 15.247 (a)(2) RSS-Gen Section 6.7	Pass
Power Spectral Density	FCC part 15.247 (e) RSS-247 Section 5.2(b)	Pass
Band Edge	FCC part 15.247(d) RSS-247 Section 5.5	Pass
Spurious Emission	FCC part 15.205/15.209 RSS-Gen Section 3.3 & 8.9 & 8.10	Pass
Frequency stability	RSS-Gen Section 6.11& Section 8.11	PASS

Remark: Test according to ANSI C63.10:2013 and RSS-Gen

Pass: The EUT complies with the essential requirements in the standard.

Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	1×10^{-7}
2	Duty cycle	0.37%
3	Occupied Bandwidth	2.8dB
4	RF conducted power	0.75dB
5	RF power density	3dB
6	Conducted Spurious emissions	2.58dB
7	AC Power Line Conducted Emission	3.44dB (0.15MHz~30MHz)
8	Radiated Spurious emission test	3.1dB (9kHz-30MHz)
		3.8039dB (30MHz-200MHz)
		3.9679dB (200MHz-1GHz)
		4.29dB (1GHz-18GHz)
		3.30dB (18GHz-40GHz)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

5 General Information

5.1 General Description of EUT

Product Name:	Smart wall control
Model No.:	SM-WLCT
Serial No.:	N/A
Hardware version:	V3.1
Software version:	V1.1.0
Test sample(s) ID:	GTSL202201000020-1
Sample(s) Status	Engineer sample
Operation Frequency:	802.11b/802.11g/802.11n(HT20): 2412MHz~2462MHz 802.11n(HT40): 2422MHz~2452MHz
Channel numbers:	802.11b/802.11g /802.11n(HT20): 11 802.11n(HT40):7
Channel separation:	5MHz
Modulation technology:	802.11b: Direct Sequence Spread Spectrum (DSSS) 802.11g/802.11n(HT20)/802.11n(HT40): Orthogonal Frequency Division Multiplexing (OFDM)
Antenna Type:	PCB Antenna
Antenna gain:	2.0dBi
Power Supply:	AC 120V/60Hz

Operation Frequency each of channel							
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		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency (MHz)	
	802.11b/802.11g/802.11n(HT20)	802.11n(HT40)
Lowest channel	2412MHz	2422MHz
Middle channel	2437MHz	2437MHz
Highest channel	2462MHz	2452MHz

Test Item	Software	Description
Conducted RF Testing and Radiated testing	AmebaD_mptool_2V1	Set the EUT to different modulation and channel

Output power setting table:

Test Mode	Set Tx Output Power	Data Rate
802.11b	17dBm	1Mbps
802.11g	13 dBm	6Mbps
802.11n(HT20)	13 dBm	6.5Mbps
802.11n(HT40)	13 dBm	13Mbps

5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode
<i>Remark: During the test, the dutycycle >98%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data. New battery is used during all test.</i>	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)
Data rate	1Mbps	6Mbps	6.5Mbps	13Mbps

5.3 Description of Support Units

None.

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Test Facility

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

- **FCC—Registration No.: 381383**

Designation Number: CN5029

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files.

- **IC —Registration No.: 9079A**

CAB identifier: CN0091

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

- **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

5.7 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

5.8 Additional Instructions

Test Software	Special test command provided by manufacturer
Power level setup	Default

6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 02 2020	July. 01 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 24 2021	June. 23 2022
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 24 2021	June. 23 2022
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 24 2021	June. 23 2022
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 24 2021	June. 23 2022
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 24 2021	June. 23 2022
9	Coaxial Cable	GTS	N/A	GTS211	June. 24 2021	June. 23 2022
10	Coaxial cable	GTS	N/A	GTS210	June. 24 2021	June. 23 2022
11	Coaxial Cable	GTS	N/A	GTS212	June. 24 2021	June. 23 2022
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 24 2021	June. 23 2022
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 24 2021	June. 23 2022
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 24 2021	June. 23 2022
15	Band filter	Amindeon	82346	GTS219	June. 24 2021	June. 23 2022
16	Power Meter	Anritsu	ML2495A	GTS540	June. 24 2021	June. 23 2022
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 24 2021	June. 23 2022
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 24 2021	June. 23 2022
19	Splitter	Agilent	11636B	GTS237	June. 24 2021	June. 23 2022
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 24 2021	June. 23 2022
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 17 2021	Oct. 16 2022
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 17 2021	Oct. 16 2022
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 17 2021	Oct. 16 2022
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 24 2021	June. 23 2022

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May.15 2019	May.14 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 24 2021	June. 23 2022
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June. 24 2021	June. 23 2022
4	ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	GTS226	June. 24 2021	June. 23 2022
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	KTJ	TA328	GTS233	June. 24 2021	June. 23 2022
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	June. 24 2021	June. 23 2022
9	ISN	SCHWARZBECK	NTFM 8158	GTS565	June. 24 2021	June. 23 2022
10	High voltage probe	SCHWARZBECK	TK9420	GTS537	July. 09 2021	July. 08 2022

RF Conducted Test:						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	June. 24 2021	June. 23 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 24 2021	June. 23 2022
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 24 2021	June. 23 2022
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 24 2021	June. 23 2022
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 24 2021	June. 23 2022
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 24 2021	June. 23 2022
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 24 2021	June. 23 2022
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 24 2021	June. 23 2022

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 24 2021	June. 23 2022
2	Barometer	ChangChun	DYM3	GTS255	June. 24 2021	June. 23 2022

7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(b) (4)
15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(b)(4) requirement: (4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	
Standard requirement:	RSS-Gen Section 6.8
A transmitter can only be sold or operated with antennas with which it was approved. When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer. For transmitters of RF output power of 10 milliwatts or less, only the portion of the antenna gain that is in excess of 6 dBi (6 dB above isotropic gain) shall be added to the measured RF output power to demonstrate compliance with the radiated power limits specified in the applicable standard. For transmitters of output power greater than 10 milliwatts, the total antenna gain shall be added to the measured RF output power to demonstrate compliance to the specified radiated power	
EUT Antenna:	
<i>The antenna is Internal Antenna, the best case gain of the antenna is 2.0dBi, reference to the appendix II for details</i>	

7.2 Conducted Emissions

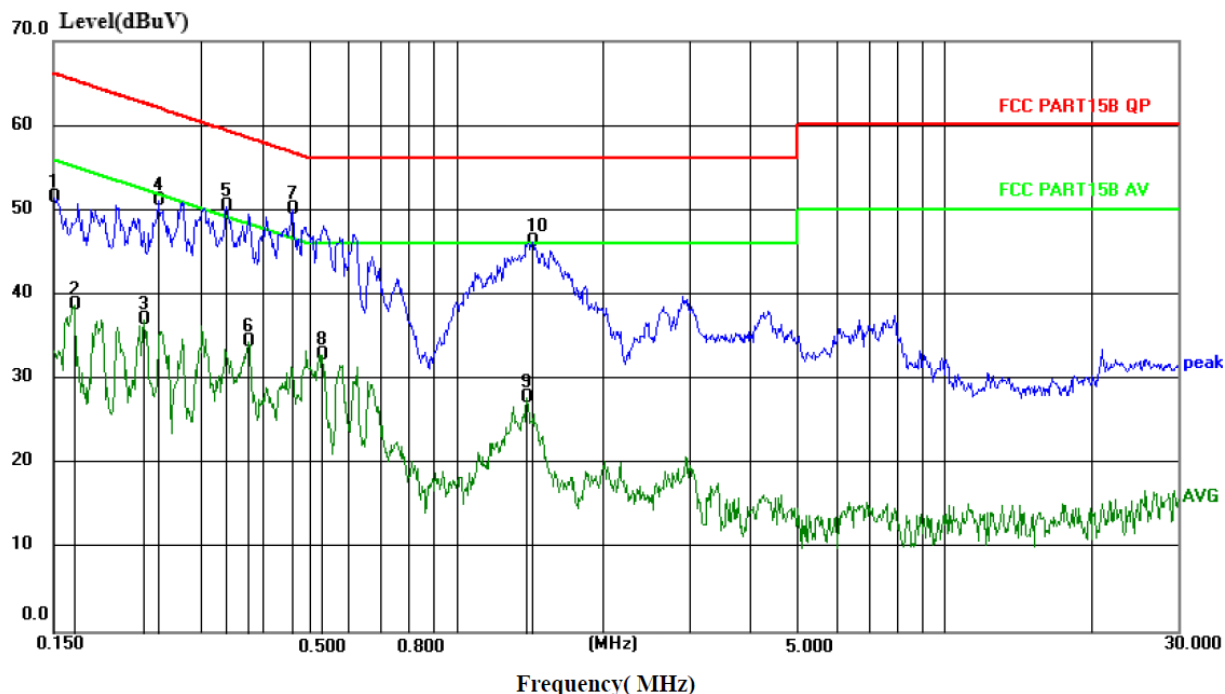
Test Requirement:	FCC Part15 C Section 15.207 RSS-Gen Section 8.8					
Test Method:	ANSI C63.10:2013					
Test Frequency Range:	150KHz to 30MHz					
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto					
Limit:	Frequency range (MHz)		Limit (dBuV)			
			Quasi-peak		Average	
	0.15-0.5		66 to 56*		56 to 46*	
	0.5-5		56		46	
	5-30		60		50	
* Decreases with the logarithm of the frequency.						
Test setup:	Reference Plane <i>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</i>					
Test procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2013 on conducted measurement.					
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test voltage:	AC 120V, 60Hz					
Test results:	Pass					

Remark: N/A

Measurement data

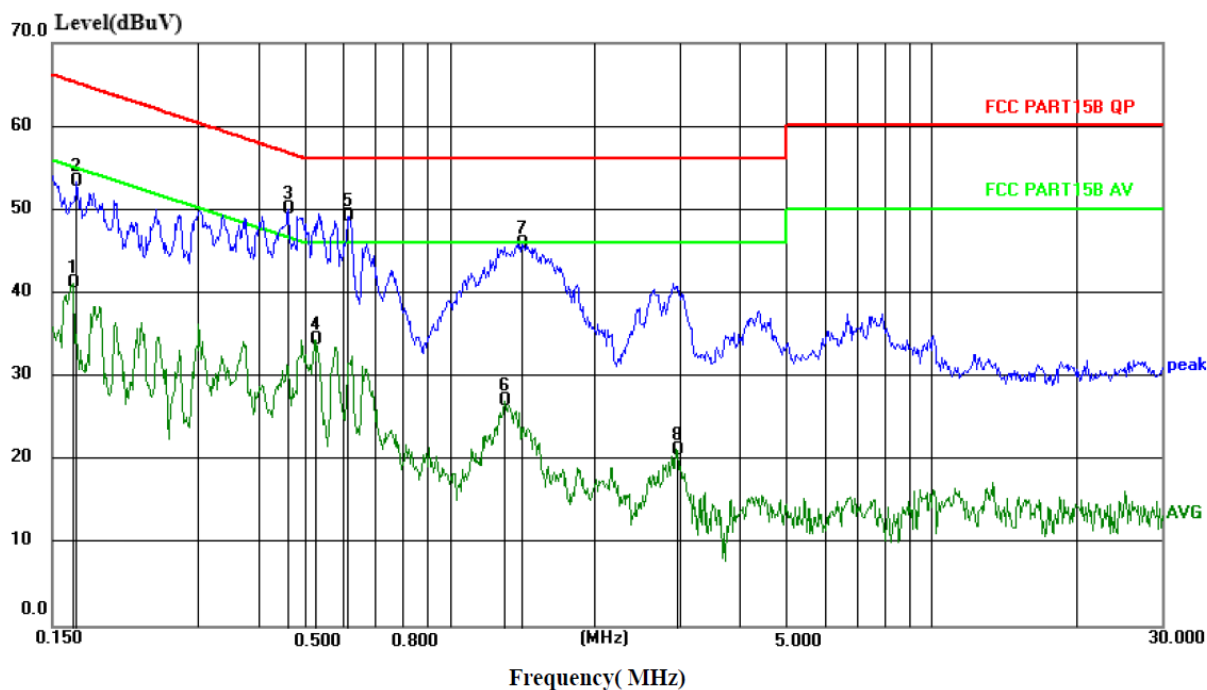
Pre-scan all test modes, found worst case at 802.11b 2462MHz, and so only show the test result of 802.11b 2462MHz

Line:



.Freq	Reading	LISN	Cable	Limit	Over	Remark
MHz	level	factor	loss	level	limit	
	dBuV	dB	dB	dBuV	dB	
0.1507	41.50	10.00	0.01	51.51	65.96	QP
0.1658	28.70	10.01	0.01	38.72	55.17	Average
0.2303	27.01	10.01	0.01	37.03	52.44	Average
0.2454	41.08	10.01	0.01	51.10	61.91	QP
0.3391	40.32	10.01	0.01	50.35	59.23	QP
0.3769	24.38	10.01	0.01	34.42	48.35	Average
0.4636	40.05	10.01	0.01	50.10	56.63	QP
0.5321	22.76	10.01	0.01	32.81	46.00	Average
1.3951	17.55	10.13	0.02	27.70	46.00	Average
1.4332	36.00	10.13	0.02	46.15	56.00	QP

Neutral:

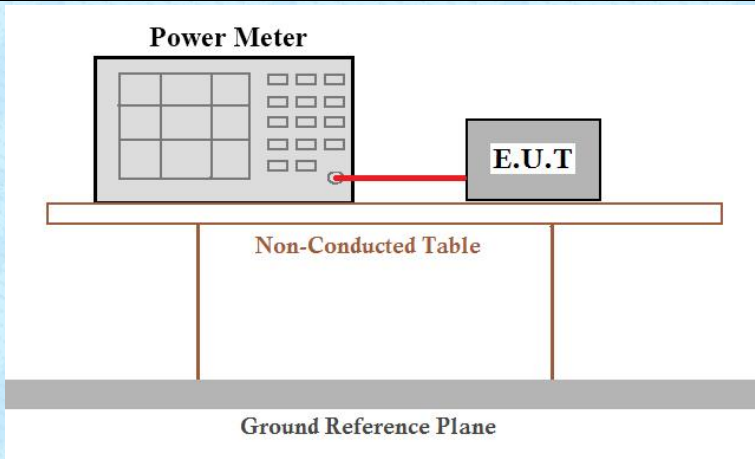


.Freq MHz	Reading level dBuV	LISN/ISN factor dB	Cable loss dB	Level dBuV	Limit level dBuV	Over limit dB	Remark
0.1658	31.20	10.01	0.01	41.22	55.17	-13.95	Average
0.1685	43.28	10.01	0.01	53.30	65.03	-11.73	QP
0.4636	40.05	10.01	0.01	50.10	56.63	-6.53	QP
0.5292	24.33	10.01	0.01	34.38	46.00	-11.62	Average
0.6169	39.11	10.04	0.01	49.17	56.00	-6.83	QP
1.3024	16.90	10.12	0.02	27.04	46.00	-18.96	Average
1.4106	35.69	10.12	0.02	45.84	56.00	-10.16	QP
2.9775	10.83	10.29	0.03	21.15	46.00	-24.85	Average

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level = Receiver Read level + LISN Factor + Cable Loss
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

7.3 Conducted Max Average Output Power

Test Requirement :	FCC Part15 C Section 15.247 (b)(3) RSS-247 Section 5.4(d)
Test Method :	KDB558074 D01 15.247 Meas Guidance v05r02 ANSI C63.10:2013 and RSS-Gen
Limit:	30dBm 36dBm(4W for e.i.r.p)
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

Duty Cycle:

Test Mode (Worse case)	Duty Cycle(x)	10log(1/x)
802.11b	99.57	0.02
802.11g	100	0.00
802.11n(HT20)	99.74	0.01
802.11n(HT40)	100	0

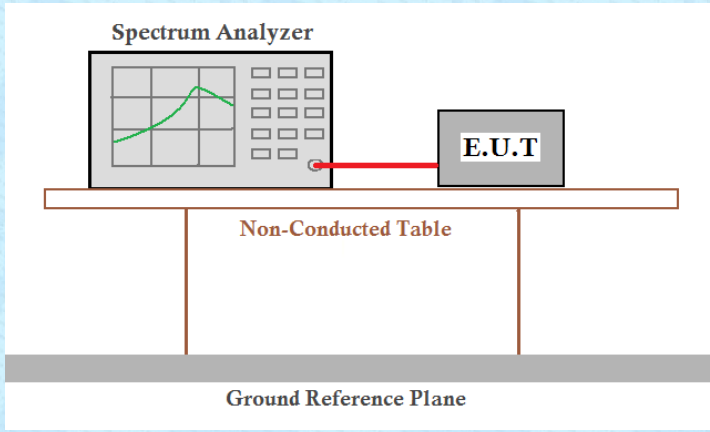
Output Power:

Test Mode	Frequency (MHz)	Conducted Power (dBm)	Duty Factor (dB)	Total Power (dBm)	Limit (dBm)	Result
802.11b	2412	16.216	0.02	16.236	30	Pass
	2437	14.282	0.02	14.302	30	Pass
	2462	13.598	0.02	13.618	30	Pass
802.11g	2412	12.338	0	12.338	30	Pass
	2437	10.965	0	10.965	30	Pass
	2462	10.162	0	10.162	30	Pass
802.11n(HT20)	2412	11.514	0.01	11.524	30	Pass
	2437	10.505	0.01	10.515	30	Pass
	2462	9.648	0.01	9.658	30	Pass
802.11n(HT40)	2422	10.166	0	10.166	30	Pass
	2437	9.275	0	9.275	30	Pass
	2452	8.3	0	8.3	30	Pass

EIRP:

Test Channel	e.i.r.p (dBm)				Limit(dBm)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	18.236	14.338	13.524	12.166	36	Pass
Middle	16.302	12.965	12.515	11.275		
Highest	15.618	12.162	11.658	10.3		

7.4 Channel Bandwidth & 99% Occupy Bandwidth

Test Requirement :	FCC Part15 C Section 15.247 (a)(2) RSS-Gen Section 6.7 & RSS-247 Section 5.2(a)
Test Method :	KDB558074 D01 15.247 Meas Guidance v05r02 ANSI C63.10:2013 and RSS-Gen
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

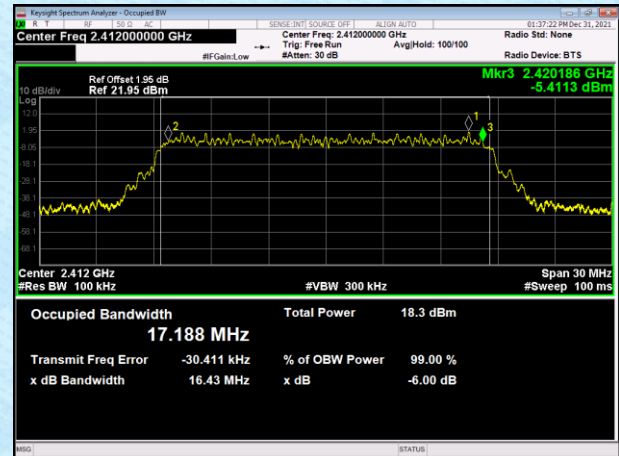
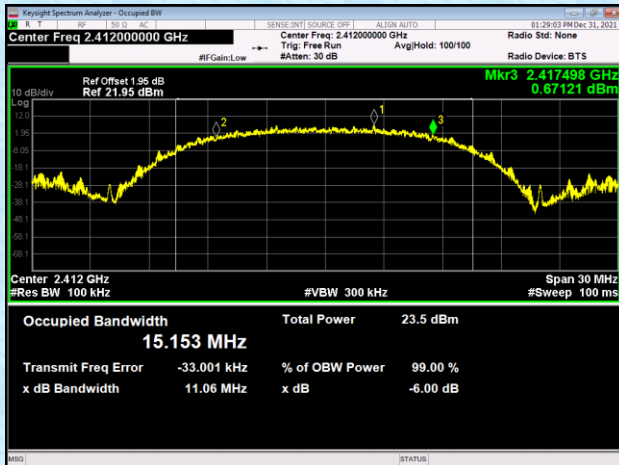
Test Channel	Channel Bandwidth (MHz)				Limit(KHz)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	11.062	16.433	15.056	35.083	>500	Pass
Middle	11.016	16.432	15.07	35.086		
Highest	13.01	16.429	15.06	35.09		

Test Channel	99% Occupy Bandwidth (MHz)				Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)	
Lowest	15.214	17.332	18.237	35.729	Pass
Middle	15.108	17.325	18.236	35.754	
Highest	15.070	17.317	18.239	35.771	

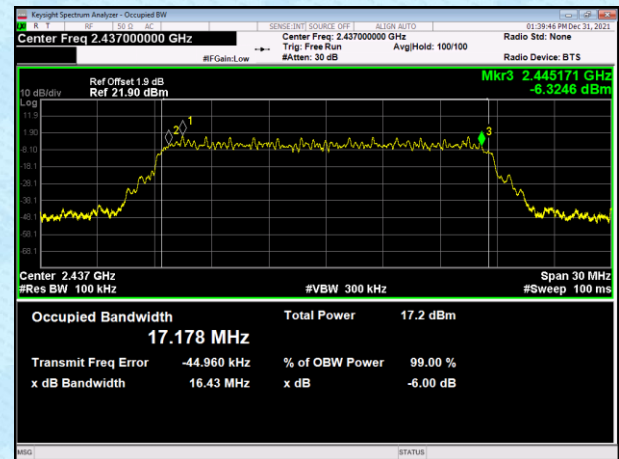
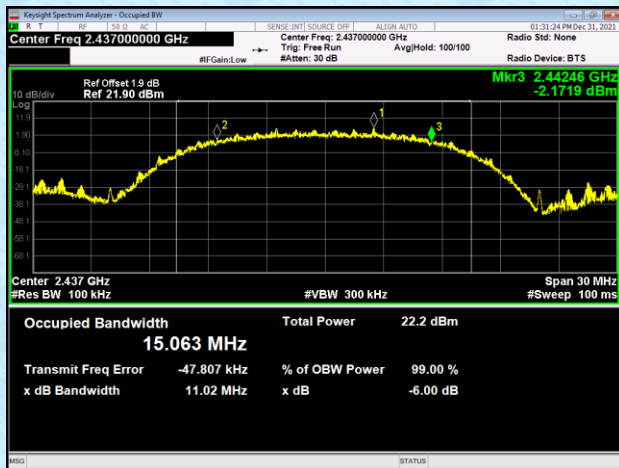
Test plot as follows:

-6dB BW:

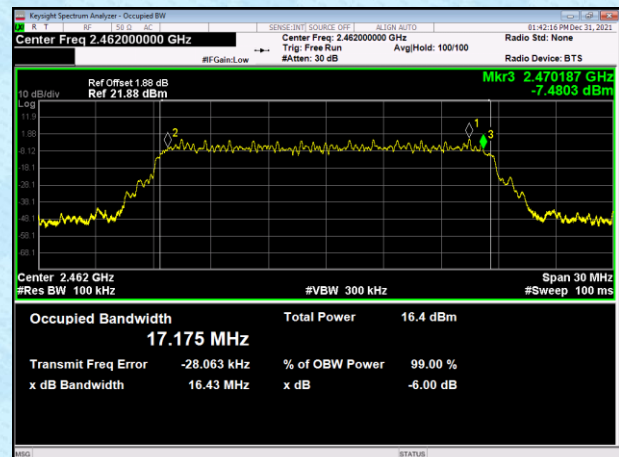
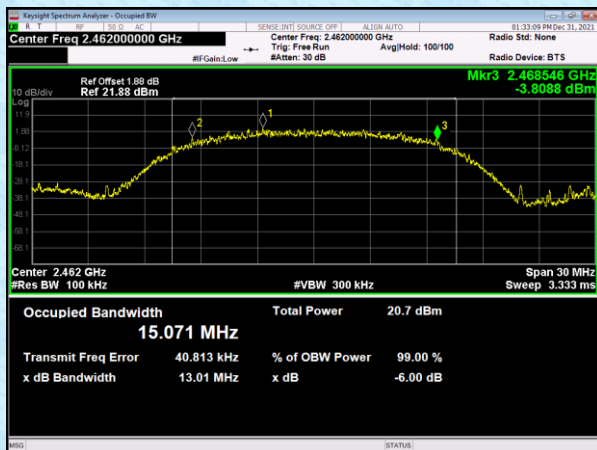
Test mode:	802.11b	Test mode:	802.11g
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Lowest channel

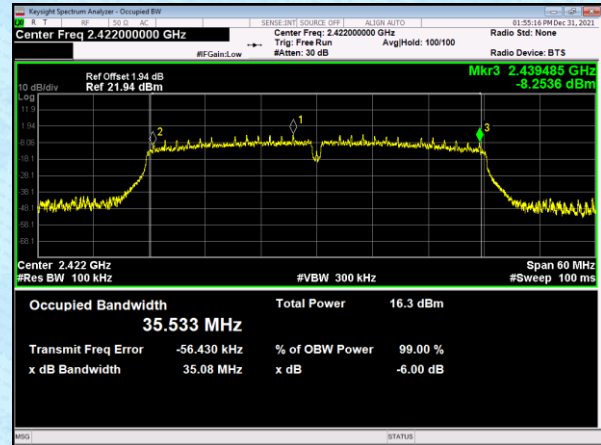
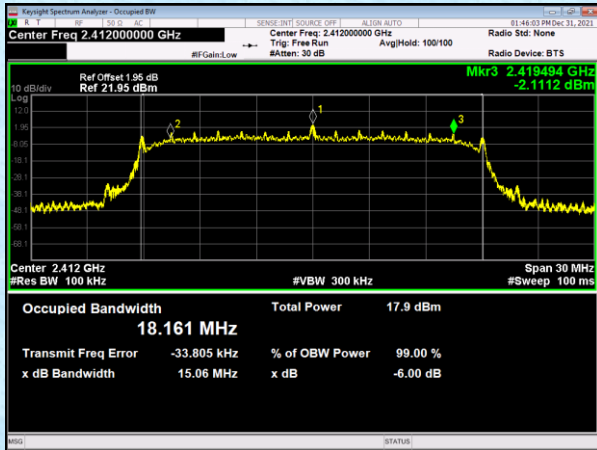


Middle channel

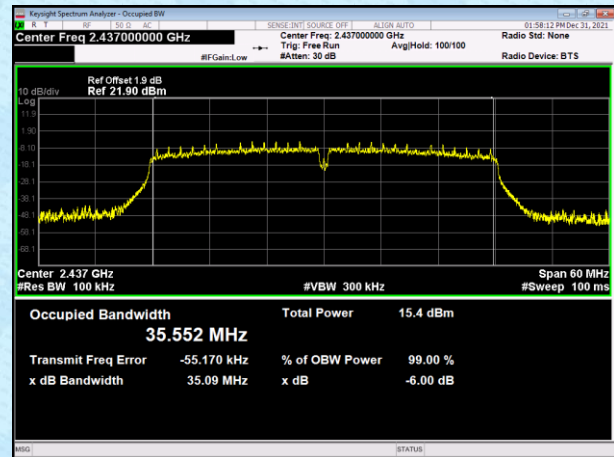
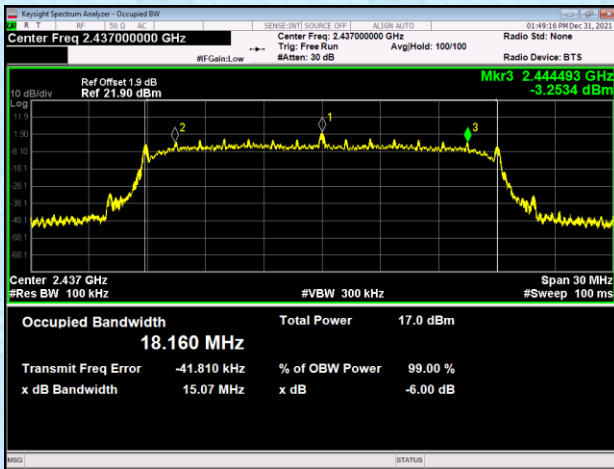


Highest channel

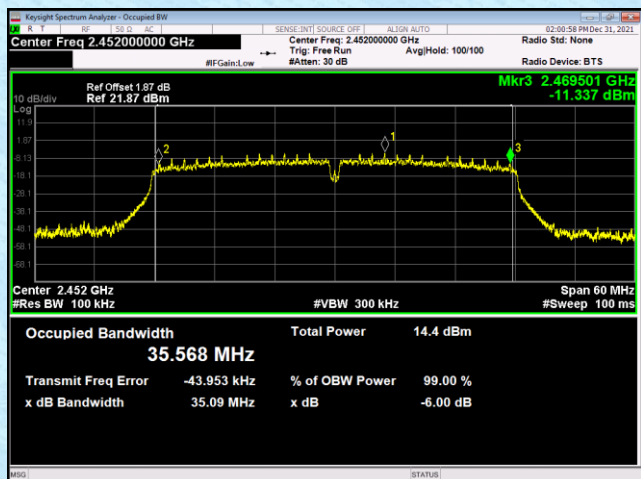
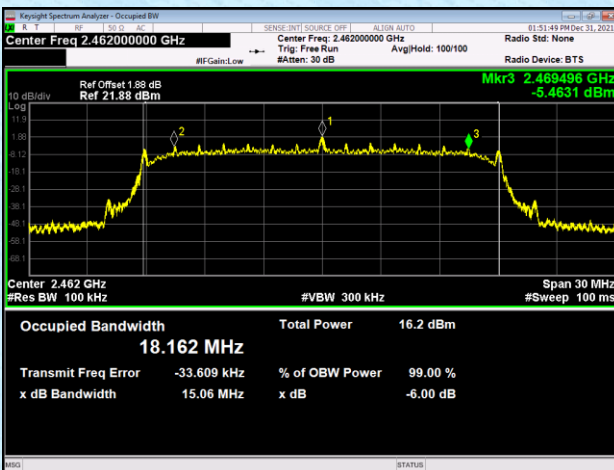
Test mode:	802.11n(HT20)	Test mode:	802.11n(HT40)
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Lowest channel



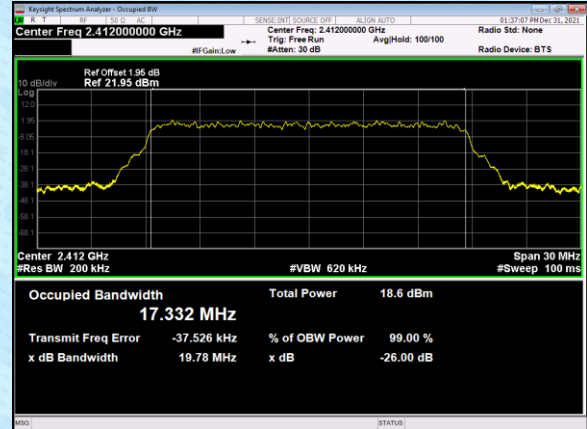
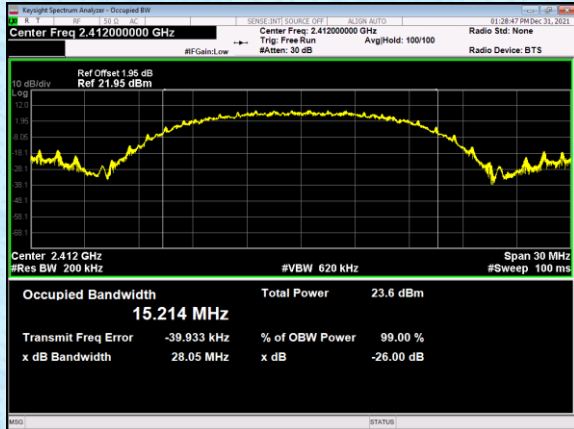
Middle channel



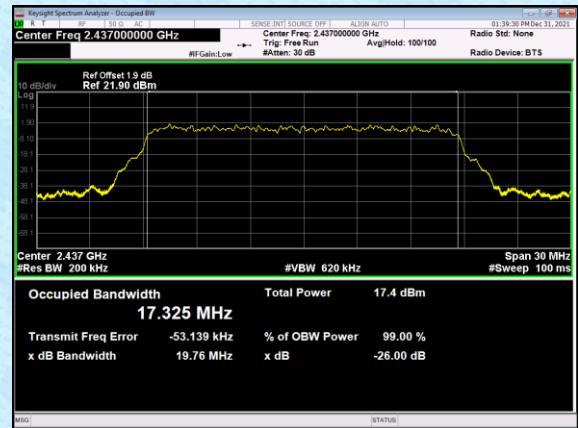
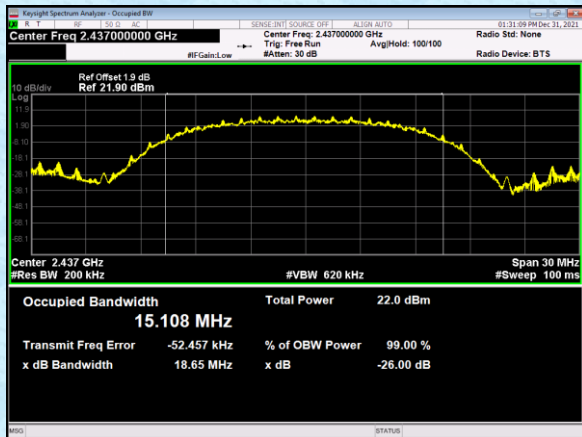
Highest channel

99% BW:

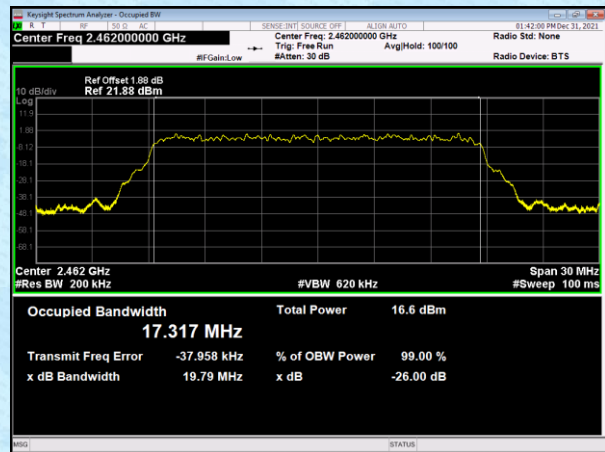
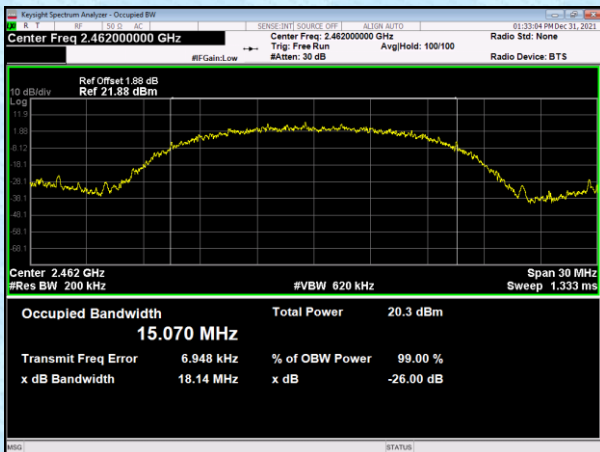
Test mode:	802.11b	Test mode:	802.11g
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Lowest channel

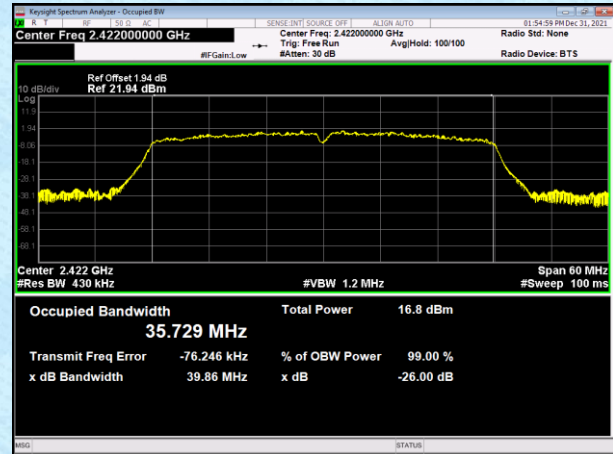
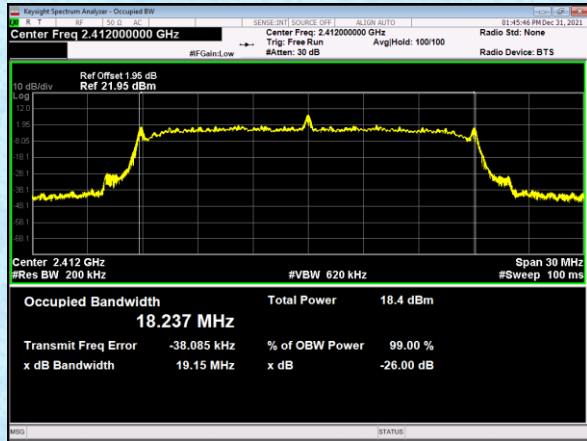


Middle channel

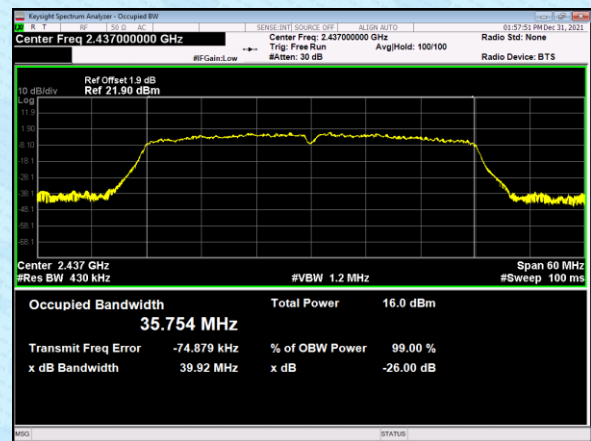
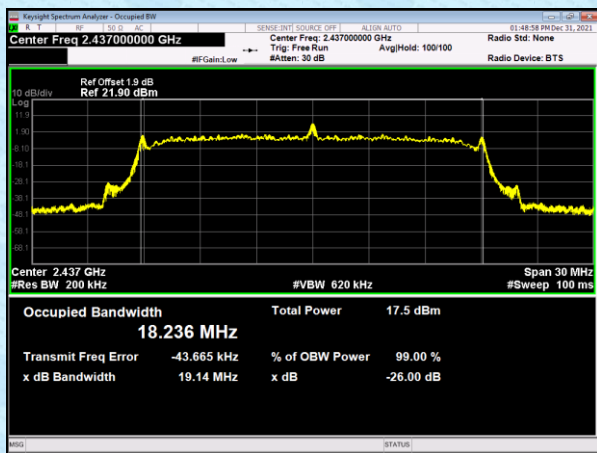


Highest channel

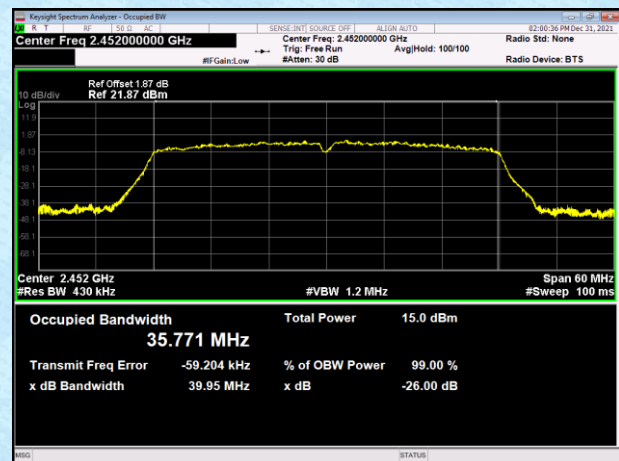
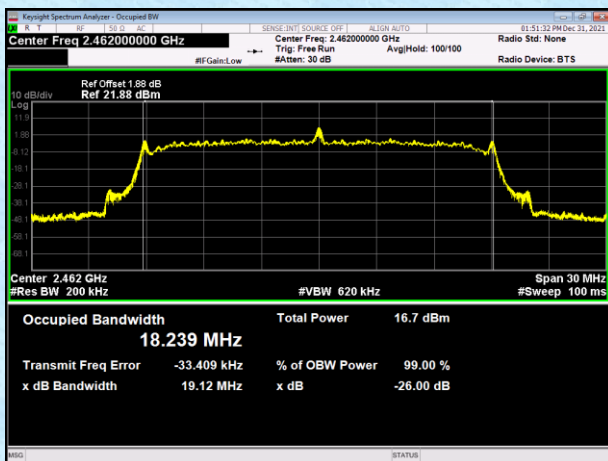
Test mode:	802.11n(HT20)	Test mode:	802.11n(HT40)
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Lowest channel

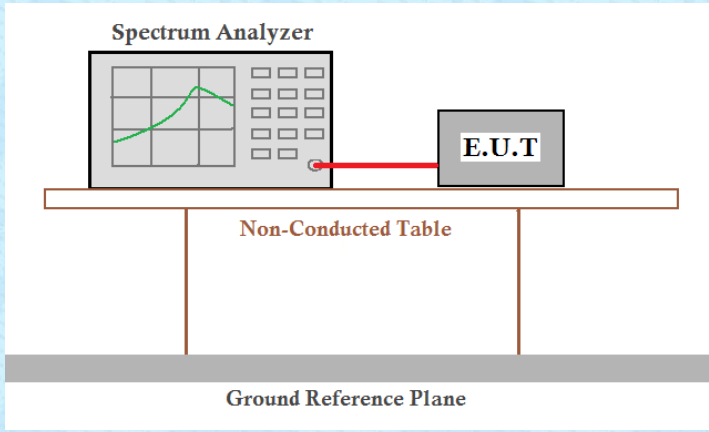


Middle channel



Highest channel

7.5 Power Spectral Density

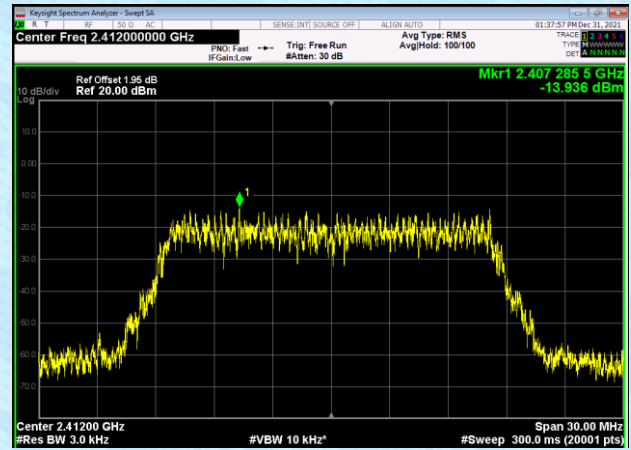
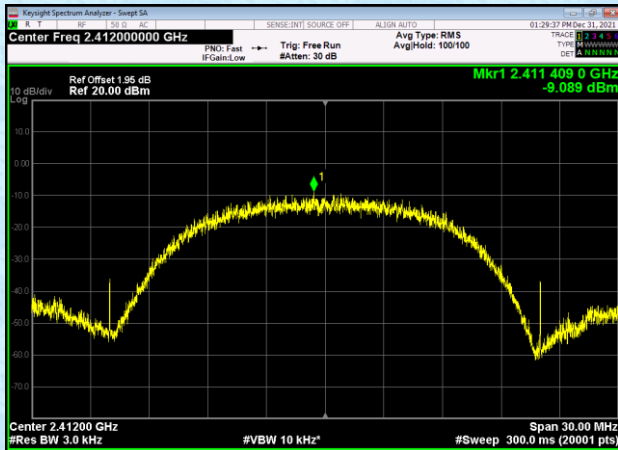
Test Requirement:	FCC Part15 C Section 15.247 (e) RSS-247 Section 5.2(b)
Test Method:	KDB558074 D01 15.247 Meas Guidance v05r02 ANSI C63.10:2013 and RSS-Gen
Limit:	8dBm/3kHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data

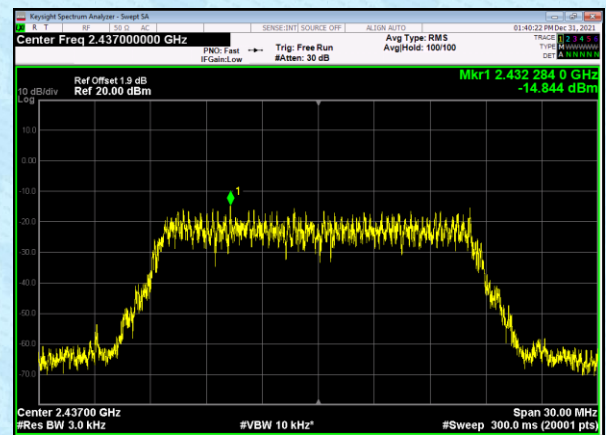
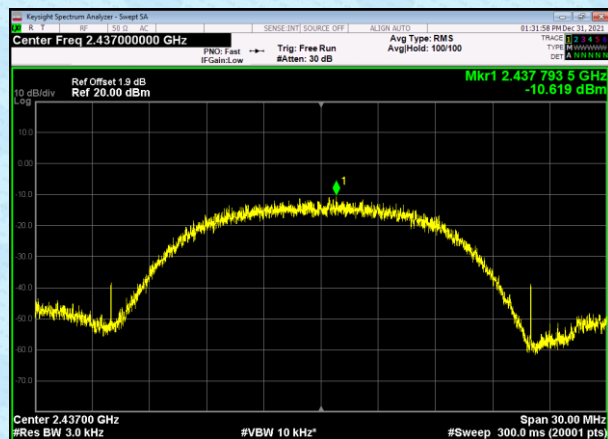
Test CH	Power Spectral Density (dBm/3kHz)				Limit (dBm/3kHz)	Result
	802.11b	802.11g	802.11n(HT20)	802.11n(HT40)		
Lowest	-9.089	-13.936	-14.518	-18.019	8.00	Pass
Middle	-10.619	-14.844	-15.422	-18.706		
Highest	-11.279	-15.877	-15.996	-19.9		

Test plot as follows:

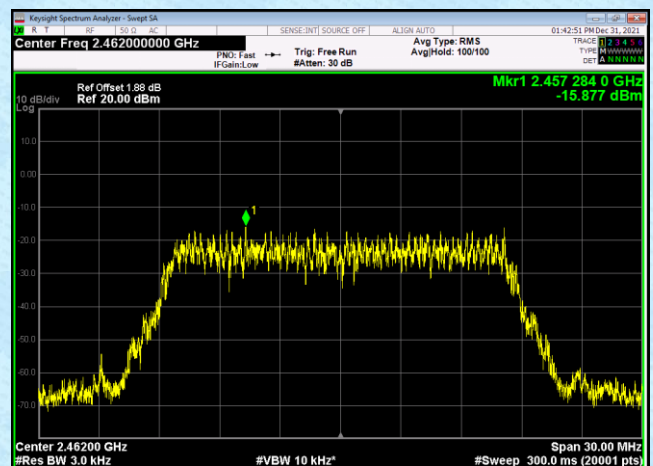
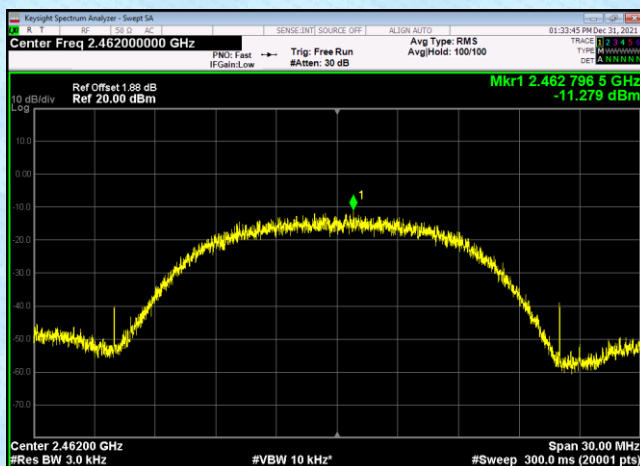
Test mode:	802.11b	Test mode:	802.11g
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Lowest channel

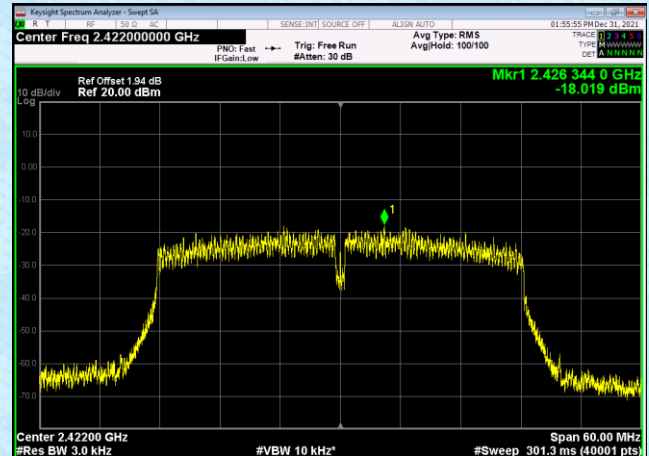
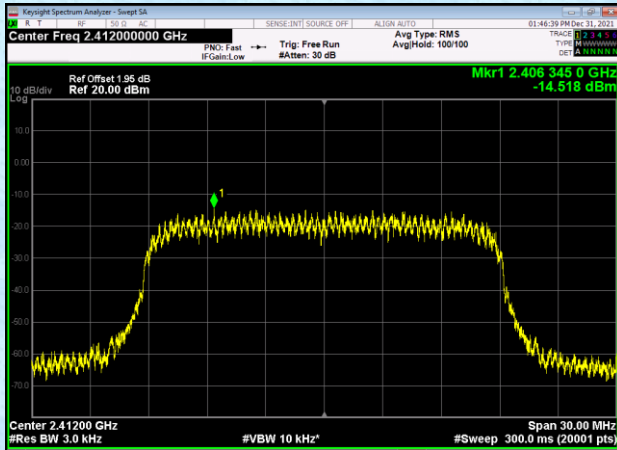


Middle channel

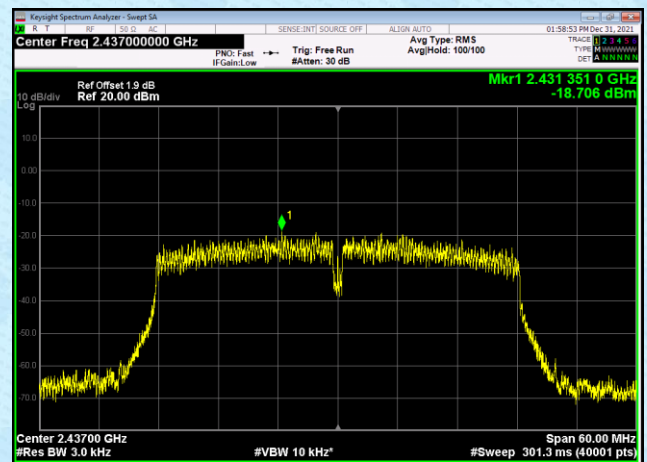
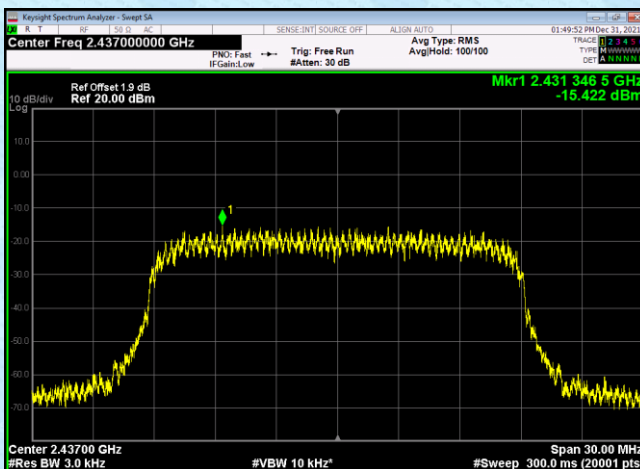


Highest channel

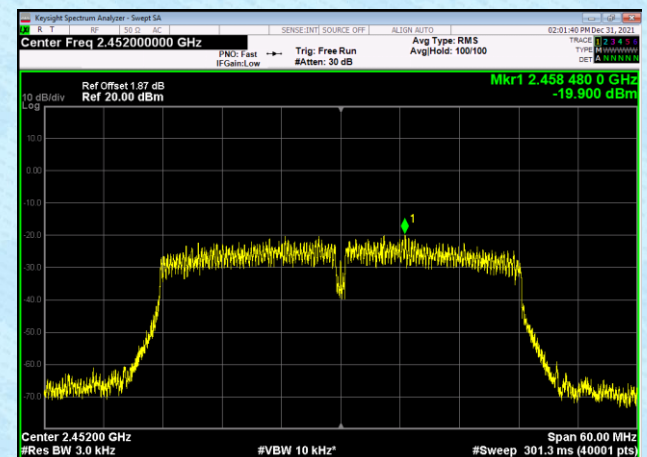
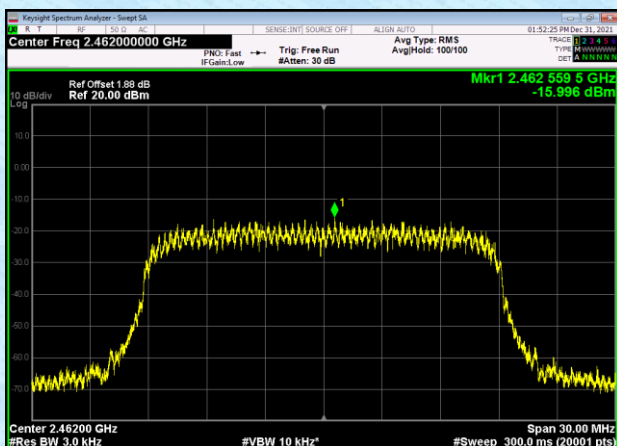
Test mode:	802.11n(HT20)	Test mode:	802.11n(HT40)
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Lowest channel



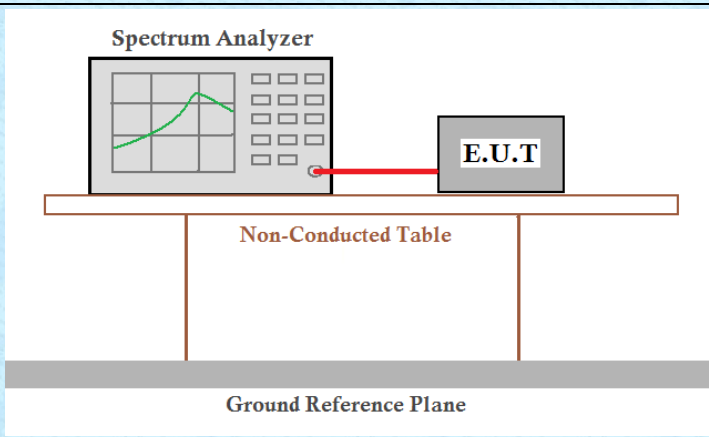
Middle channel



Highest channel

7.6 Spurious Emission in Non-restricted & restricted Bands

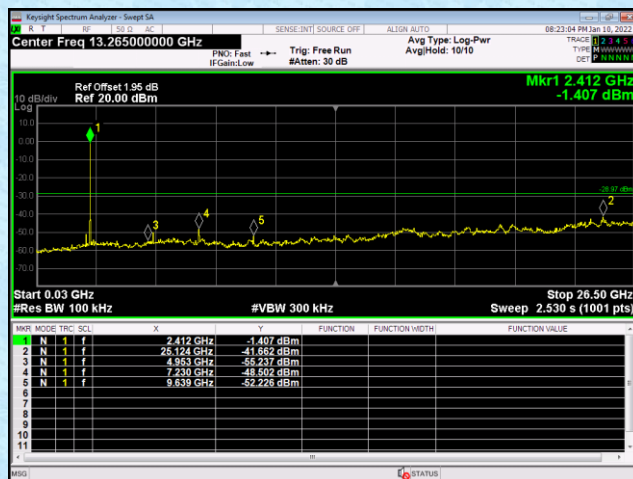
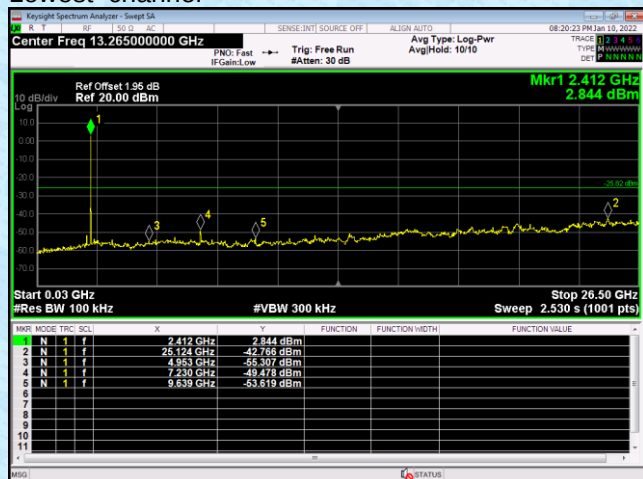
7.6.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d) RSS-247 Section 5.5
Test Method:	KDB558074 D01 15.247 Meas Guidance v05r02 ANSI C63.10:2013 & RSS-Gen
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.
Test setup:	 The diagram illustrates the test setup. A Spectrum Analyzer is connected to an E.U.T. (Equipment Under Test) via a red cable. Both the Spectrum Analyzer and the E.U.T. are placed on a Non-Conducted Table. The table is supported by a Ground Reference Plane.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Test plot as follows:

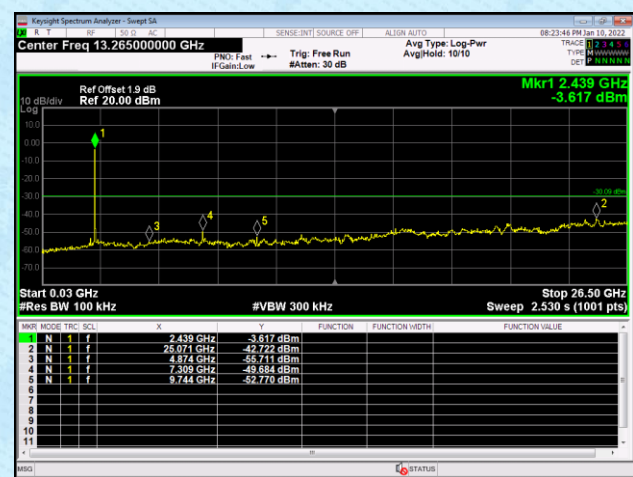
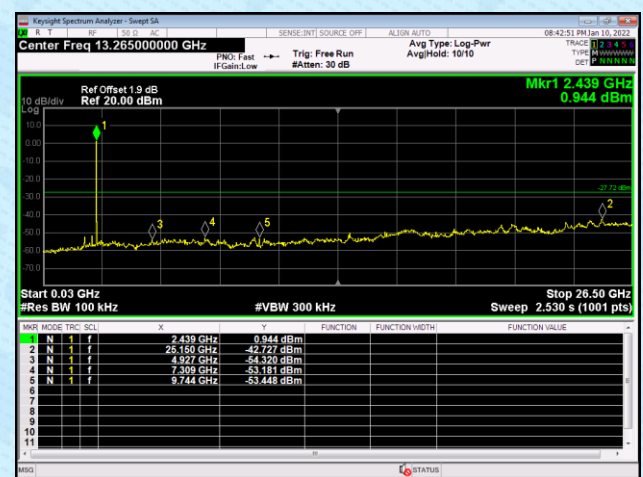
Test mode:	802.11b	Test mode:	802.11g
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Lowest channel



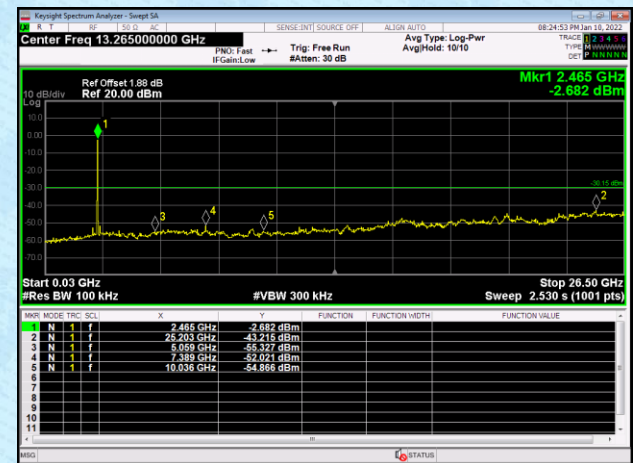
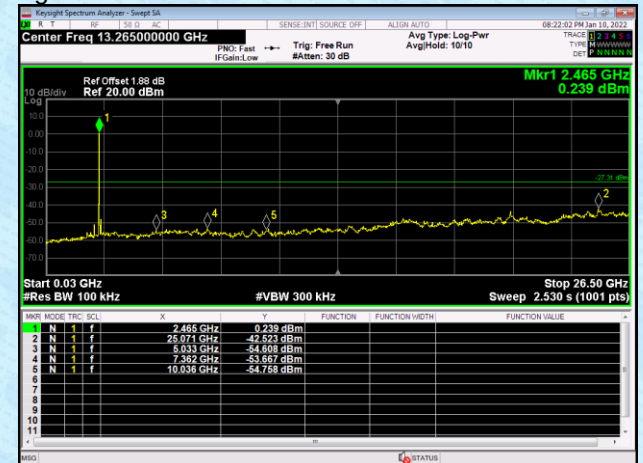
30MHz~26.5GHz

Middle channel



30MHz~26.5GHz

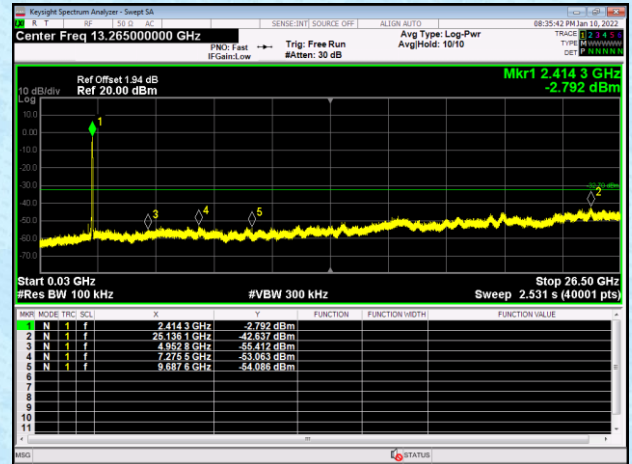
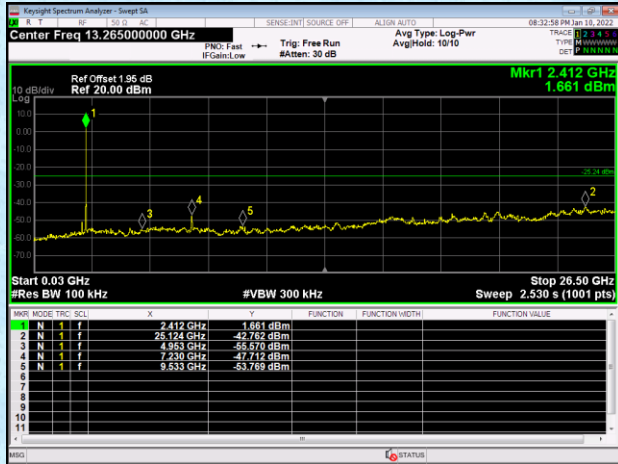
Highest channel



30MHz~26.5GHz

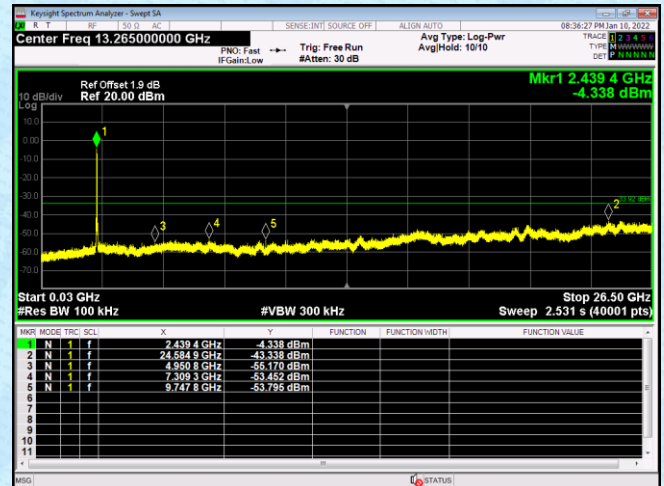
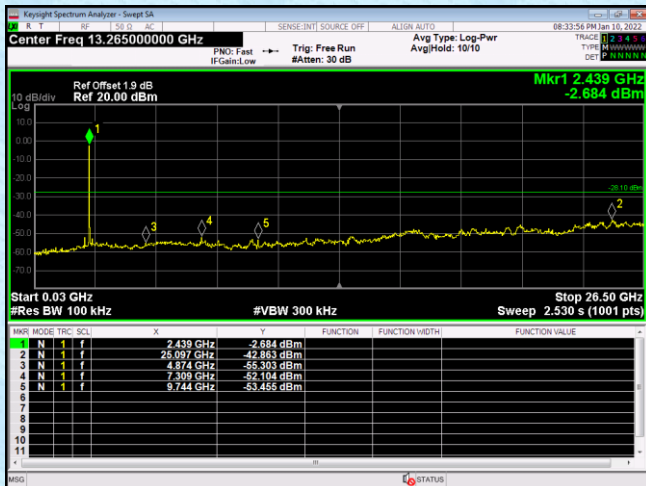
Test mode:	802.11n(HT20)	Test mode:	802.11n(HT40)
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Lowest channel



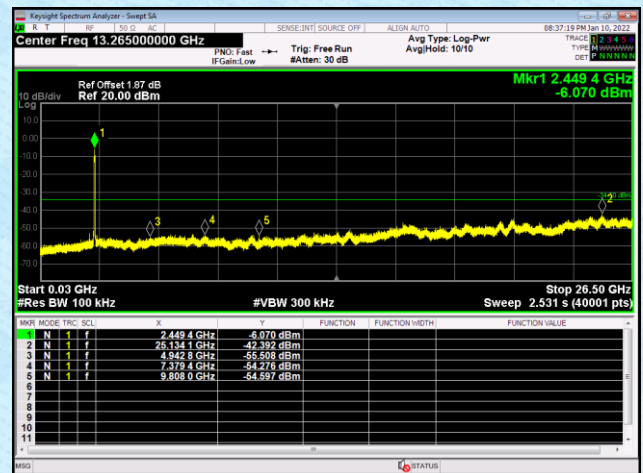
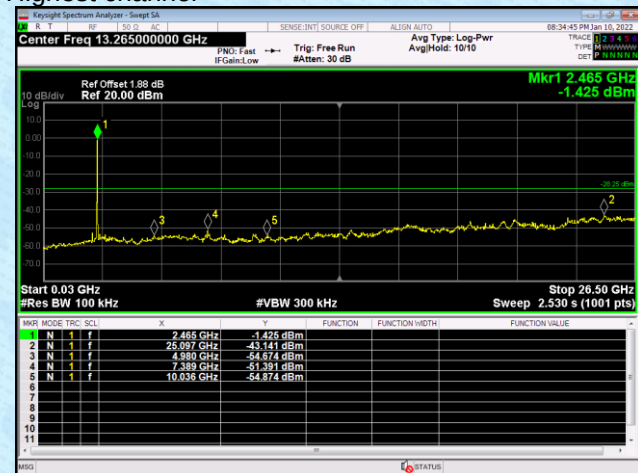
30MHz~26.5GHz

Middle channel



30MHz~26.5GHz

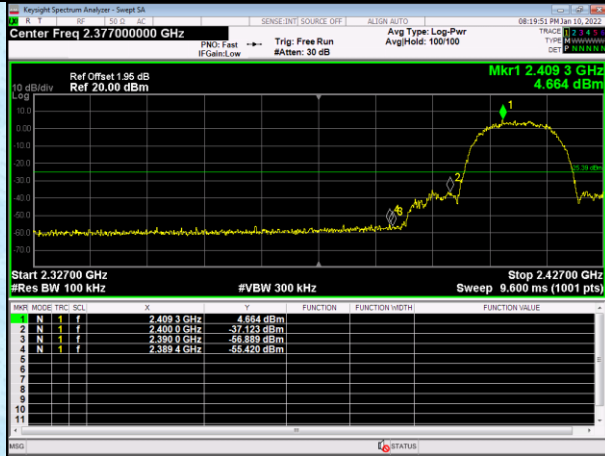
Highest channel



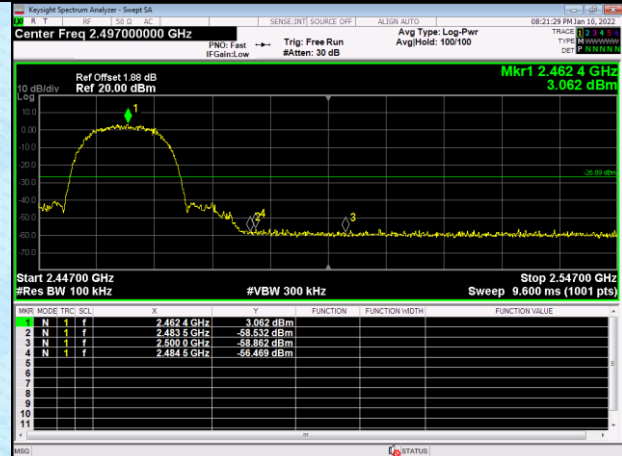
30MHz~26.5GHz

Test plot as follows:

Test mode: 802.11b

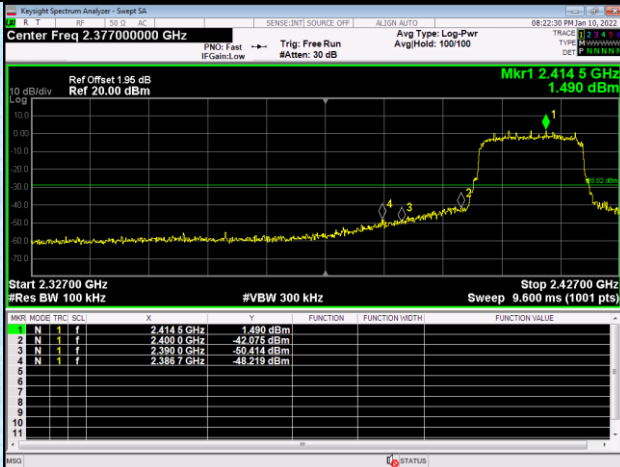


Lowest channel

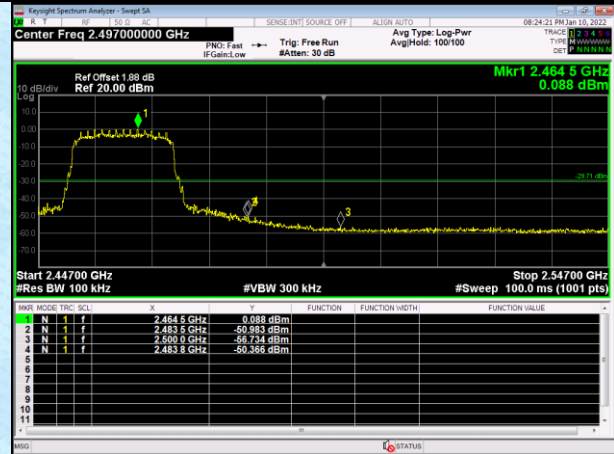


Highest channel

Test mode: 802.11g

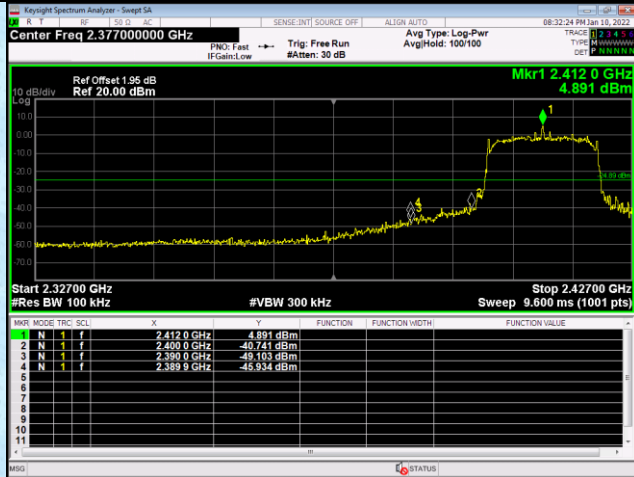


Lowest channel

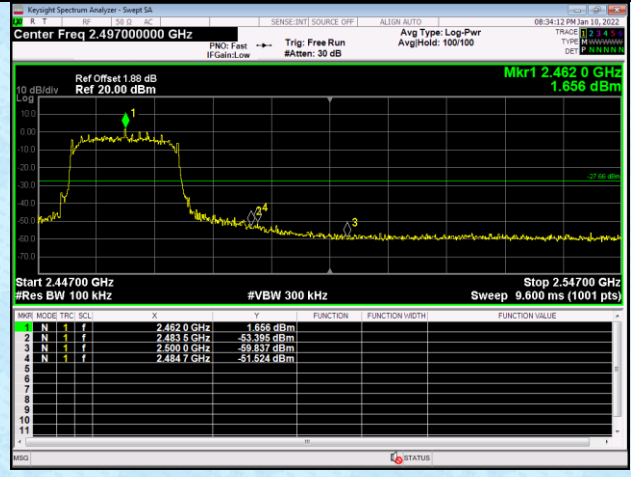


Highest channel

Test mode: 802.11n(HT20)

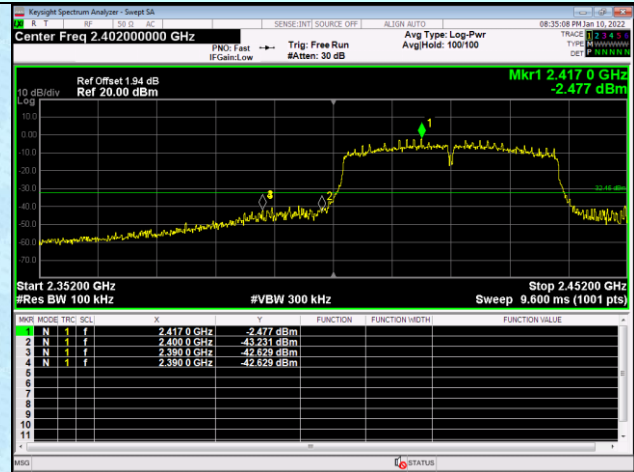


Lowest channel

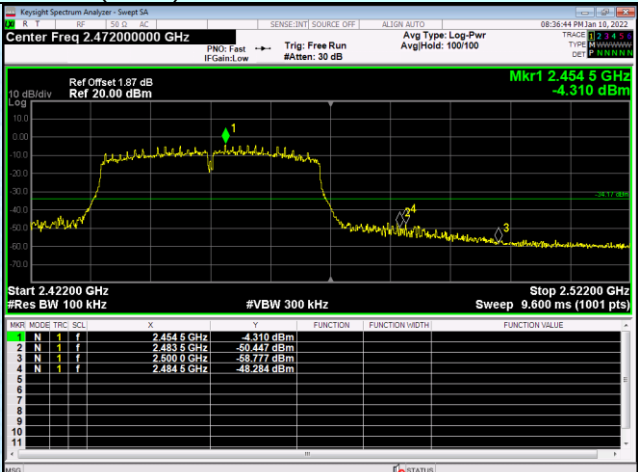


Highest channel

Test mode: 802.11n(HT40)

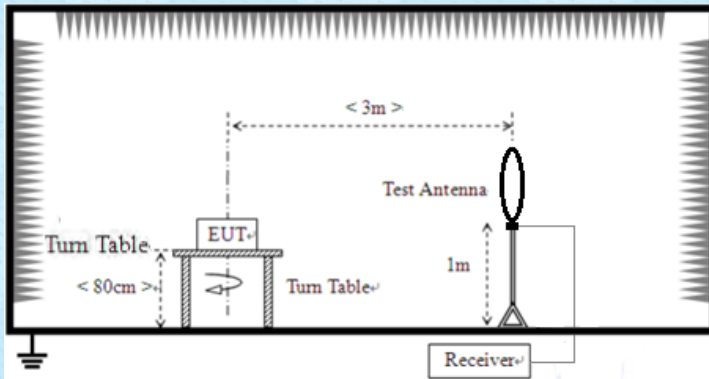


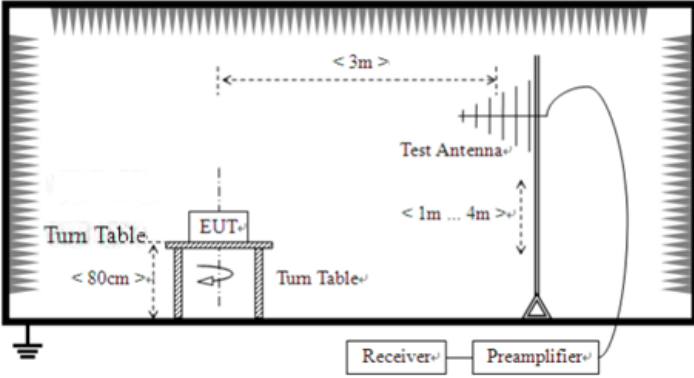
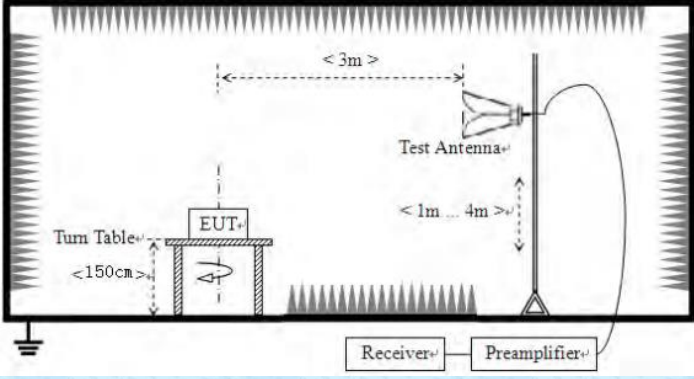
Lowest channel



Highest channel

Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 RSS-247 Section 3.3 & RSS-Gen Section 8.9				
Test Method:	ANSI C63.10: 2013 & RSS-Gen				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Limit:	Frequency	Limit (uV/m)	Value	Measurement Distance	
	0.009MHz-0.490MHz	2400/F(KHz)	QP	300m	
	0.490MHz-1.705MHz	24000/F(KHz)	QP	300m	
	1.705MHz-30MHz	30	QP	30m	
	30MHz-88MHz	100	QP	3m	
	88MHz-216MHz	150	QP		
	216MHz-960MHz	200	QP		
	960MHz-1GHz	500	QP		
	Above 1GHz	500	Average		
		5000	Peak		
Test setup:	For radiated emissions from 9kHz to 30MHz  For radiated emissions from 30MHz to 1GHz				

	 For radiated emissions above 1GHz 
Test Procedure:	1. The EUT was placed on the top of a rotating table (0.8m for below 1G and 1.5m for above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. 4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
Test Instruments:	Refer to section 6.0 for details

Test mode:	Refer to section 5.2 for details					
Test voltage:	AC120V 60Hz					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test results:	Pass					

Remarks:

1. Only the worst case Main Antenna test data.
2. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

Measurement data:

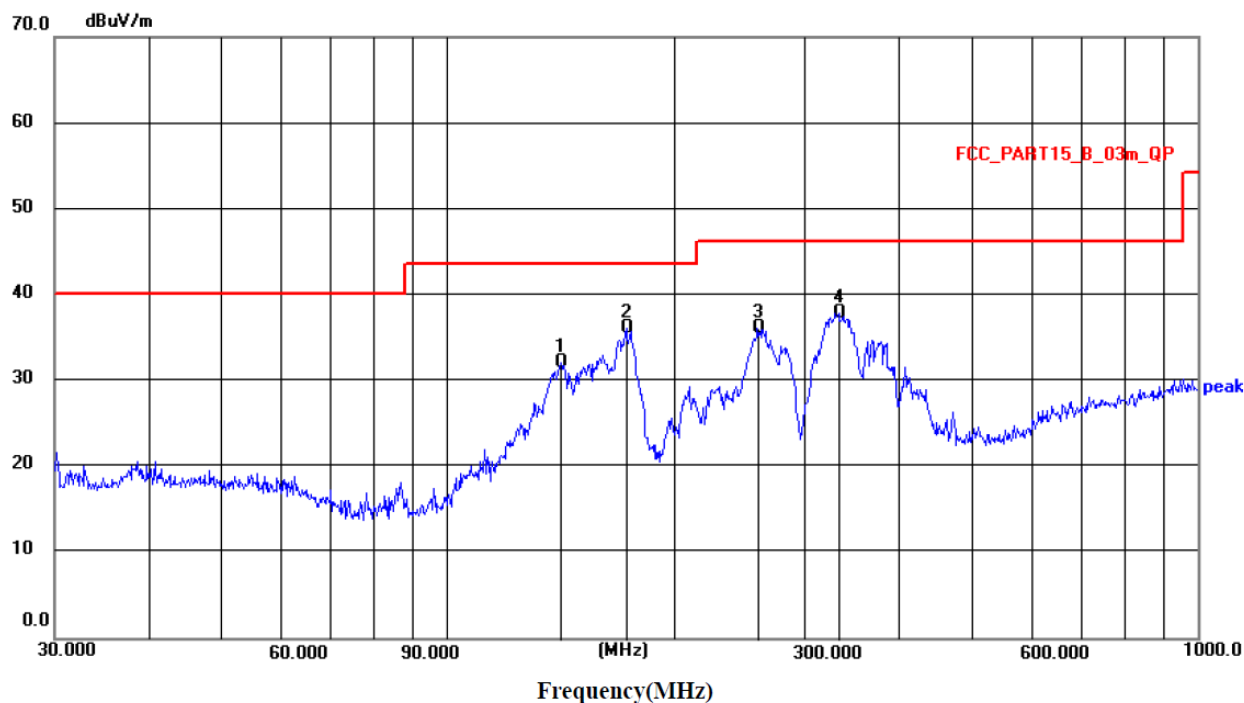
■ **9kHz~30MHz**

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

Below 1GHz

Pre-scan all test modes, found worst case at 802.11b 2412MHz, and so only show the test result of 802.11b 2412MHz

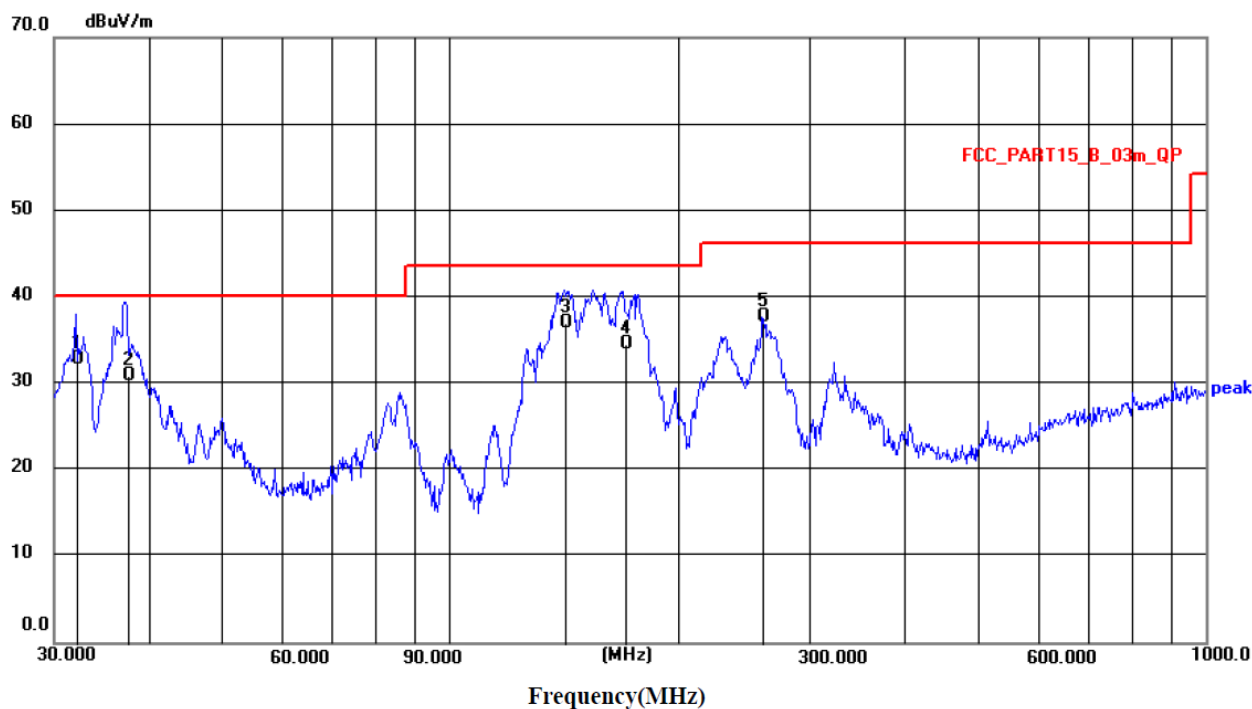
Horizontal:



.Freq	Reading		Limit	Over	Remark
MHz	level	factor	level	limit	
	dBuV/m	dB	dBuV/m	dB	
141.8262	17.98	14.23	32.21	43.50	-11.29 QP
173.2051	21.61	14.56	36.17	43.50	-7.33 QP
259.2338	22.37	13.68	36.05	46.00	-9.95 QP
332.5187	22.41	15.53	37.94	46.00	-8.06 QP

- 1 Final Level =Receiver Read level +Factor(Antenna Factor + Cable Loss – Preamplifier Factor)
- 2 The emission levels of other frequencies are very lower than the limit and not show in test report.

Vertical:



.Freq	Reading		Limit	Over	Remark
MHz	level	factor	level	limit	
	dBuV/m	dB	dBuV/m	dB	
32.0707	18.31	14.49	32.80	40.00	-7.20 QP
37.5930	15.91	14.99	30.90	40.00	-9.10 QP
142.6728	22.59	14.41	37.00	43.50	-6.50 QP
171.2009	19.64	14.86	34.50	43.50	-9.00 QP

Remark:

1. An initial pre-scan was performed on the Horizontal and Vertical with peak detector.
2. Quasi-Peak measurement were performed at the frequencies with maximized peak emission.
3. Level =Reading + Factor
4. Factor= Antenna Gain + Cable Loss – Amplifier Gain

Unwanted Emissions in non-restricted Frequency Bands

■ Above 1GHz

Test mode:	802.11b	Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	43.65	31.79	8.62	32.10	51.96	74.00	-22.04	Vertical
7236.00	31.27	36.19	11.68	31.97	47.17	74.00	-26.83	Vertical
4824.00	44.73	31.79	8.62	32.10	53.04	74.00	-20.96	Horizontal
7236.00	35.19	36.19	11.68	31.97	51.09	74.00	-22.91	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	36.38	31.79	8.62	32.10	44.69	54.00	-9.31	Vertical
7236.00	27.53	36.19	11.68	31.97	43.43	54.00	-10.57	Vertical
4824.00	38.96	31.79	8.62	32.10	47.27	54.00	-6.73	Horizontal
7236.00	29.11	36.19	11.68	31.97	45.01	54.00	-8.99	Horizontal

Test mode:	802.11b	Test channel:	Middle
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	42.39	31.85	8.66	32.12	50.78	74.00	-23.22	Vertical
7311.00	31.58	36.37	11.71	31.91	47.75	74.00	-26.25	Vertical
4874.00	43.92	31.85	8.66	32.12	52.31	74.00	-21.69	Horizontal
7311.00	33.29	36.37	11.71	31.91	49.46	74.00	-24.54	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	35.05	31.85	8.66	32.12	43.44	54.00	-10.56	Vertical
7311.00	26.47	36.37	11.71	31.91	42.64	54.00	-11.36	Vertical
4874.00	37.82	31.85	8.66	32.12	46.21	54.00	-7.79	Horizontal
7311.00	27.83	36.37	11.71	31.91	44.00	54.00	-10.00	Horizontal

Test mode:	802.11b	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	41.68	31.90	8.70	32.15	50.13	74.00	-23.87	Vertical
7386.00	32.92	36.49	11.76	31.83	49.34	74.00	-24.66	Vertical
4924.00	43.32	31.90	8.70	32.15	51.77	74.00	-22.23	Horizontal
7386.00	35.21	36.49	11.76	31.83	51.63	74.00	-22.37	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	34.81	31.90	8.70	32.15	43.26	54.00	-10.74	Vertical
7386.00	28.05	36.49	11.76	31.83	44.47	54.00	-9.53	Vertical
4924.00	37.36	31.90	8.70	32.15	45.81	54.00	-8.19	Horizontal
7386.00	29.63	36.49	11.76	31.83	46.05	54.00	-7.95	Horizontal

Test mode:	802.11g	Test channel:	lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	41.54	31.79	8.62	32.10	49.85	74.00	-24.15	Vertical
7236.00	30.33	36.19	11.68	31.97	46.23	74.00	-27.77	Vertical
4824.00	43.12	31.79	8.62	32.10	51.43	74.00	-22.57	Horizontal
7236.00	31.53	36.19	11.68	31.97	47.43	74.00	-26.57	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	33.42	31.79	8.62	32.10	41.73	54.00	-12.27	Vertical
7236.00	24.86	36.19	11.68	31.97	40.76	54.00	-13.24	Vertical
4824.00	35.90	31.79	8.62	32.10	44.21	54.00	-9.79	Horizontal
7236.00	25.29	36.19	11.68	31.97	41.19	54.00	-12.81	Horizontal

Test mode:	802.11g	Test channel:	Middle
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	40.64	31.85	8.66	32.12	49.03	74.00	-24.97	Vertical
7311.00	29.61	36.37	11.71	31.91	45.78	74.00	-28.22	Vertical
4874.00	42.62	31.85	8.66	32.12	51.01	74.00	-22.99	Horizontal
7311.00	30.03	36.37	11.71	31.91	46.20	74.00	-27.80	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	33.35	31.85	8.66	32.12	41.74	54.00	-12.26	Vertical
7311.00	23.16	36.37	11.71	31.91	39.33	54.00	-14.67	Vertical
4874.00	35.18	31.85	8.66	32.12	43.57	54.00	-10.43	Horizontal
7311.00	24.35	36.37	11.71	31.91	40.52	54.00	-13.48	Horizontal

Test mode:	802.11g	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	40.08	31.90	8.70	32.15	48.53	74.00	-25.47	Vertical
7386.00	29.22	36.49	11.76	31.83	45.64	74.00	-28.36	Vertical
4924.00	42.94	31.90	8.70	32.15	51.39	74.00	-22.61	Horizontal
7386.00	29.25	36.49	11.76	31.83	45.67	74.00	-28.33	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	33.41	31.90	8.70	32.15	41.86	54.00	-12.14	Vertical
7386.00	22.56	36.49	11.76	31.83	38.98	54.00	-15.02	Vertical
4924.00	36.75	31.90	8.70	32.15	45.20	54.00	-8.80	Horizontal
7386.00	24.62	36.49	11.76	31.83	41.04	54.00	-12.96	Horizontal

Test mode:	802.11n(HT20)	Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	39.52	31.79	8.62	32.10	47.83	74.00	-26.17	Vertical
7236.00	31.68	36.19	11.68	31.97	47.58	74.00	-26.42	Vertical
4824.00	41.42	31.79	8.62	32.10	49.73	74.00	-24.27	Horizontal
7236.00	32.63	36.19	11.68	31.97	48.53	74.00	-25.47	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4824.00	32.79	31.79	8.62	32.10	41.10	54.00	-12.90	Vertical
7236.00	25.64	36.19	11.68	31.97	41.54	54.00	-12.46	Vertical
4824.00	34.72	31.79	8.62	32.10	43.03	54.00	-10.97	Horizontal
7236.00	26.43	36.19	11.68	31.97	42.33	54.00	-11.67	Horizontal

Test mode:	802.11n(HT20)	Test channel:	Middle
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	40.53	31.85	8.66	32.12	48.92	74.00	-25.08	Vertical
7311.00	32.61	36.37	11.71	31.91	48.78	74.00	-25.22	Vertical
4874.00	43.19	31.85	8.66	32.12	51.58	74.00	-22.42	Horizontal
7311.00	34.32	36.37	11.71	31.91	50.49	74.00	-23.51	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	33.85	31.85	8.66	32.12	42.24	54.00	-11.76	Vertical
7311.00	25.98	36.37	11.71	31.91	42.15	54.00	-11.85	Vertical
4874.00	37.12	31.85	8.66	32.12	45.51	54.00	-8.49	Horizontal
7311.00	27.26	36.37	11.71	31.91	43.43	54.00	-10.57	Horizontal

Test mode:	802.11n(HT20)	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	38.53	31.90	8.70	32.15	46.98	74.00	-27.02	Vertical
7386.00	27.42	36.49	11.76	31.83	43.84	74.00	-30.16	Vertical
4924.00	40.37	31.90	8.70	32.15	48.82	74.00	-25.18	Horizontal
7386.00	29.04	36.49	11.76	31.83	45.46	74.00	-28.54	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4924.00	32.75	31.90	8.70	32.15	41.20	54.00	-12.80	Vertical
7386.00	23.81	36.49	11.76	31.83	40.23	54.00	-13.77	Vertical
4924.00	34.77	31.90	8.70	32.15	43.22	54.00	-10.78	Horizontal
7386.00	23.80	36.49	11.76	31.83	40.22	54.00	-13.78	Horizontal

Test mode:	802.11n(HT40)	Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4844.00	40.48	31.81	8.63	32.11	48.81	74.00	-25.19	Vertical
7266.00	32.93	36.28	11.69	31.94	48.96	74.00	-25.04	Vertical
4844.00	42.54	31.81	8.63	32.11	50.87	74.00	-23.13	Horizontal
7266.00	34.51	36.28	11.69	31.94	50.54	74.00	-23.46	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4844.00	34.03	31.81	8.63	32.11	42.36	54.00	-11.64	Vertical
7266.00	25.96	36.28	11.69	31.94	41.99	54.00	-12.01	Vertical
4844.00	36.85	31.81	8.63	32.11	45.18	54.00	-8.82	Horizontal
7266.00	28.13	36.28	11.69	31.94	44.16	54.00	-9.84	Horizontal

Test mode:	802.11n(HT40)	Test channel:	Middle
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	38.63	31.85	8.66	32.12	47.02	74.00	-26.98	Vertical
7311.00	30.69	36.37	11.71	31.91	46.86	74.00	-27.14	Vertical
4874.00	41.15	31.85	8.66	32.12	49.54	74.00	-24.46	Horizontal
7311.00	32.74	36.37	11.71	31.91	48.91	74.00	-25.09	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4874.00	32.55	31.85	8.66	32.12	40.94	54.00	-13.06	Vertical
7311.00	24.36	36.37	11.71	31.91	40.53	54.00	-13.47	Vertical
4874.00	35.82	31.85	8.66	32.12	44.21	54.00	-9.79	Horizontal
7311.00	26.37	36.37	11.71	31.91	42.54	54.00	-11.46	Horizontal

Test mode:	802.11n(HT40)	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4904.00	39.43	31.88	8.68	32.13	47.86	74.00	-26.14	Vertical
7356.00	31.59	36.45	11.75	31.86	47.93	74.00	-26.07	Vertical
4904.00	42.01	31.88	8.68	32.13	50.44	74.00	-23.56	Horizontal
7356.00	33.24	36.45	11.75	31.86	49.58	74.00	-24.42	Horizontal

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
4904.00	33.26	31.88	8.68	32.13	41.69	54.00	-12.31	Vertical
7356.00	25.48	36.45	11.75	31.86	41.82	54.00	-12.18	Vertical
4904.00	36.38	31.88	8.68	32.13	44.81	54.00	-9.19	Horizontal
7356.00	26.93	36.45	11.75	31.86	43.27	54.00	-10.73	Horizontal

Test mode:	802.11b	Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2310.00	43.25	27.14	6.19	42.04	34.54	74.00	-39.46	Horizontal
2390.00	58.93	27.37	6.31	42.11	50.50	74.00	-23.50	Horizontal
2310.00	42.84	27.14	6.19	42.04	34.13	74.00	-39.87	Vertical
2390.00	54.72	27.37	6.31	42.11	46.29	74.00	-27.71	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2310.00	35.46	27.14	6.19	42.04	26.75	54.00	-27.25	Horizontal
2390.00	53.24	27.37	6.31	42.11	43.81	54.00	-9.19	Horizontal
2310.00	35.28	27.14	6.19	42.04	26.57	54.00	-27.43	Vertical
2390.00	48.39	27.37	6.31	42.11	39.96	54.00	-14.04	Vertical

Test mode:	802.11b	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.50	57.62	27.66	6.45	42.01	49.72	74.00	-24.28	Horizontal
2500.00	42.16	27.70	6.47	42.00	34.33	74.00	-39.67	Horizontal
2483.50	52.74	27.66	6.45	42.01	44.84	74.00	-29.16	Vertical
2500.00	43.91	27.70	6.47	42.00	36.08	74.00	-37.92	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.50	52.52	27.66	6.45	42.01	44.62	54.00	-9.38	Horizontal
2500.00	35.88	27.70	6.47	42.00	28.05	54.00	-25.95	Horizontal
2483.50	48.53	27.66	6.45	42.01	40.63	54.00	-13.37	Vertical
2500.00	34.19	27.70	6.47	42.00	26.36	54.00	-27.64	Vertical

Test mode:	802.11g	Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2310.00	41.52	27.14	6.19	42.04	32.81	74.00	-41.19	Horizontal
2390.00	56.45	27.37	6.31	42.11	48.02	74.00	-25.98	Horizontal
2310.00	40.72	27.14	6.19	42.04	32.01	74.00	-41.99	Vertical
2390.00	53.28	27.37	6.31	42.11	44.85	74.00	-29.15	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2310.00	35.93	27.14	6.19	42.04	27.22	54.00	-26.78	Horizontal
2390.00	51.42	27.37	6.31	42.11	42.99	54.00	-11.01	Horizontal
2310.00	34.55	27.14	6.19	42.04	25.84	54.00	-28.16	Vertical
2390.00	47.48	27.37	6.31	42.11	39.05	54.00	-14.95	Vertical

Test mode:	802.11g	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.50	56.04	27.66	6.45	42.01	48.14	74.00	-25.86	Horizontal
2500.00	41.65	27.70	6.47	42.00	33.82	74.00	-40.18	Horizontal
2483.50	52.91	27.66	6.45	42.01	45.01	74.00	-28.99	Vertical
2500.00	42.52	27.70	6.47	42.00	34.69	74.00	-39.31	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.50	50.31	27.66	6.45	42.01	42.41	54.00	-11.59	Horizontal
2500.00	35.26	27.70	6.47	42.00	27.43	54.00	-26.57	Horizontal
2483.50	47.53	27.66	6.45	42.01	39.63	54.00	-14.37	Vertical
2500.00	36.38	27.70	6.47	42.00	28.55	54.00	-25.45	Vertical

Test mode:	802.11n(HT20)	Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2310.00	42.46	27.14	6.19	42.04	33.75	74.00	-40.25	Horizontal
2390.00	55.62	27.37	6.31	42.11	47.19	74.00	-26.81	Horizontal
2310.00	41.05	27.14	6.19	42.04	32.34	74.00	-41.66	Vertical
2390.00	52.19	27.37	6.31	42.11	43.76	74.00	-30.24	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2310.00	36.53	27.14	6.19	42.04	27.82	54.00	-26.18	Horizontal
2390.00	50.47	27.37	6.31	42.11	42.04	54.00	-11.96	Horizontal
2310.00	35.94	27.14	6.19	42.04	27.23	54.00	-26.77	Vertical
2390.00	46.83	27.37	6.31	42.11	38.40	54.00	-15.60	Vertical

Test mode:	802.11n(HT20)	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.50	54.87	27.66	6.45	42.01	46.97	74.00	-27.03	Horizontal
2500.00	41.94	27.70	6.47	42.00	34.11	74.00	-39.89	Horizontal
2483.50	52.29	27.66	6.45	42.01	44.39	74.00	-29.61	Vertical
2500.00	42.79	27.70	6.47	42.00	34.96	74.00	-39.04	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.50	49.24	27.66	6.45	42.01	41.34	54.00	-12.66	Horizontal
2500.00	36.07	27.70	6.47	42.00	28.24	54.00	-25.76	Horizontal
2483.50	47.73	27.66	6.45	42.01	39.83	54.00	-14.17	Vertical
2500.00	37.22	27.70	6.47	42.00	29.39	54.00	-24.61	Vertical

Test mode:	802.11n(H40)	Test channel:	Lowest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2310.00	42.48	27.14	6.19	42.04	33.77	74.00	-40.23	Horizontal
2390.00	56.53	27.37	6.31	42.11	48.10	74.00	-25.90	Horizontal
2310.00	41.05	27.14	6.19	42.04	32.34	74.00	-41.66	Vertical
2390.00	53.68	27.37	6.31	42.11	45.25	74.00	-28.75	Vertical

Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2310.00	37.42	27.14	6.19	42.04	28.71	54.00	-25.29	Horizontal
2390.00	51.43	27.37	6.31	42.11	43.00	54.00	-11.00	Horizontal
2310.00	35.96	27.14	6.19	42.04	27.25	54.00	-26.75	Vertical
2390.00	47.29	27.37	6.31	42.11	38.86	54.00	-15.14	Vertical

Test mode:	802.11n(HT40)	Test channel:	Highest
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Peak value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.50	55.64	27.66	6.45	42.01	47.74	74.00	-26.26	Horizontal
2500.00	43.73	27.70	6.47	42.00	35.90	74.00	-38.10	Horizontal
2483.50	52.79	27.66	6.45	42.01	44.89	74.00	-29.11	Vertical
2500.00	42.37	27.70	6.47	42.00	34.54	74.00	-39.46	Vertical

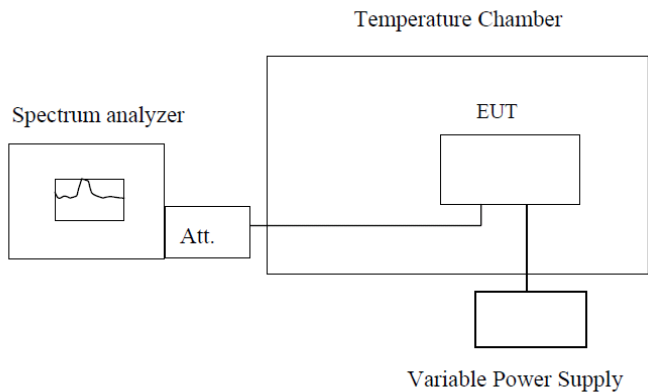
Average value:

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamplifier Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
2483.50	50.42	27.66	6.45	42.01	42.52	54.00	-11.48	Horizontal
2500.00	37.83	27.70	6.47	42.00	30.00	54.00	-24.00	Horizontal
2483.50	47.95	27.66	6.45	42.01	40.05	54.00	-13.95	Vertical
2500.00	36.12	27.70	6.47	42.00	28.29	54.00	-25.71	Vertical

Remarks:

1. Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The emission levels of other frequencies are very lower than the limit and not show in test report.

7.7 Frequency stability

Test Requirement:	RSS-Gen Section 6.11& Section 8.11
Test Method:	ANSI C63.10: 2013 & RSS-Gen
Limit:	Manufactures of devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified
Test Procedure:	The EUT was setup to ANSI C63.10, 2013; tested to 2.1055 for compliance to RSS-Gen requirements.
Test setup:	 Note : Measurement setup for testing on Antenna connector
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Remark: Set the EUT transmits at un-modulation mode to test frequency stability.

Measurement data:

Frequency stability versus Temp.						
Power Supply: AC 120V/60Hz						
Temp. (°C)	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)	Pass /Fail
-30	2412	2411.999	2412.003	2412.002	2412.002	Pass
	2422	2422.003	2422.002	2422.01	2422.001	Pass
	2437	2436.998	2436.997	2436.998	2436.997	Pass
	2452	2452.002	2452.003	2452.001	2451.998	Pass
	2462	2462.001	2462.002	2462.003	2462.002	Pass
-20	2412	2411.999	2412.001	2412.002	2412.003	Pass
	2422	2422.001	2422.004	2422.002	2421.997	Pass
	2437	2436.999	2436.999	2436.999	2436.998	Pass
	2452	2452.001	2452.003	2451.997	2452.001	Pass
	2462	2462.002	2462.002	2462.002	2462.002	Pass
-10	2412	2412.002	2411.999	2412.001	2411.999	Pass
	2422	2422.003	2422.004	2422.003	2422.002	Pass
	2437	2436.998	2436.999	2436.998	2437.001	Pass
	2452	2452.002	2452.001	2452.002	2452.002	Pass
	2462	2462.001	2462.002	2462.001	2462.002	Pass
0	2412	2412.002	2411.997	2412.003	2412.001	Pass
	2400	2422.003	2422.002	2421.998	2422.002	Pass
	2437	2436.999	2436.999	2436.997	2436.995	Pass
	2452	2452.002	2452.001	2452.001	2452.001	Pass
	2462	2462.003	2462.002	2462.002	2462.002	Pass
10	2412	2412.002	2411.999	2412.003	2412.003	Pass
	2422	2422.002	2422.003	2422.002	2422.002	Pass
	2437	2436.996	2436.996	2436.999	2437.001	Pass
	2452	2452.004	2452.003	2452.002	2452.001	Pass
	2462	2462.001	2462.004	2462.002	2462.004	Pass
20	2412	2411.999	2412.002	2412.003	2412.002	Pass
	2400	2422.002	2422.005	2422.001	2422.003	Pass
	2437	2436.997	2436.997	2436.997	2436.999	Pass
	2452	2452.003	2452.001	2451.999	2452.001	Pass
	2462	2462.002	2462.003	2462.000	2462.003	Pass
30	2412	2412.001	2411.997	2412.001	2412.002	Pass
	2422	2422.002	2422.002	2421.997	2422.004	Pass
	2437	2436.997	2436.998	2436.996	2437.002	Pass
	2452	2452.001	2452.003	2452.001	2452.001	Pass
	2462	2462.001	2462.001	2462.002	2462.005	Pass
40	2412	2411.998	2412.002	2412.003	2412.001	Pass
	2422	2422.002	2422.001	2422.001	2422.002	Pass
	2437	2436.999	2436.997	2436.996	2436.997	Pass
	2452	2452.001	2452.002	2452.001	2452.002	Pass
	2462	2462.003	2462.003	2461.995	2462.001	Pass
50	2412	2411.998	2412.001	2412.004	2412.003	Pass
	2422	2422.002	2422.002	2422.001	2422.002	Pass
	2437	2436.998	2436.999	2436.998	2436.998	Pass
	2452	2452.003	2451.996	2452.004	2452.000	Pass
	2462	2462.002	2462.002	2462.001	2462.002	Pass

Frequency stability versus Voltage						
Temperature: 25°C						
Power Supply	Operating Frequency (MHz)	0 minute Measured Frequency (MHz)	2 minute Measured Frequency (MHz)	5 minute Measured Frequency (MHz)	10 minute Measured Frequency (MHz)	Pass /Fail
AC 120V/60Hz	2412	2412.002	2411.997	2412.003	2412.001	Pass
	2422	2422.001	2422.001	2421.997	2422.003	Pass
	2437	2437.002	2436.998	2436.999	2436.999	Pass
	2452	2452.003	2452.001	2452.001	2452.001	Pass
	2462	2461.999	2461.999	2462.002	2462.002	Pass

8 Test Setup Photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

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