

CTC Laboratories, Inc.

1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China Tel: +86-755- 27521059 Fax: +86-755- 27521011 Http://www.sz-ctc.org.cn

TEST REPORT			
Report No. ·····:	CTC20222139E02		
FCC ID······:	2AYGT-JYM		
Applicant:	IRay Technology Co., Ltd.		
Address	11GUIYANG STREET, YANTAI ECON DEVELOPMENT DISTRICT, YANTAI S		
Manufacturer	IRay Technology Co., Ltd.		
Address	11GUIYANG STREET, YANTAI ECON DEVELOPMENT DISTRICT, YANTAI S		
Product Name······:	Monocular Head Mounted Thermal I	mager	
Trade Mark······:	(n) iRay		
Model/Type reference······:	J-YM		
Listed Model(s) ······	J-YM316, J-YM627		
Standard:	FCC CFR Title 47 Part 15 Subpart C Section 15.247		
Date of receipt of test sample:	Nov. 28, 2022		
Date of testing:	Nov. 29, 2022 ~ Dec. 22, 2022		
Date of issue:	Dec. 23, 2022		
Result:	PASS		
Compiled by:		 - C	
(Printed name+signature)	Terry Su	Jerry Su Zic shang	
Supervised by:		Zir shang	
(Printed name+signature)	Eric Zhang		
Approved by:		Jemas	
(Printed name+signature)	Totti Zhao	100000	
Testing Laboratory Name:	CTC Laboratories, Inc.		
Address	1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China		
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1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

FCC Rules Part 15.247: Operation within the bands of 902-928MHz, 2400-2483.5MHz, and 5725-5850MHz.

<u>RSS 247 Issue 2:</u> Standard Specifications for Frequency Hopping Systems (FHSs) and Digital Transmission Systems (DTSs) Operating in the Bands 902-928MHz, 2400-2483.5MHz and 5725-5850MHz.

ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices.

1.2. Report version

Revised No.	Date of issue	Description
01	Dec. 23, 2022	Original



1.3. Test Description

FCC Part 15 Subpart C (15.247) / RSS 247 Issue 2					
Test Item	Standard Section		Result	Test	
rest item	FCC	IC	Result	Engineer	
Antenna Requirement	15.203	/	Pass	Alicia Liu	
Conducted Emission	15.207	RSS-Gen 8.8	Pass	Lance Lan	
Radiated Band Edge and Spurious Emissions	15.205&15.209& 15.247(d)	RSS 247 5.5	Pass	Alicia Liu	
Conducted Band Edge and Spurious Emissions	15.247(d)	RSS 247 5.5	Pass	Alicia Liu	
6dB Bandwidth	15.247(a)(2)	RSS 247 5.2 (a)	Pass	Alicia Liu	
Conducted Max Output Power	15.247(b)(3)	RSS 247 5.4 (d)	Pass	Alicia Liu	
Power Spectral Density	15.247(e)	RSS 247 5.2 (b)	Pass	Alicia Liu	
Transmitter Radiated Spurious	15.209&15.247(d)	RSS 247 5.5& RSS-Gen 8.9	Pass	Alicia Liu	

Note: The measurement uncertainty is not included in the test result.



1.4. Test Facility

CTC Laboratories, Inc.

Add: 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

Laboratory accreditation

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

A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. 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 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. 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 inour files. Registration 951311, Aug 26, 2017.

1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties radio equipment characteristics; Part 2" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.



Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.42 dB	(1)
Transmitter power Radiated	2.14 dB	(1)
Conducted spurious emissions 9kHz~40GHz	1.60 dB	(1)
Radiated spurious emissions 9kHz~40GHz	2.20 dB	(1)
Conducted Emissions 9kHz~30MHz	3.08 dB	(1)
Radiated Emissions 30~1000MHz	4.51 dB	(1)
Radiated Emissions 1~18GHz	5.84 dB	(1)
Radiated Emissions 18~40GHz	6.12 dB	(1)
Occupied Bandwidth		(1)

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

1.6. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	21°C ~ 27°C
Relative Humidity:	40% ~ 60%
Air Pressure:	101kPa



2. GENERAL INFORMATION

2.1. Client Information

Applicant:	IRay Technology Co., Ltd.
Address:	11GUIYANG STREET, YANTAI ECONOMY AND TECHNOLOGY DEVELOPMENT DISTRICT, YANTAI Shandong P.R. China
Manufacturer:	IRay Technology Co., Ltd.
Address:	11GUIYANG STREET, YANTAI ECONOMY AND TECHNOLOGY DEVELOPMENT DISTRICT, YANTAI Shandong P.R. China

2.2. General Description of EUT

Product Name:	Monocular Head Mounted Thermal Imager
Trade Mark:	(fi) iRay
Model/Type reference:	J-YM
Listed Model(s):	J-YM316, J-YM627
Model Different:	All these models are identical in the same PCB, layout and electrical circuit, The only difference is the size of the lens.
Power supply:	5Vdc from USB Cable 3.7Vdc from 3400mAh Li-ion Battery
Hardware version:	/
Software version:	/
WIFI 802.11b/ g/ n(HT20)	
Modulation:	802.11b: DSSS(CCK, DQPSK, DBPSK) 802.11g/n: OFDM(BPSK, QPSK, 16QAM, 64QAM)
Operation frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz
Channel number:	802.11b/g/n(HT20):11channels
Channel separation:	5MHz
Antenna type:	FPC Antenna
Antenna gain:	0.89dBi Max



2.3. Accessory Equipment information

Equipment Information				
Name	Model	S/N	Manufacturer	
Notebook	ThinkBook 14G3 ACL	MP246QDR	Lenovo	
AC/DC Adapter	A2167		Apple	
Cable Information				
Name	Shielded Type	Ferrite Core	Length	
1	1	1	1	
Test Software Information				
Name	Versions	1	1	
1	1	1	1	



2.4. Operation state

Operation Frequency List: The EUT has been tested under typical operating condition. The Applicant provides communication tools software to control the EUT for staying in continuous transmitting and receiving mode for testing.

Operation Frequency List:

Channel	Frequency (MHz)
01	2412
02	2417
03	2422
04	2427
05	2432
06	2437
07	2442
08	2447
09	2452
10	2457
11	2462

Note: CH 01~CH 11 for 802.11b/g/n(HT20).

Data Rated

Preliminary tests were performed in different data rate, and found which the below bit rate is worst case mode, so only show data which it is a worst case mode.

Mode	Data rate (worst mode)
802.11b	1Mbps
802.11g	6Mbps
802.11n(HT20)	HT-MCS0

Test mode

For RF test items:

The engineering test program was provided and enabled to make EUT continuous transmit.

For AC power line conducted emissions:

The EUT was set to connect with the WLAN AP under large package sizes transmission.

For Radiated spurious emissions test item:

The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data Recorded in the report.



2.5. Measurement Instruments List

Tonsce	Tonscend JS0806-2 Test system				
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Spectrum Analyzer	KEYSIGHT	N9020A	100231	Dec. 23, 2022
2	Spectrum Analyzer	Rohde & Schwarz	FUV40-N	101331	Mar. 15, 2023
3	MXG Vector Signal Generator	Agilent	N5182A	MY47420864	Dec. 23, 2022
4	Signal Generator	Agilent	E8257D	MY46521908	Dec. 23, 2022
5	Power Sensor	Agilent	U2021XA	MY5365004	Mar. 15, 2023
6	Power Sensor	Agilent	U2021XA	MY5365006	Mar. 15, 2023
7	High and low temperature box	ESPEC	MT3035	N/A	Mar. 15, 2023
8	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	102414	Dec. 23, 2022
9	300328 v2.2.2 test system	TONSCEND	v2.6	/	/

Radiate	Radiated emission(3m chamber 2)										
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until						
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-1013	Jan. 12, 2023						
2	2 Horn Antenna Schwarzbeck BBHA 9120D 9120D-647 Dec. 23, 2022										
3	Spectrum Analyzer	R&S	FSU26	100105	Dec. 23, 2022						
4	Spectrum Analyzer	R&S	FSV40-N	101331	Mar. 15, 2023						
5	Pre-Amplifier	SONOMA	310	186194	Dec. 23, 2022						
6	Low Noise Pre-Amplifier	EMCI	EMC051835	980075	Dec. 23, 2022						
7	Loop Antenna	ETS	6507	1446	Dec. 23, 2022						
8											

Radiate	Radiated emission(3m chamber 3)										
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until						
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-759	Mar. 30, 2023						
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-647	Dec. 23, 2022						
3	Test Receiver	Keysight	N9038A	MY56400071	Dec. 23, 2022						
4	Broadband Premplifier	dband Premplifier SCHWARZBECK BBVS		259	Dec. 23, 2022						
5	Mirowave Broadband Amplifier	SCHWARZBECK	BBV9718C	111	Dec. 23, 2022						
6	Pre-Amplifier	R&S	SCU-26	10033	Dec. 23, 2022						
7	Pre-Amplifier	R&S	SCU-40	10030	Dec. 23, 2022						
8	Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	BBHA 9170-497	Dec. 23, 2022						



EN

Condu	Conducted Emission										
Item	em Test Equipment Manufacturer Model No. Serial No. Calibrated un										
1	LISN	R&S	ENV216	101112	Dec. 23, 2022						
2	LISN	R&S	ENV216	101113	Dec. 23, 2022						
3	EMI Test Receiver	R&S	ESCS30	100353	Dec. 23, 2022						

Note: 1. The Cal. Interval was one year.

2. The Cal. Interval was three year of the chamber

3. The cable loss has calculated in test result which connection between each test instruments.



3.TEST ITEM AND RESULTS

3.1. Conducted Emission

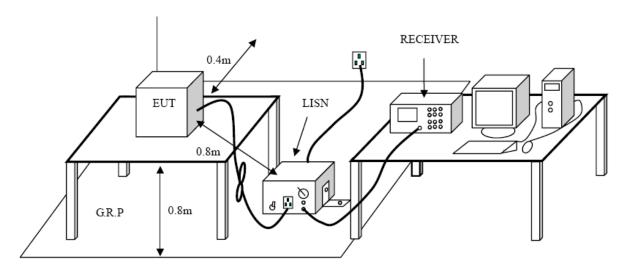
<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.207/ RSS - Gen 8.8:

	Limit (dBuV)					
Frequency range (MHz)	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 Configuration



Test Procedure

1. The EUT was setup according to ANSI C63.10:2013 requirements.

2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.

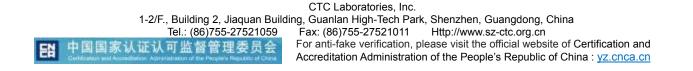
3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)

4. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

5. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

6. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.

7. During the above scans, the emissions were maximized by cable manipulation.

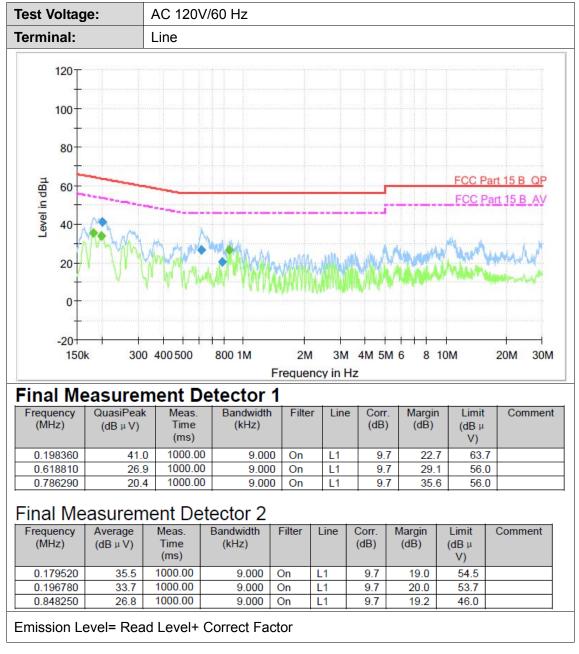




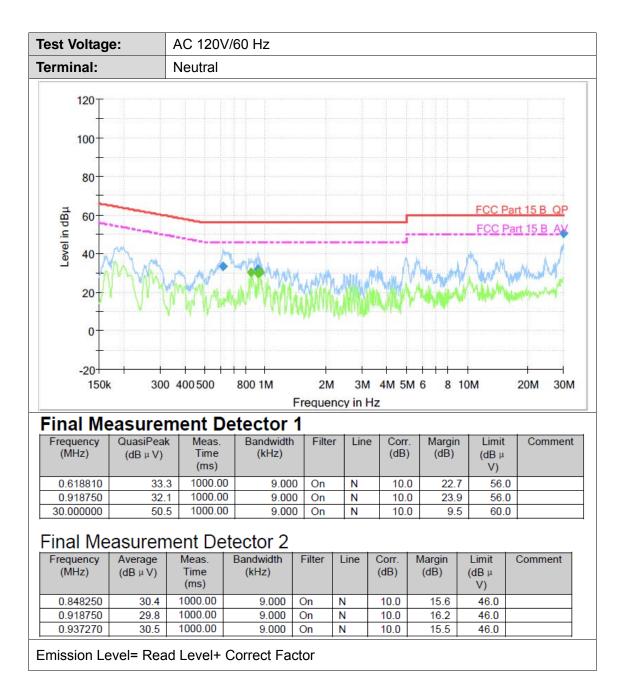
Test Mode:

Please refer to the clause 2.4.

Test Results









3.2. Radiated Emission

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.209/ RSS – Gen 8.9:

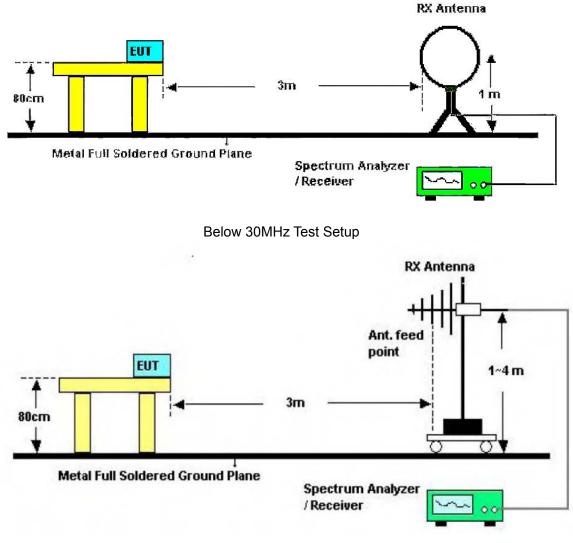
Frequency	Limit (dBuV/m @3m)	Value	
30 MHz ~ 88 MHz	40.00	Quasi-peak	
88 MHz ~ 216 MHz	43.50	Quasi-peak	
216 MHz ~ 960 MHz	46.00	Quasi-peak	
960 MHz ~ 1 GHz	54.00	Quasi-peak	
Above 1 GHz	54.00	Average	
	74.00	Peak	

Note:

(1) The tighter limit applies at the band edges.

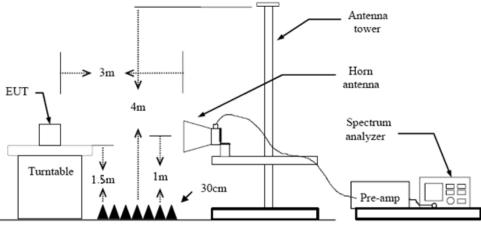
(2) Emission Level (dBuV/m)=20log Emission Level (uV/m).

Test Configuration



Below 1000MHz Test Setup





Above 1GHz Test Setup

Test Procedure

1. The EUT was setup and tested according to ANSI C63.10:2013

2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable 3. height antenna tower.

4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.

Set to the maximum power setting and enable the EUT transmit continuously. 5.

- Use the following spectrum analyzer settings 6.
- (1) Span shall wide enough to fully capture the emission being measured;

(2) Below 1 GHz:

RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;

If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

(3) From 1 GHz to 10th harmonic:

RBW=1MHz, VBW=3MHz Peak detector for Peak value.

RBW=1MHz, VBW≥1/T Peak detector for Average value.

Note 1: For the 1/T& Duty Cycle please refer to clause 3.8 Duty Cycle.

Test Mode

Please refer to the clause 2.4.

Test Result

9 KHz~30 MHz

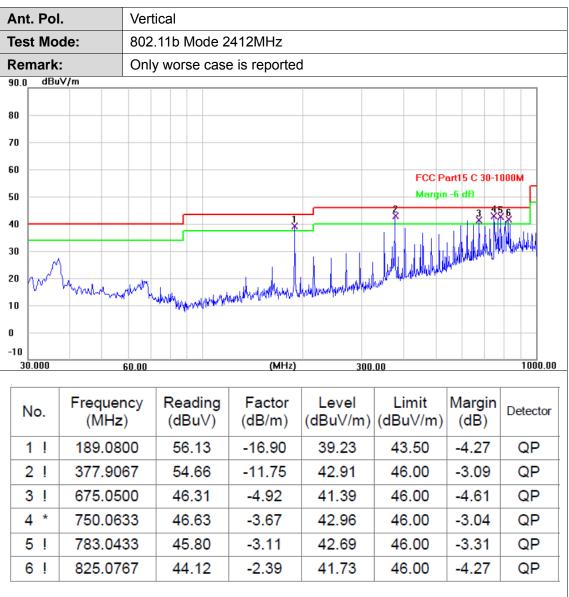
From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



nt. Pol				Horizontal									
est Mo	de:	802	.11b	Mode	2412MHz								
emark		Only	y woi	rse ca	se is reporte	d							
0.0 dBu	iV/m												
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0													
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0	Freque (MHz	60.00	Re	adin BuV)	(MHz) g Factor	· · · ·	Limit	Margin (dB)					
0 0 30.000	Freque	60.00 ncy :)	Re (d	adin	(MHz) g Factor	Level	Limit	-					
0 30.000 No.	Freque (MHz	60.00 ncy :)	Re (d	eading	(MHz) G Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	(dB)	Detecto				
No.	Freque (MHz 351.07	60.00 ncy :) 00 67	Re (d	eadin BuV)	(MHz) Factor (dB/m) -12.47	Level (dBuV/m) 42.85	Limit (dBuV/m) 46.00	(dB) -3.15	Detecto QP				
No.	Freque (MHz 351.07 377.90	60.00 ncy :) 00 67 00	Re (d 5	eadin BuV) 5.32 4.70	(MHz) G Factor (dB/m) -12.47 -11.75	Level (dBuV/m) 42.85 42.95	Limit (dBuV/m) 46.00 46.00	(dB) -3.15 -3.05	Detecto QP QP				
No.	Frequer (MHz 351.07 377.90 485.90	60.00 hcy c) 00 67 00 00 00	Re (d 5	eadin BuV) 5.32 4.70 1.92	(MHz) Factor (dB/m) -12.47 -11.75 -9.21	Level (dBuV/m) 42.85 42.95 42.71	Limit (dBuV/m) 46.00 46.00 46.00	(dB) -3.15 -3.05 -3.29	Detecto QP QP QP				





Remarks:

est Mo	ode:	TX 8	02.11b Mod	le 2412MHz	2			
emarl	c :		eport for the cribed limit.	emission v	hich more tl	nan 10 dB k	pelow the	!
.0 dB	JV/m	p.00						
					FUC Part	5 Class C 3M Abo	ve-16 Peak	
					FCC Part1	5 Class C 3M Abo	ve-1G AV	
	2 X							
	1×							
0) 3500.00 6	000.00	8500.00 110)00.00 (MHz)	16000.00 18	3500.00 21000.	.00 23500.0	0 26000.0
	Fuu u u u		Deating	Faster		1 :00:14	Marria	
No.	Freque (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 * 4823.02		20	33.55	-2.36	31.19	54.00	-22.81	AVG
2	4823.1	00	47.05	-2.36	44.69	74.00	-29.31	peak
	-							

Remarks:



Ant	. Pol		Verti	cal						
Tes	t Moo	de:	TX 8	02.11b Mod	de 2412MHz	Z				
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90.0	dBu¥	/m								
80			FCC Part15 Class C 3M Above-16 Peak							
70										
60						FCC Part	15 Class C 3M Abo	ve-1G AV		
50		2								
40		1 ×								
30		×								
20										
10										
0 -10										
L	00.000	3500.00 6	00.00	8500.00 11	000.00 (MHz)	16000.00 1	8500.00 21000	.00 23500.	00 26000.00	
i—										
N	lo.	Frequer (MHz		Reading (dBu∀)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	
1	1 *	4824.3	18	33.89	-2.36	31.53	54.00	-22.47	AVG	
	2	4824.4	38	46.95	-2.36	44.59	74.00	-29.41	peak	
Der	narks									

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Remarks:



Ant. Pol. Horizontal												
Test Mode:			e 2437MHz									
Remark:		ort for the ibed limit.	emission w	hich more	than 10 dB l	below the						
90.0 dBuV/m												
80				FCC Pa	t15 Class C 3M Ab	ove-1G Peak						
70												
60				FCC Pa	t15 Class C 3M Ab	ove-1G AV						
50												
40 2												
30												
20												
10												
0												
-10	i000.00 8	3500.00 110	100.00 (MHz)	16000.00	18500.00 2100	0.00 23500.	00 26000.00					
·				I								
No. Freque (MH		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector					
1 4873.3	73.338 47.48 -2.14 45.34 74.00 -28.66 pe											
2 * 4874.0	058	34.20 -2.14 32.06 54.00 -21.94 AVG										
Remarks:												

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An	t. Po		Vert	ical										
Tes	st Mo	de:	TX 8	302.1	1b Mo	de 2437N	ΛH:	z						
Rei	mark	:			t for the	e emissio	n v	which	more	than	10 dB	below th	ne	
90.0	dBu	//m												
80									FCC Par	t15 Clas	ss C 3M Ab	ove-16 Peak		
70														
60									ECC Par	15 Cla		ove-1G AV		
50		1 X							reera		SS C JM AU	OVE-TO AV		
40		×												
30		2 X												
20														
10														
0														
-10														
10	00.000	3500.00 6	000.00	8500	<u>J.00 11</u>	000.00 (M	Hz)	160	00.00	18500.0	0 2100	0.00 2350	0.00 2600	0.00
<u> </u>														
	lo.	Frequer (MHz			ading BuV)	Facto (dB/m			vel V/m)		imit uV/m)	Margir (dB)	Detecto	or
	1	4873.34	40	47	7.05	-2.14		44	.91	74	4.00	-29.09) peak	
2	2 *	4874.12	22	34	4.01	-2.14		31	.87	54	4.00	-22.13	AVG	
Por	marke	<u>.</u>												

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Remarks:



Ant	. Pol		Horiz	zonta	al									
Tes	t Mo	de:	TX 8	02.1	1b Mod	de 2462	MH:	z						
Rer	nark	:			t for the ed limit.		on v	vhich	more t	han 1	0 dB l	below the	9	
90.0	dBu\	//m												
80									500 D			10.0		
70							<u> </u>		FUC Par	15 Class	C 3M Ab	ove-1G Peak		
60														
									FCC Par	15 Class	С ЗМ АЬ	ove-1G AV		
50		1 X												
40		Z												
30		×												
20							-							
10														
0														
-10	00.000	3500.00 6	00.00	8500	00 11	000.00 (M	Hz)	100	00.00 1	8500.00	21000	.00 23500	00 200	D O. OC
10	00.000	3500.00 6	000.00	8300		MJ UU.UU	HZJ	160	00.00	8500.00	21000	1.00 23300.	00 2600	JU.UL
N	lo.	Frequer (MHz			ading BuV)	Facto (dB/m			vel IV/m)	Lir (dBu		Margin (dB)	Detect	or
	1	4924.3	96	47	7.14	-1.93	}	45	.21	74.	00	-28.79	peal	<hr/>
2	2 *	4924.6	04	33	3.94	-1.93	}	32	.01	54.	00	-21.99	AVG	;
Day														

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Remarks:



_														
An	t. Pol	•	Verti	cal										
	st Mo					le 2462N								
Re	mark:	:			t for the ed limit.	emissic	n w	/hich	more th	nan 10 d	B below	the		
90.0	dBuV	7m	pres	UNDE										
80									FCC Part1	5 Class C 3M	Above-1G Pe	ak		
70														
co														
60									FCC Part1	5 Class C 3M	Above-1G AV			
50		1 X												
40														
30		2 ×												
20														
10												-		
0														
-10														
10	000.000	3500.00 6	00.00	8500).00 110	000.00 (M	lz)	160	00.00 18	500.00 21	000.00 23	500.0	0 2600	10.00
1	No.	Freque (MHz			ading BuV)	Facto (dB/m			vel IV/m)	Limit (dBuV/r	n) Marg (dB	jin)	Detect	or
	1	4923.9	72	4	7.26	-1.93	}	45	.33	74.00	-28.6	67	peał	C
	2 *	4924.5	24	3	3.36	-1.93	}	31	.43	54.00	-22.5	57	AVG	;
	morka								I					<u> </u>

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Remarks:



Ant	. Pol	•	Hori	zont	al										
Tes	t Mo	de:	TX 8	302. ⁻	11g Mo	de 2412	2MHz	z							
Ren	nark	:			rt for the	e emiss	sion v	vhich	more t	han 10	dB b	pelow t	he		
90.0	dBu\	//m											_		
80									FCC Part	15 Class C	3M Abo	we-1G Pea	sk		
70							_								
60															
									FCC Part	15 Class C	3M Abo	ve-16 AV			
50		1×													
40															
30		2 X													
20															
10															
10															
0															
-10	00.000	3500.00	6000.00	950	0.00 1	1000.00	(MHz)	160	00.00 1	8500.00	21000	00 225	500.0	0 260	00.00
	0.000										21000				
<u> </u>						1									
N	lo.	Freque (MHz	-		ading BuV)	Fac (dB/			evel ıV/m)	Lim (dBu\		Margi (dB)		Detec	tor
-	1	4824.7	00	4	6.49	-2.3	36	44	.13	74.(00	-29.8	7	pea	k
2	*	4828.0	96	3	3.97	-2.3	34	31	.63	54.0	00	-22.3	7	AVC	3
Ren	narks	:													
1.Fa	actor	(dB/m) =	Anten	ina F	actor (dB/m)+	Cabl	e Fac	tor (dB)-Pre-a	ampli	fier Fa	cto	r	

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A .n.4	. Pol.		Verti											
	t Mod					0 24121	11-							
	nark:	ie:			-	e 2412N			more t	han 10 dl	3 helow f	he		
i.ci					ed limit.	CIIII33IO	11 V.	mon	more t		5 6010 10	inc.		
90.0	dBuV.	/m												
80												-		
70									FCC Part	15 Class C 3M .	Above-1G Pea	ik		
60									FCC Part	15 Class C 3M	Above-1G AV			
50		1 X												
40		×												
30		2 ×												
20														
10														
0														
-10 10	00.000	3500.00 6	000.00	850	0.00 110)00.00 (MI	lz)	160	00.00 1	8500.00 21	000.00 235	00.00	26000	.00
		Freque	ncy	Re	ading	Facto	or	Le	evel	Limit	Marg	in ,		
	No.	(MHz	:)	(d	BuV)	(dB/m	I)	(dBu	ıV/m)	(dBuV/n	n) (dB)) '	Detecto	pr
	1	4823.3	32	4	5.98	-2.36	;	43	.62	74.00	-30.3	8	peak	1
	2 *	4824.0	18	3	3.48	-2.36	;	31	.12	54.00	-22.8	8	AVG	1
			I											_
Rer	narks	:		_				_						

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Ant	. Pol		Horiz	zontal					
	t Mo				le 2437MHz	2			
	nark:		No re			which more t	han 10 dB t	pelow the	;
90.0	dBuV	//m	p		1				
80						FCC Parl	15 Class C 3M Abo	ve-16 Peak	
70									
60						ECC Part	15 Class C 3M Abo	we 16 AV	
50							TO CIOSS C OM ADU	Ve-IG AV	
40		X							
30		2 X							
20									
10									
0									
-10	00.000	3500.00 6	000.00	8500.00 11	000.00 (MHz)	16000.00 1	8500.00 21000	.00 23500.	00 26000.00
N	lo.	Frequer (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
•	1	4873.1	94	44.43	-2.14	42.29	74.00	-31.71	peak
2	2 *	4874.9	30	34.08	-2.14	31.94	54.00	-22.06	AVG
Der	narka								

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Remarks:



Δn	t. Pol		Verti	ral									
	st Mo				a Mor	de 24371	ин-	7					
	mark		No re	eport	-				more t	han 10 d	B below	the	
90.0	dBuV	//m									1		
80													
70									FCC Part	15 Class C 3M	Above-1G Pe	eak	
60									FCC Part	15 Class C 3M	Above-1G AV	/	
50		1											
40													
30		2 X											
20													
10													
0													
-10 10	00.000	3500.00 60	00.00	8500.0	0 11	000.00 (M	Hz)	160	00.00 1	8500.00 2	1000.00 23	500.0	0 26000.00
1	No.	Frequer (MHz			ding uV)	Facto (dB/n			evel uV/m)	Limit (dBuV/i			Detector
	1	4873.9	18	47	.18	-2.14	1	45	.04	74.00	-28.9	96	peak
	2 *	4874.5	44	34	.00	-2.14	1	31	.86	54.00	-22.1	14	AVG
						-		-					

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Remarks:



	. Pol.			zontal					
	t Moo			802.11g Moc					
Ren	nark:			eport for the cribed limit.	emission v	vhich more t	han 10 dB t	pelow the	;
90.0	dBuV	//m						1	
80						FCC Par	15 Class C 3M Abo	ove-16 Peak	
70									
60									
50		1				FCC Par	15 Class C 3M Abo	ove-16 AV	
40		X							
30		2 X							
20									
10									
0									
10	00.000					16000.00		.00 23500.	
N	lo.	Freque (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1	4923.1	04	46.80	-1.93	44.87	74.00	-29.13	peak
	<u> </u>			33.95	-1.93	32.02	54.00	-21.98	AVG

Remarks:



Ant	. Pol	•	Vert	ical											
Tes	t Mo	de:	TX 8	302.1	1g Moo	de 2462	2MHz	z							
Ren	nark	:			t for the d limit.	e emiss	ion v	vhich	more t	han 10	dB b	pelow t	he		
90.0	dBu\	//m													1
80									FCC Part	15 Class C 3	M Abo	ve-1G Pea	ık		
70															
60															
									FCC Part	15 Class C	M Abo	ve-1G AV			
50		1													
40			•												
30		2													
20															
10															
0															
-10															
10	00.000	3500.00	6000.00	8500).00 11	000.00	(MHz)	160	00.00 1	8500.00	21000	.00 235	00.00) 260	00.00
N	lo.	Frequ (Mł	-		ading BuV)	Fac (dB/			evel iV/m)	Lim (dBuV		Marg (dB)		Detec	tor:
	1	4923	.376	46	3.49	-1.9	93	44	.56	74.0	0	-29.4	4	pea	k
2	2 *	4924	.886	33	3.64	-1.9	93	31	.71	54.0	0	-22.2	9	AV	G
	narks														

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	eport for the scribed limit.	emission v		than 10 dB t		;
			FCC Par	t15 Class C 3M Abo	10 D - h	
2×			FCC Par	t15 Class C 3M Abo	10 P h	
2×						
2 X						
2 X					10.44	
2 X			FLL Par	t15 Class C 3M Abo	We-TG AV	
1×						
×						
		-				
equency (MHz)	Reading (dBuV)	Factor (dB/m)			Margin (dB)	Detector
323.240	33.74	-2.36	31.38	54.00	-22.62	AVG
324.830	47.31	-2.36	44.95	74.00	-29.05	peak
	323.240	equency (MHz) Reading (dBuV) 323.240 33.74	equency Reading Factor (MHz) (dBuV) (dB/m) 323.240 33.74 -2.36	equency Reading Factor Level (dBuV) (dBuV) (dB/m) 2323.240 33.74 -2.36 31.38	equency Reading Factor Level Limit (dBuV) (dB/m) (dBuV/m) (dBuV/m) 323.240 33.74 -2.36 31.38 54.00	equency Reading Factor Level Limit (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) 323.240 33.74 -2.36 31.38 54.00 -22.62



Ant	t. Pol.		Vertica	al					
Tes	t Mod	de:	TX 80	2.11n(HT2	0) Mode 24	12MHz			
	nark:		No rep	•	,	vhich more t	han 10 dB t	pelow the	;
90.0	dBuV	/m							
80						500 B .		10.0	
70						FUC Part	15 Class C 3M Abo	ve-16 Peak	
60						FCC Part	15 Class C 3M Abo	ve-1G AV	
50		2 X							
40									
30		X							
20									
10									
0 -10									
	00.000	3500.00 6	00.00	8500.00 110)00.00 (MHz)	16000.00 1	8500.00 21000	.00 23500.	00 26000.00
Ţ									
1	No.	Frequer (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
	1 *	4823.4	46	33.71	-2.36	31.35	54.00	-22.65	AVG
	2	4824.4	64	46.02	-2.36	43.66	74.00	-30.34	peak
									L

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Remarks:



	Pol.		izontal					
	Mode: ark:	No	802.11n(HT) report for the scribed limit.	e emission v		than 10 dB l	below the	;
0.0	dBuV/m	p.e.						
80 -					ECC Pa	rt15 Class C 3M Ab	ove 16 Pest	
70								
:0 -								
io –					FCC Pa	rt15 Class C 3M Ab	ove-1G AV	
10 -	Ś	2						
30 -	1	،						
20								
, _								
10	0.000 3500.00	6000.00	8500.00 11	1000.00 (MHz)	16000.00	18500.00 2100	0.00 23500	00 26000.
	Frequ	lency	Reading	Factor	Level	Limit	Margin	Detector
Nc	D. (MI		(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
Nc 1		Hz)	(dBuV) 34.12	(dB/m) -2.14	(dBuV/m) 31.98	(dBuV/m) 54.00	(dB) -22.02	AVG



\nt	. Pol	-	Vert	cal										
es	t Mo	de:	TX 8	302.1	l1n(HT2	20) Mode	e 24	137MF	Ιz					
Ren	nark:	:			t for the ed limit.	e emissio	on v	vhich	more t	han 1) dB	below t	he	
0.0	dBu\	//m												
10												10.0		
~o									FCC Part	15 Class	3M AL	ove-16 Pea	ik	_
0									FCC Part	15 Class	3M AI	ove-16 AV		
0		1 X	_											
10														_
10		2 X	_											_
0														
0														
10														
	00.000	3500.00 6	000.00	850	0.00 11	000.00 (M	Hz)	160	00.00 1	8500.00	2100	0.00 235	00.00 2	6000.0
N	lo.	Freque (MHz			ading BuV)	Facto (dB/m			vel V/m)	Lin		Margi (dB)		ctor
			·	`	· ·		<u> </u>					· · ·		
	1	4874.2			6.74	-2.14			.60	74.		-29.4	_ ·	
2	*	4874.6	80	3	3.85	-2.14		31	.71	54.	00	-22.2	9 AV	'G

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A			Llaria							
	t. Po			zontal						
	st Mo				T20) Mode					
Rei	mark	:		eport for 1 cribed lim	the emissior hit.	which mo	ore than	10 dB b	elow the	!
90.0	dBu	//m				Î				
80						FC	C Part15 Cl	ass C 3M Abo	ve-1G Peak	
70										
60										
50						FC	C Part15 Cla	ass C 3M Abo	ve-1G AV	
50		2 X								
40										
30		1 ×								
20										
10										
0										
-10 10	00.000	3500.00 6	000.00	8500.00	11000.00 (MHz) 16000.0	D 18500.	.00 21000.	00 23500.0	0 26000.00
. <u> </u>										
	lo.	Frequer (MHz		Reading (dBuV)		Leve (dBuV/		Limit BuV/m)	Margin (dB)	Detector
1	*	4923.2	96	33.83	-1.93	31.90) 5	54.00	-22.10	AVG
	2	4924.1	06	46.76	-1.93	44.83	3 7	74.00	-29.17	peak
	morle									

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Remarks:



Ant. Po	ol.	Verti	cal					
est M	ode:	TX 8	02.11n(HT2	20) Mode 24	462MHz			
Remar	k:		eport for the cribed limit.	e emission v	vhich more t	han 10 dB t	elow the	;
0.0 dB	uV/m							
0					FCC Par	t15 Class C 3M Abo	ve-16 Peak	
o ⊨								
0								
o ⊨					FLL Par	t15 Class C 3M Abo	Ve-IG AV	
	X							
0								
0	2 X							
20								
0								
·								
10	0 3500.00 6	000.00	8500.00 11	000.00 (MHz)	16000.00	18500.00 21000	.00 23500.	00 26000.0
	Frequer	ncy	Reading	Factor	Level	Limit	Margin	
No.	(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1	4923.1	06	47.78	-1.93	45.85	74.00	-28.15	peak
2 *	4923.4	20	33.84	-1.93	31.91	54.00	-22.09	AVG
Remark								

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2.Margin value = Level -Limit value



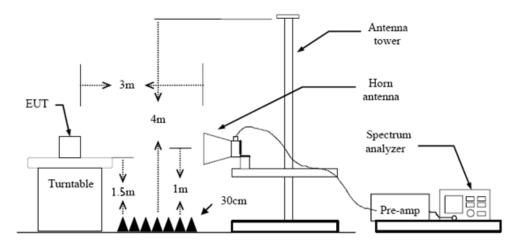
3.3. Band Edge Emissions (Radiated)

Limit

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d)/ RSS 247 5.5:

Restricted Frequency Band	(dBuV/m	n)(at 3m)
(MHz)	Peak	Average
2310 ~2390	74	54
2483.5 ~2500	74	54

Test Configuration



Test Procedure

- 1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
- The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 2. degrees to determine the position of the maximum emission level.
- 3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
- 4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
- The receiver set as follow: 5.
 - RBW=1MHz, VBW=3MHz Peak detector for Peak value.

RBW=1MHz, VBW see note 1 with Peak Detector for Average Value.

Note 1: For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause 3.8 Duty Cycle.

Test Mode

Please refer to the clause 2.4.

Test Results



nt.	Pol.		Hori	zontal					
est	Mode:		802.	11b Mode 2	412MHz				
10.0	dBuV/m								
00								20	
							^	\bigwedge	
)							FCC Part15	C - Above 10	GIPK
D							FQC Part15	C - Above 10	L KAR
							×/		
		-	yan me	an in species to be a state of the state of	a and a construction of the second	- Marine - M	ž		
)									
)									
0.0	7.600 231	0 60 2	331.60	2343.60 23	55.60 (MHz)	2379.60 2	2391.60 2403.	60 2415.6	0 2427.0
No	5. F	requer (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
NU			/						
1	2	390.0		20.00	30.84	50.84	74.00	-23.16	peak

Remarks:



: m	802.	11b Mc	ode 2	412M	IHz						
m											
										N	
										\bigwedge	-h
								FCC	Part15	C - Above	e 1G PK
									~ (
						X		3EdC	Part15	C - Ahove	
						2 N	. ^ .	× j			
** ****		Addression	وسيريد	MAN	m	N ^A	ww	~~×			
	Iber al accord		-					_			
217.00 0	200.00	0241.0	0 02	52.00		0.0	7.00	2200.00	0.401	00 041	3.20 2425.
	-		-							Margir (dB)	n _{Detector}
2375.7	60	26.5	i9	30	.78	57	.37	74.	00	-16.63	3 peak
2375.7	60	19.1	5	30	.78	49	.93	54.	00	-4.07	AVG
2390.0	00	23.0	8(30	.84	53	.92	74.	00	-20.08	3 peak
2390.0	00	12.3	7	30	.84	43	21	54.	00	-10.79	AVG
	-requer (MHz 2375.7 2375.7	Frequency (MHz) 2375.760 2375.760	Trequency (MHz) 2375.760 2375.760 2375.760 2375.760 26.5 2375.760 19.1	317.20 2329.20 2341.20 23 Frequency (MHz) Reading (dBuV) 2375.760 26.59 2375.760 19.15 19.15	317.20 2329.20 2341.20 2353.20 Frequency (MHz) Reading (dBuV) Fa (dBuV) 2375.760 26.59 30 2375.760 19.15 30	Frequency (MHz)Reading (dBuV)Factor (dB/m)2375.76026.5930.782375.76019.1530.78	Trequency (MHz) Reading (dBuV) Factor (dB/m) Le (dBu 2375.760 26.59 30.78 57 2375.760 19.15 30.78 49	Trequency (MHz) Reading (dBuV) Factor (dB/m) Level (dBuV/m) 2375.760 26.59 30.78 57.37 2375.760 19.15 30.78 49.93	Image: state stat	Reading (MHz) Factor (dBuV) Level (dB/m) Limit (dBuV/m) 2375.760 26.59 30.78 57.37 74.00 2375.760 19.15 30.78 49.93 54.00	Reading (MHz) Factor (dBuV) Level (dBn) Limit (dBuV/m) Margin (dBuV/m) 2375.760 26.59 30.78 57.37 74.00 -16.63 2375.760 19.15 30.78 49.93 54.00 -4.07



nt. Pol		Horiz	zontal					
est Mo	de:	802.	11b Mode 2	462 MHz				
10.0 dBu	iV/m		1					
	M					FCC Part15	0.41-0-0-1	
,o 🕇						FUC Partis	C-Above II	
io		h	1.			FCC Part15	C - Above 1	GAV
io 🕴		ľ	× V					
0			Burnan	manna	hat scherichaess, and	a hat a har a h	man Manna Sa	many
0								
:0								
0.0 2448-800) 2460.80 2	472.80	2484.80 24	196.80 (MHz)	2520.80 2	2532.80 2544	.80 2556.8	30 2568
No.	Frequer (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detecto
No.)						Detecto peak

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Remarks:



Ant	. Pol.		Verti	cal										
Tes	t Moo	de:	802.	11b	Mode 2	462 MH	z							
110.) dBu\	//m												
100 90	Ą	M												
80							-			FCC	Part15	C - Above	1G PK	
70														
60	\bigvee		h	1	3					FCC	Part15	C - Above	1G AV	
50	•		۳V	× v	3 × 4									
40				ş	wh	maria	- Ayre	m	dimension of the second	man	mont	unound,	more	
30							_							
20														
10.0														
24	148.800	2460.80 2	472.80	248	34.80 24	96.80 (M	IHz)	252	0.80 2	532.80	2544	.80 2556	.80 2568.8	<u>su</u>
1	۱o.	Frequer (MHz	-		ading BuV)	Facto (dB/m			vel IV/m)	Lin (dBu)		Margin (dB)	Detector	
	1	2483.5	00	2	1.68	31.24	1	52	.92	74.	00	-21.08	peak	Ť
	2	2483.5	00		7.88	31.24	1	39	.12	54.	00	-14.88	AVG	T
	3	2490.2	40	2	1.29	31.27	7	52	.56	74.	00	-21.44	peak	T
4	4 *	2490.2	40	1	4.85	31.27	7	46	.12	54.	00	-7.88	AVG	Τ
Rer	narks	:										ifior Eac		

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Ant. Po	l.	Hori	zontal					
est Mo	de:	802	.11g Mode	2412MHz				
10.0 dB	JV/m							
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	0 2317.80	2329.80	2341.80 2	2353.80 (MHz)	2377.80	2389.80 24	01.80 2413.	80 2425.
No.	Freque		Reading	Factor	Level		Margin	Detector
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1	No.	Freque (MH		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detecto
	1	2390.	000	32.60	30.84	63.44	74.00	-10.56	peak
	2 *	2390.	000	21.52	30.84	52.36	54.00	-1.64	AVG

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Remarks:



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No.	Frequer (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detecto
1	2483.5	00	32.80	31.24	64.04	74.00	-9.96	peak
2 *	2483.5	00	17.77	31.24	49.01	54.00	-4.99	AVG

Remarks:

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No.	Freque (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
						74.00	44.05	
1	2483.5	500	28.51	31.24	59.75	74.00	-14.25	peak

Remarks:



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2207.60	0 2319.60	2331.60	2343.60 2	355.60 (MHz)	2379.60	2391.60 2403	.60 2415.1	60 2427.0
No.	Freque (MH		Reading (dBuV)	Factor (dB/m)	Level	Limit (dBuV/m)	Margin (dB)	Detector
1	2390.	,	25.88	30.84	56.72	74.00	-17.28	peak
	2390.		15.04	30.84	45.88	54.00	-8.12	AVG
2 *	2390.	000	15.04	30.84	45.88	54.00	-8.12	AVG

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Remarks:



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.0 2305.80	0 2317.80 2	329.80	2341.80 23	53.80 (MHz)	2377.80 2	389.80 2401.	80 2413.8	0 2425.0
No.	Frequer (MHz		Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detecto
1	2390.0	00	30.29	30.84	61.13	74.00	-12.87	peak
2 *	2390.0	00	17.36	30.84	48.20	54.00	-5.80	AVG
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2448.20	0 2460.20	2472.20	2484.20 24	196.20 (MHz)	2520.20	2532.20 2544.	20 2556.	20 2568.
No.	Frequ (Mł		Reading (dBu∀)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483	.500	31.86	31.24	63.10	74.00	-10.90	peak
2 *	2483	.500	18.98	31.24	50.22	54.00	-3.78	AVG

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2448.200) 2460.20	2472.20	2484.20 2	496.20 (MHz) 2520.20	2532.20 2544.	20 2556.3	20 2568.2
No.	Freque (MH		Reading (dBu∀)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2483.	500	33.65	31.24	64.89	74.00	-9.11	peak
2 *	2483.	500	20.84	31.24	52.08	54.00	-1.92	AVG

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Remarks:

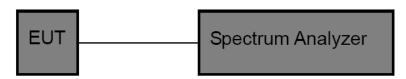


3.4. Band edge and Spurious Emissions (Conducted)

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d):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 Configuration



Test Procedure

- 1. The transmitter output was connected to the spectrum analyzer through an attenuator, the path loss was compensated to the results for each measurement.
- 2. Set to the maximum power setting and enable the EUT transmit continuously
- Use the following spectrum analyzer settings: RBW = 100 kHz, VBW ≥ RBW, scan up through 10th harmonic. Sweep = auto, Detector function = peak, Trace = max hold
- Measure and record the results in the test report.

Test Mode

Please refer to the clause 2.4.

Test Results



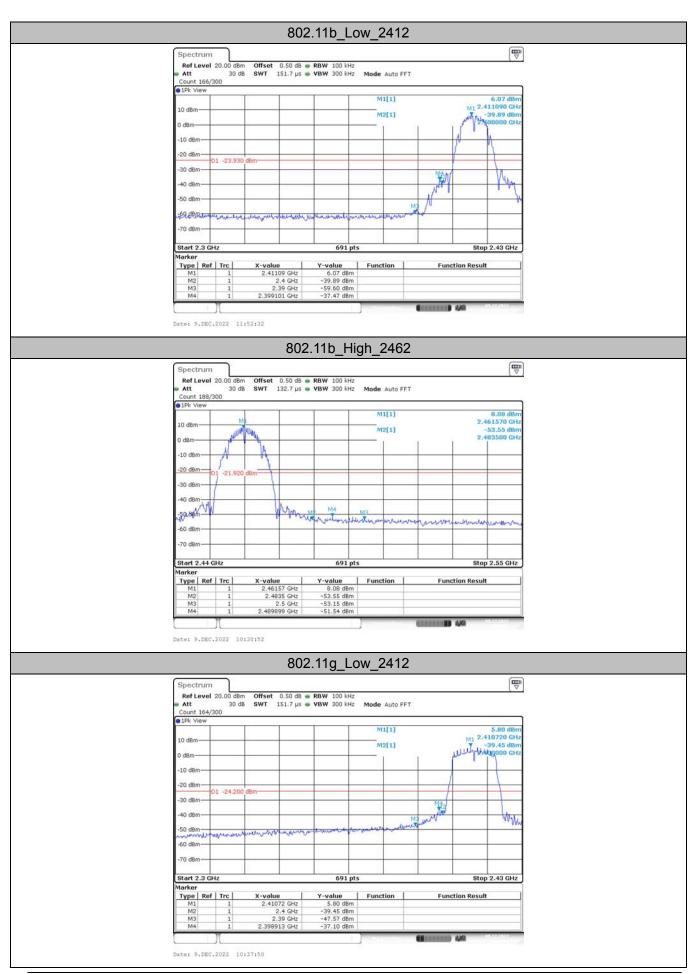
EN

(1) Band edge Conducted Test

Test Mode	Test Frequency	Ref Level[dBm]	Result[dBm]	Limit[dBm]	Verdict
802.11b	2412	6.07	-37.47	≤-23.93	PASS
002.110	2462	8.08	-51.54	≤-21.92	PASS
902 11 a	2412	5.80	-37.10	≤-24.20	PASS
802.11g	2462	4.51	-46.51	≤-25.49	PASS
802.11n(HT20)	2412	4.44	-37.71	≤-25.56	PASS
	2462	2.14	-46.92	≤-27.86	PASS



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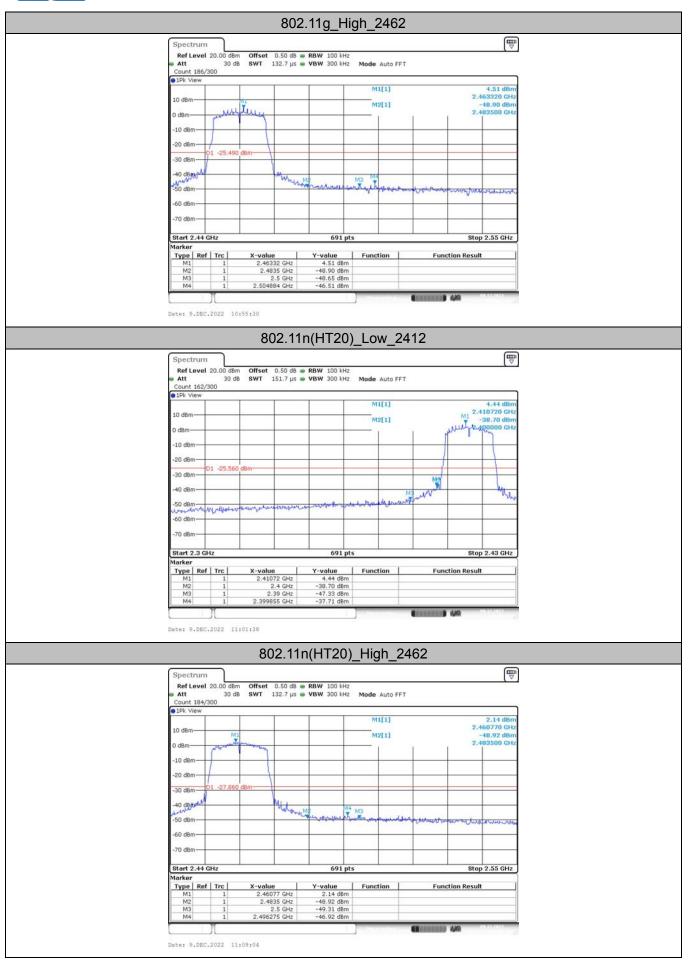


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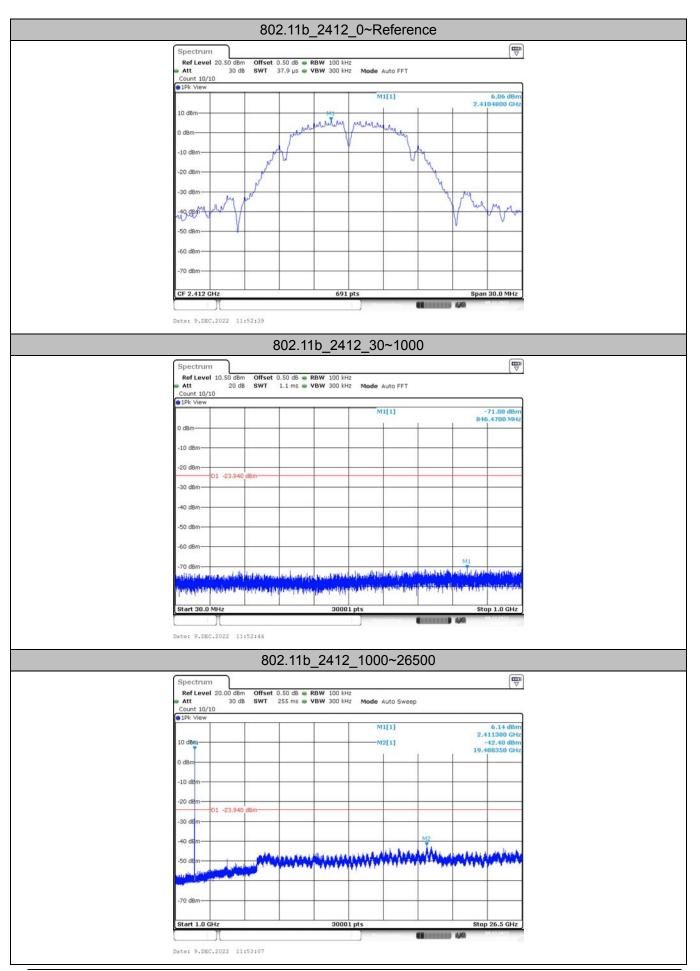
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(2) Conducted Spurious Emissions Test

Test Mode	Test Frequency	Freq Range [Mhz]	Ref Level [dBm]	Result [dBm]	Limit [dBm]	Verdict
		Reference	6.06	6.06		PASS
	2412	30~1000	6.06	-71.08	≤-23.94	PASS
		1000~26500	6.06	-42.4	≤-23.94	PASS
		Reference	8.25	8.25		PASS
802.11b	2437	30~1000	8.25	-70.46	≤-21.75	PASS
		1000~26500	8.25	-41.17	≤-21.75	PASS
		Reference	7.82	7.82		PASS
	2462	30~1000	7.82	-65.00	≤-22.18	PASS
		1000~26500	7.82	-40.93	≤-22.18	PASS
		Reference	1.95	1.95		PASS
	2412	30~1000	1.95	-70.64	≤-28.05	PASS
		1000~26500	1.95	-42.14	≤-28.05	PASS
	2437	Reference	5.50	5.50		PASS
802.11g		30~1000	5.50	-69.73	≤-24.50	PASS
		1000~26500	5.50	-41.56	≤-24.50	PASS
	2462	Reference	5.15	5.15		PASS
		30~1000	5.15	-67.33	≤-24.85	PASS
		1000~26500	5.15	-41.82	≤-24.85	PASS
		Reference	5.15	5.15		PASS
	2412	30~1000	5.15	-69.69	≤-24.85	PASS
		1000~26500	5.15	-42.24	≤-24.85	PASS
		Reference	5.21	5.21		PASS
802.11n(HT20)	2437	30~1000	5.21	-67.82	≤-24.79	PASS
		1000~26500	5.21	-42.08	≤-24.79	PASS
		Reference	4.89	4.89		PASS
	2462	30~1000	4.89	-63.61	≤-25.11	PASS
		1000~26500	4.89	-41.52	≤-25.11	PASS



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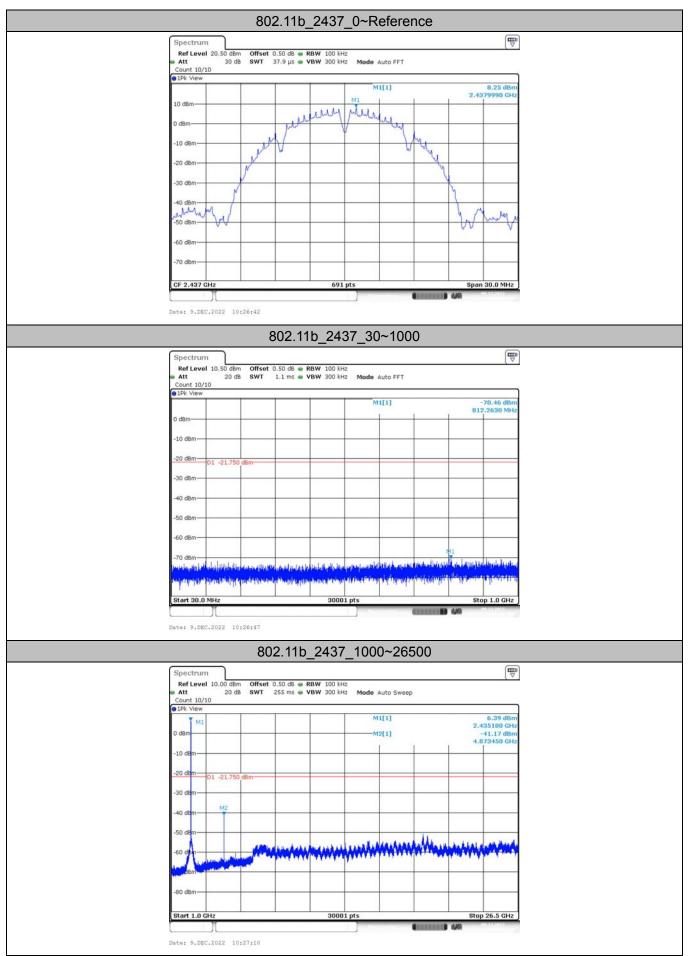
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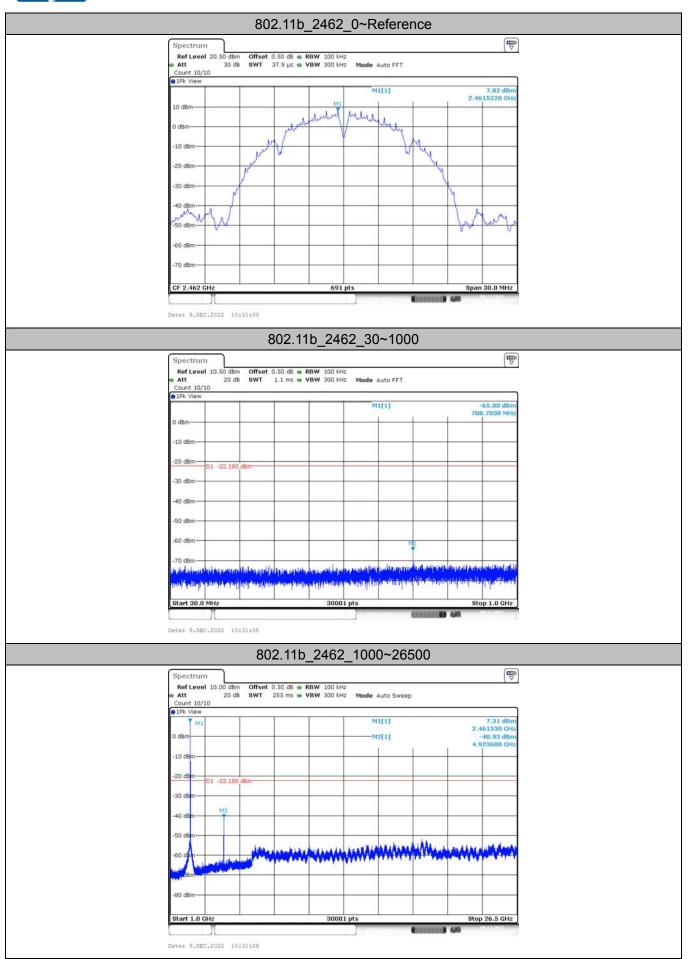
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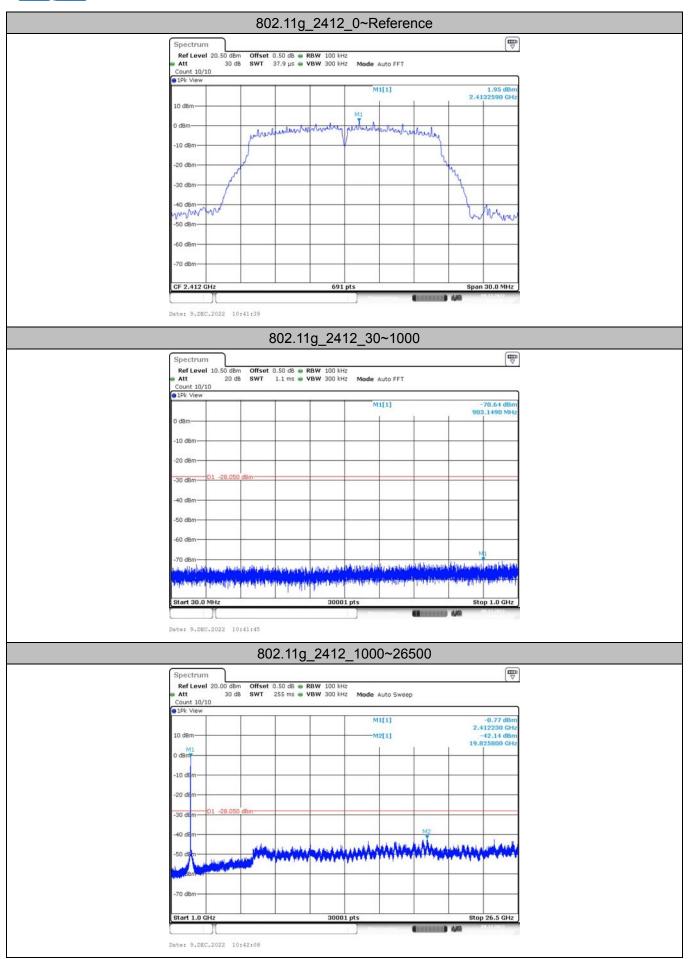


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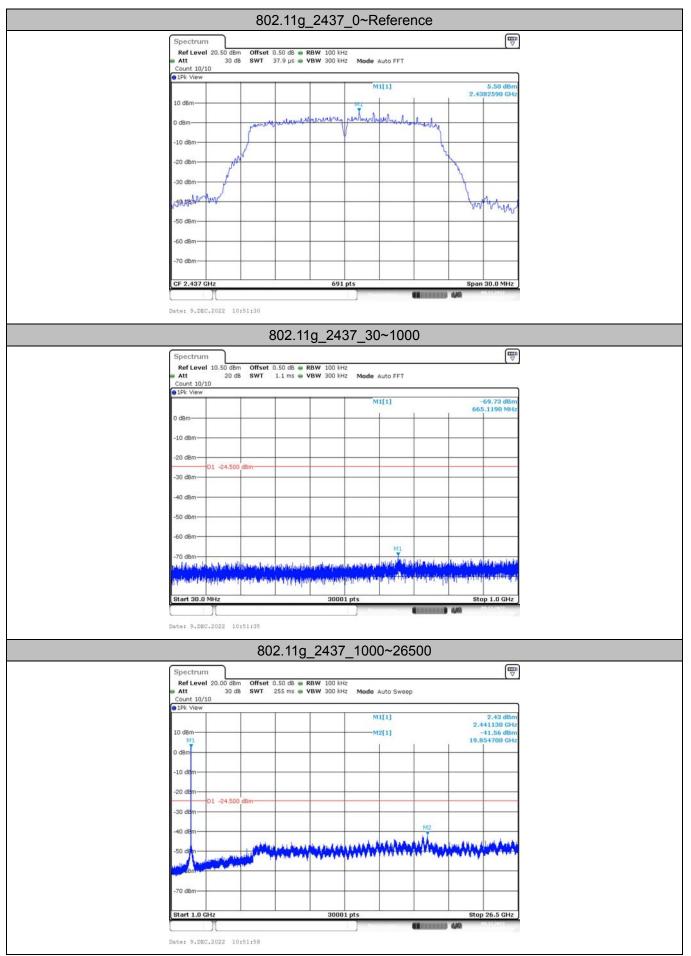


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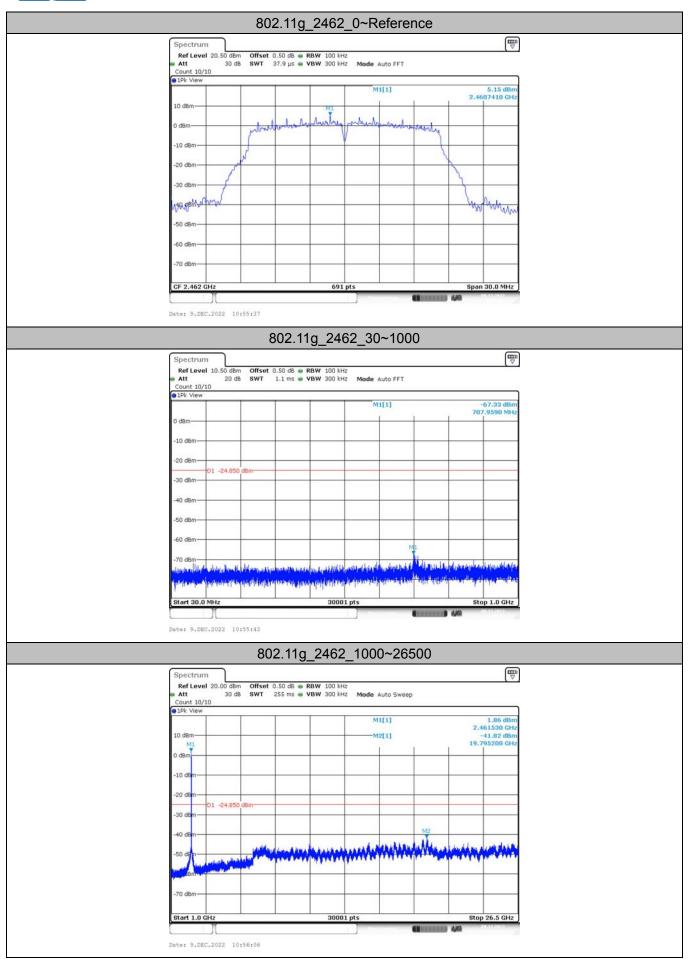


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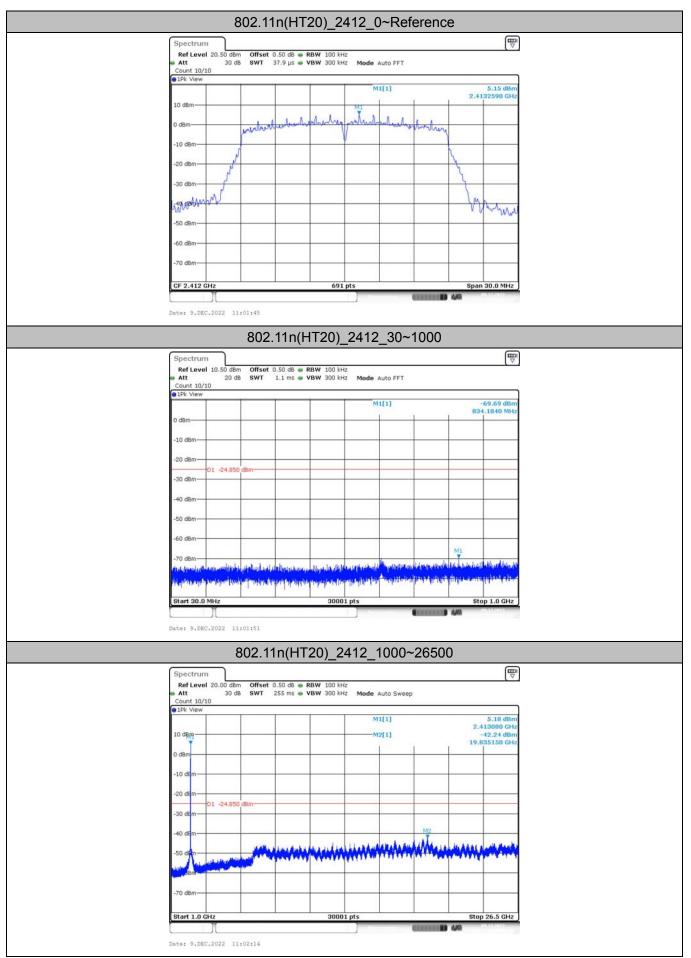


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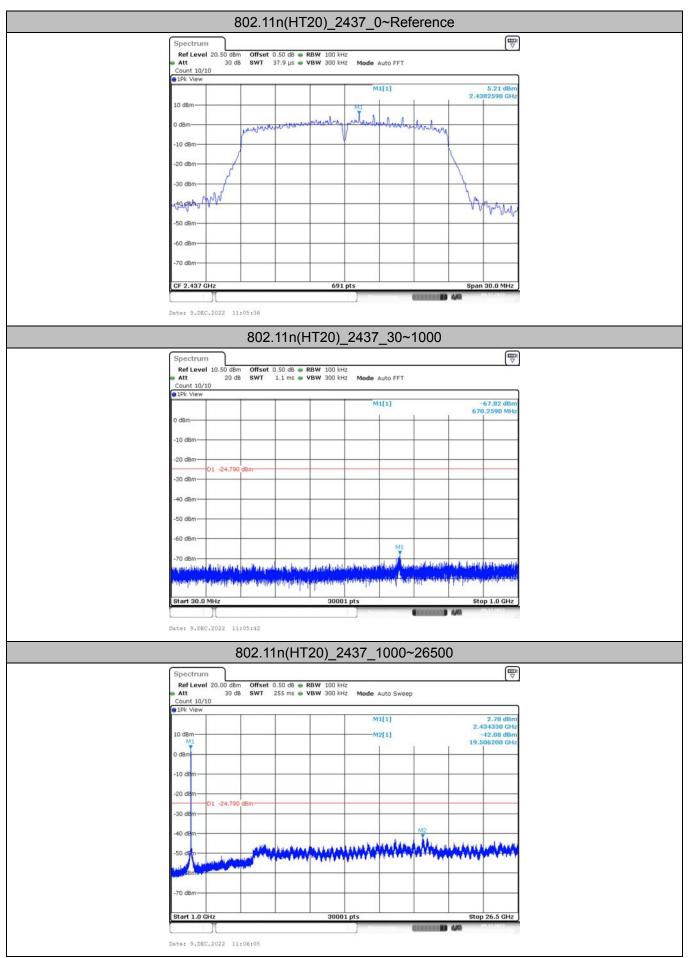


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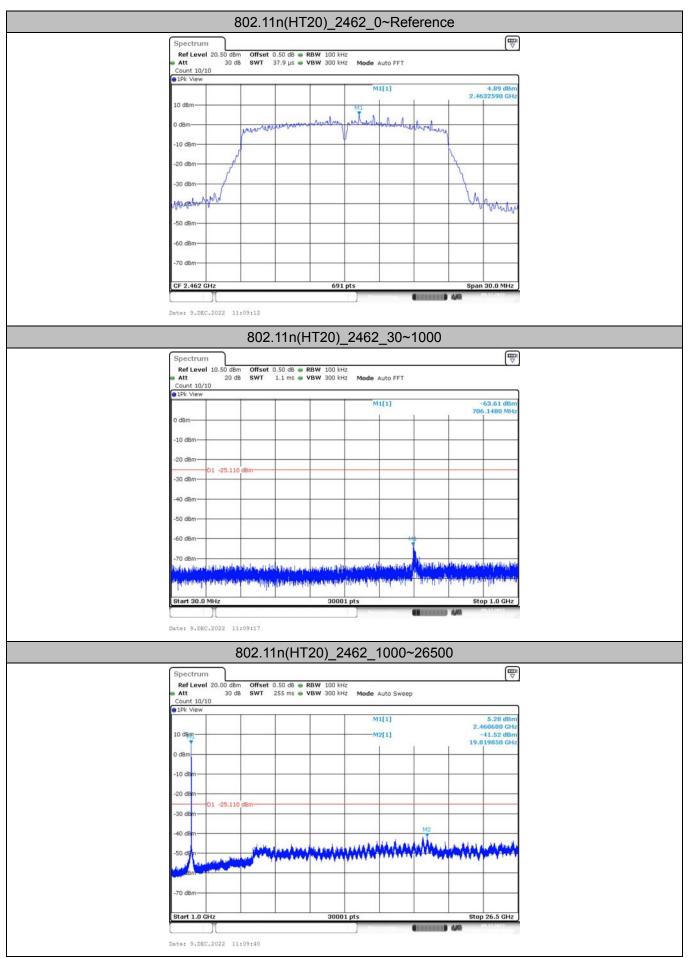


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3.5. DTS Bandwidth

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(2)/ RSS-247 5.2 a:

Test Item	Limit	Frequency Range(MHz)
DTS Bandwidth	>=500 KHz (6dB bandwidth)	2400~2483.5

Test Configuration



Test Procedure

- 5. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- 6. DTS Spectrum Setting:
 - (1) Set RBW = 100 kHz.
 - (2) Set the video bandwidth (VBW) \geq 3 RBW.
 - (3) Detector = Peak.
 - (4) Trace mode = Max hold.
 - (5) Sweep = Auto couple.
 - OCB Spectrum Setting:
 - (1) Set RBW = $1\% \sim 5\%$ occupied bandwidth.
 - (2) Set the video bandwidth (VBW) \ge 3 RBW.
 - (3) Detector = Peak.
 - (4) Trace mode = Max hold.
 - (5) Sweep = Auto couple.

NOTE: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

Test Mode

Please refer to the clause 2.4.



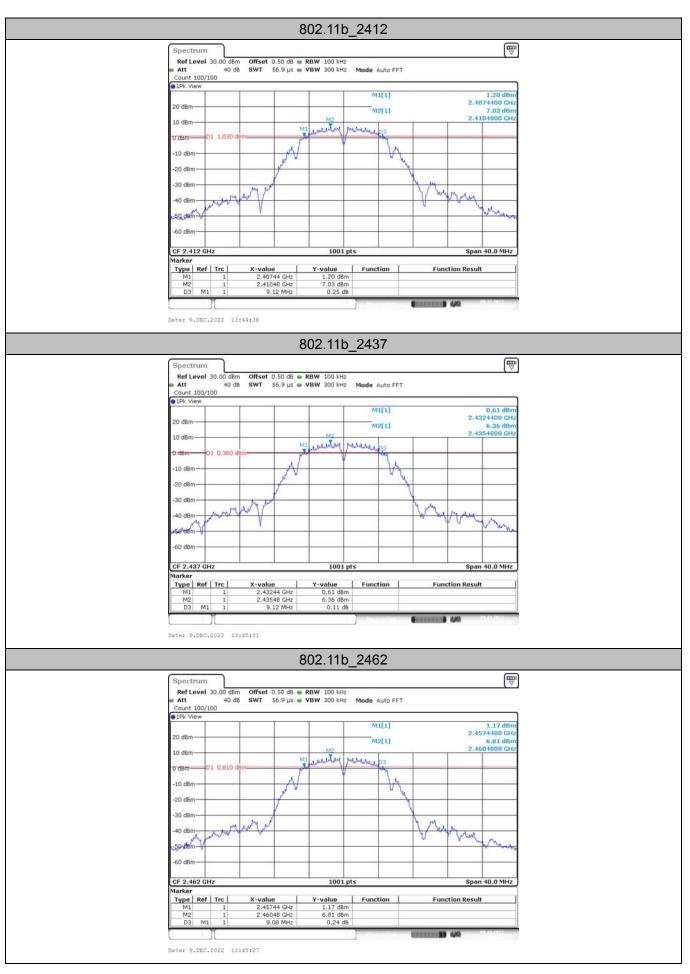
Test Results

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Test Mode	Channel	DTS BW [MHz] Limit [MHz]		Verdict
	2412	9.12	>=0.5	PASS
802.11b	2437	9.12	>=0.5	PASS
	2462	9.08	>=0.5	PASS
	2412	15.68	>=0.5	PASS
802.11g	2437	15.12	>=0.5	PASS
	2462	15.04	>=0.5	PASS
	2412	15.12	>=0.5	PASS
802.11n(HT20)	2437	15.64	>=0.5	PASS
	2462	15.08	>=0.5	PASS



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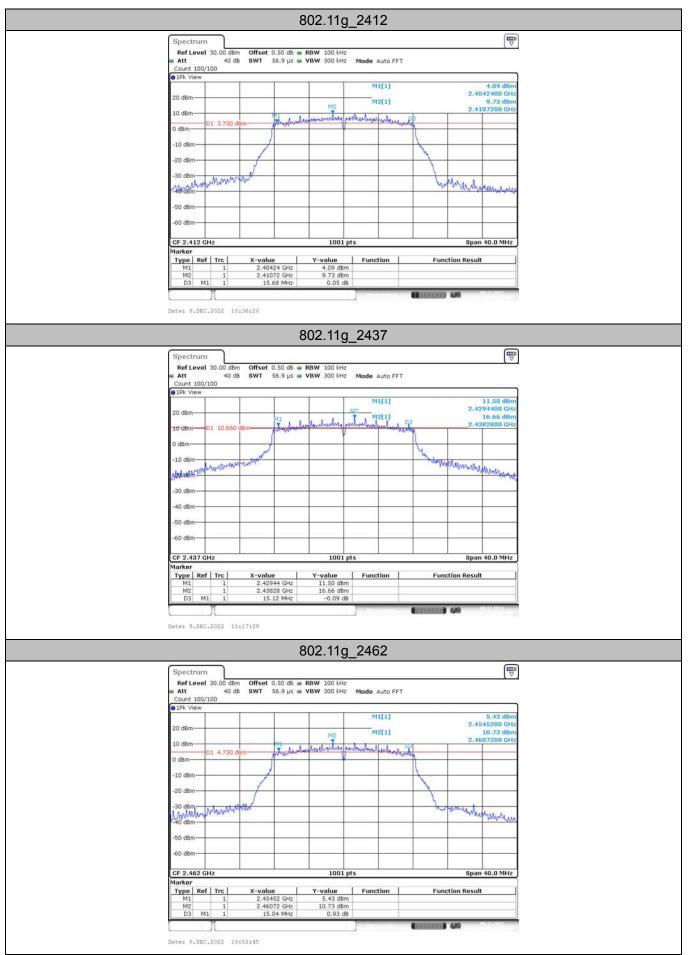


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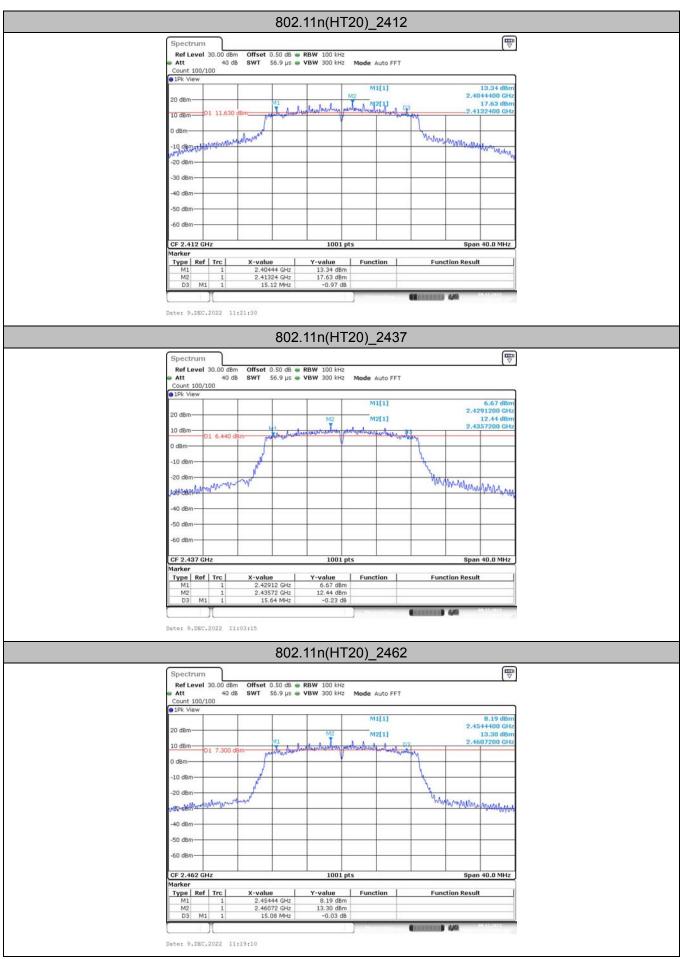
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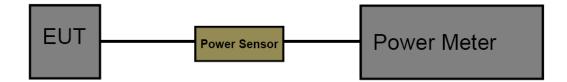
3.6. Maximum Conducted Output Power

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(3)/ RSS-247 5.4:

Section	Test Item	Limit	Frequency Range(MHz)
CFR 47 FCC 15.247(b)(3)	Maximum conducted output power	1 Watt or 30dBm	2400~2483.5
ISED RSS-247 5.4 d	EIRP	4 Watt or 36dBm	2400~2483.5

Test Configuration



Test Procedure

- 1. The maximum conducted output power may be measured using a broadband RF power meter.
- 2. Power measurements were performed only when the EUT was transmitting at its AVG power control level using a broadband power meter with a pulse sensor.
- 3. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.
- 4. Record the measurement data.

Test Mode

Please refer to the clause 2.4.

Test Result



Test Mode	Channel	Result Avg [dBm]	Limit [dBm]	Verdict
	2412	13.56	<=30	PASS
802.11b	2437	13.74	<=30	PASS
	2462	13.63	<=30	PASS
	2412	13.24	<=30	PASS
802.11g	2437	13.26	<=30	PASS
	2462	13.06	<=30	PASS
	2412	13.11	<=30	PASS
802.11n(HT20)	2437	13.16	<=30	PASS
	2462	13.20	<=30	PASS

Note: Test results increased RF cable loss by 0.5dB and Duty Cycle Factor.



3.7. Power Spectral Density

<u>Limit</u>

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (e)/ RSS-247 5.2 b:

Test Item	Limit	Frequency Range(MHz)	
Power Spectral Density	8dBm(in any 3 kHz)	2400~2483.5	

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.

2. The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v05r02.

3. Spectrum Setting:

Set analyzer center frequency to DTS channel center frequency.

Set the span to 1.5 times the DTS bandwidth.

Set the RBW to: 3 kHz

Set the VBW to: 10 kHz

Detector: PK

Sweep time: Auto

Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

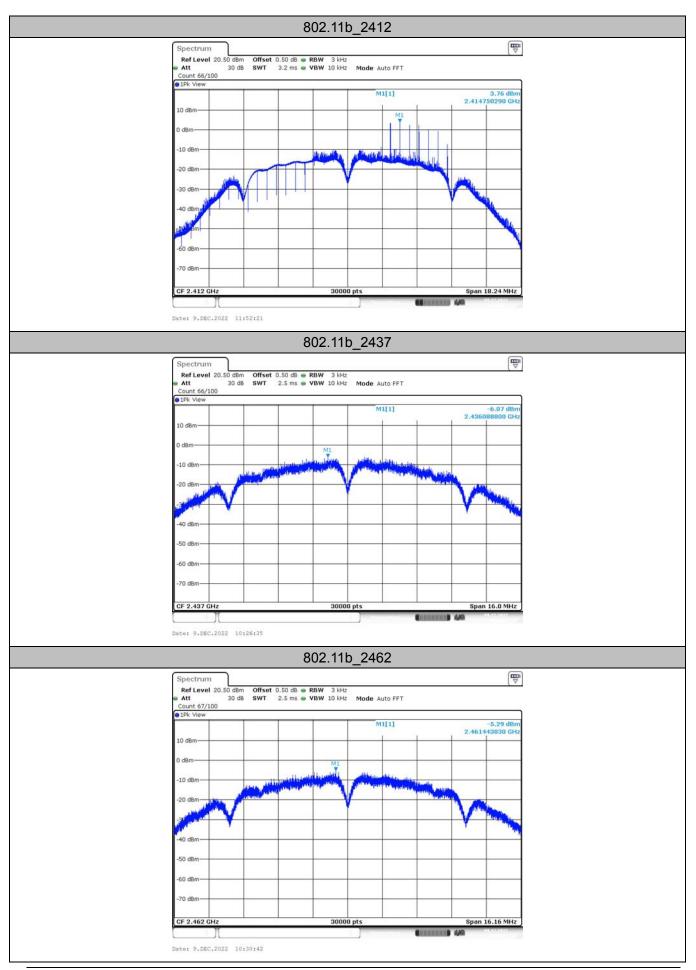
Test Mode

Please refer to the clause 2.4.



Test Mode	Channel	Result [dBm/3kHz]	Limit [dBm/3kHz]	Verdict
	2412	3.76	<=8	PASS
802.11b	2437	-6.07	<=8	PASS
	2462	-5.29	<=8	PASS
	2412	-7.42	<=8	PASS
802.11g	2437	-7.60	<=8	PASS
	2462	-9.00	<=8	PASS
	2412	-9.19	<=8	PASS
802.11n(HT20)	2437	-8.63	<=8	PASS
	2462	-9.13	<=8	PASS





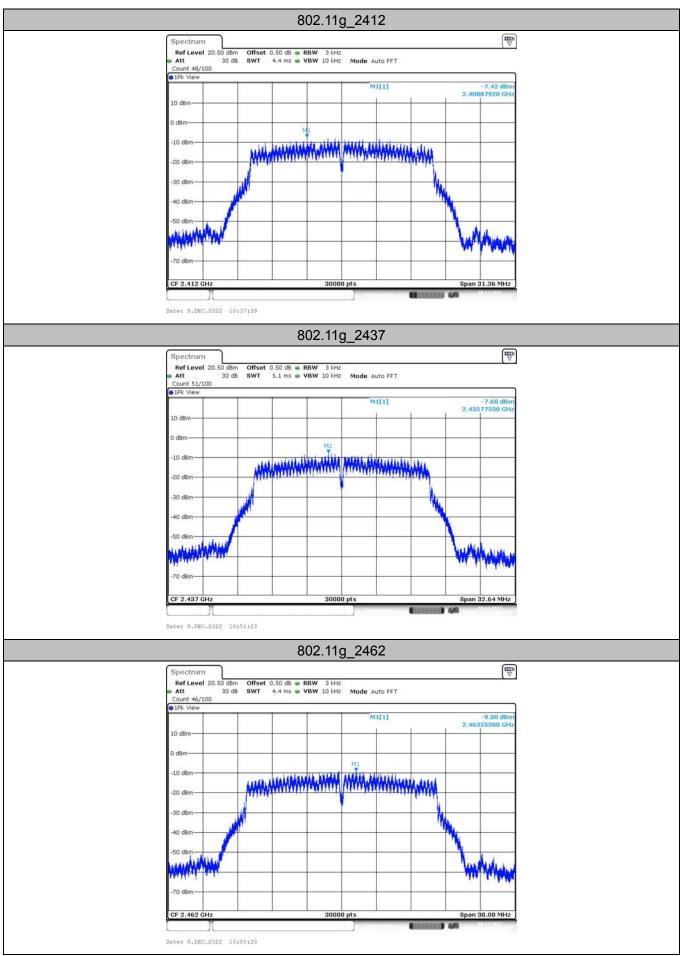
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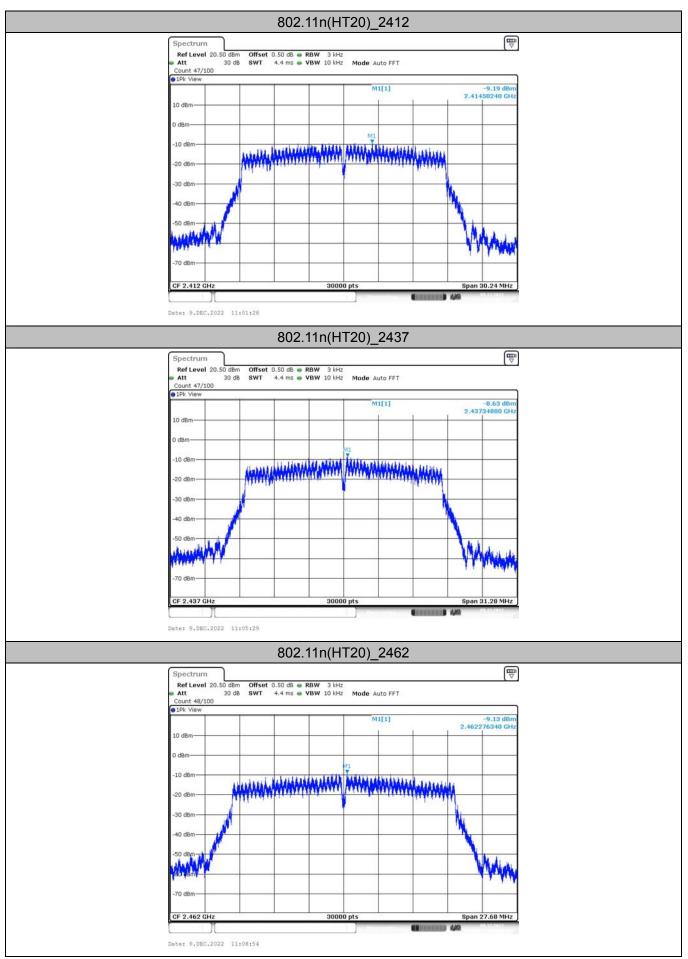


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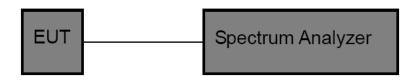


3.8. Duty Cycle

Limit

None, for report purposes only.

Test Configuration



Test Procedure

1. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.

2. The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement according to section 10.2 of KDB 558074 D01 DTS Meas Guidance v05r02.

Spectrum Setting: 3.

Set analyzer center frequency to DTS channel center frequency. Set the span to 0Hz Set the RBW to 8MHz Set the VBW to 8MHz Detector: peak Sweep time: auto Allow trace to fully stabilize. Then use the peak marker function to determine the maximum amplitude level.

Test Mode

Please refer to the clause 2.4.

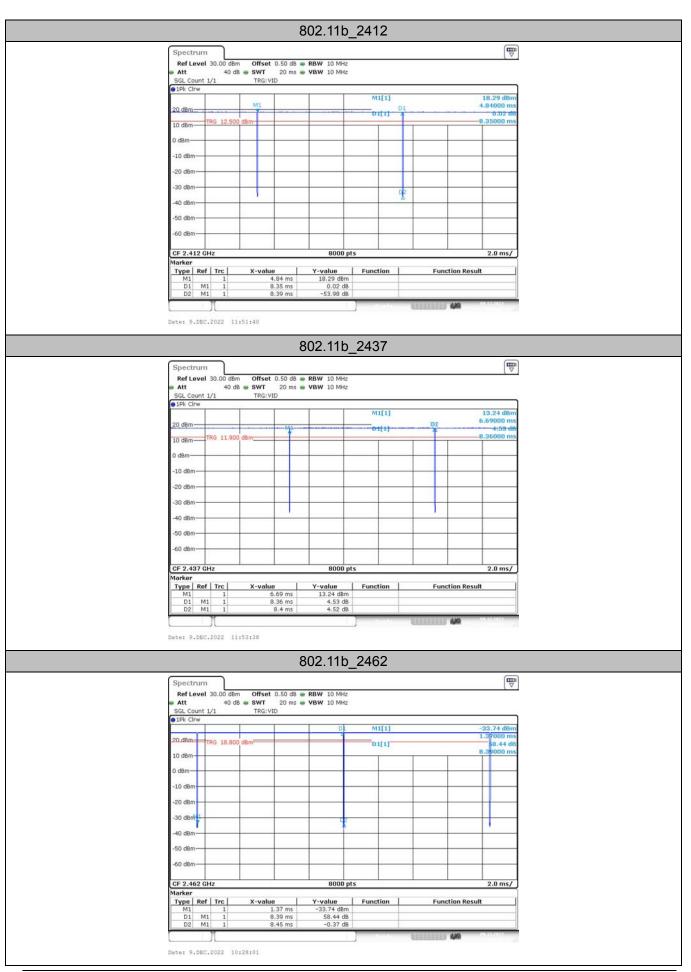
Test Result

Test Mode	Channel	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Duty Cycle Factor	1/T Minimum VBW (kHz)	Final setting For VBW (kHz)
	2412	8.35	8.39	99.52	0.02	0.12	1
802.11b	2437	8.36	8.40	99.52	0.02	0.12	1
	2462	8.39	8.45	99.29	0.03	0.12	1
	2412	1.38	1.44	95.83	0.18	0.72	1
802.11g	2437	1.39	1.44	96.53	0.15	0.72	1
	2462	1.38	1.44	95.83	0.18	0.72	1
802.11n(HT20)	2412	1.30	1.36	95.59	0.20	0.77	1
	2437	1.30	1.36	95.59	0.20	0.77	1
	2462	1.30	1.36	95.59	0.20	0.77	1

Note: Duty Cycle Factor = 10*Log10(1/ Duty Cycle)

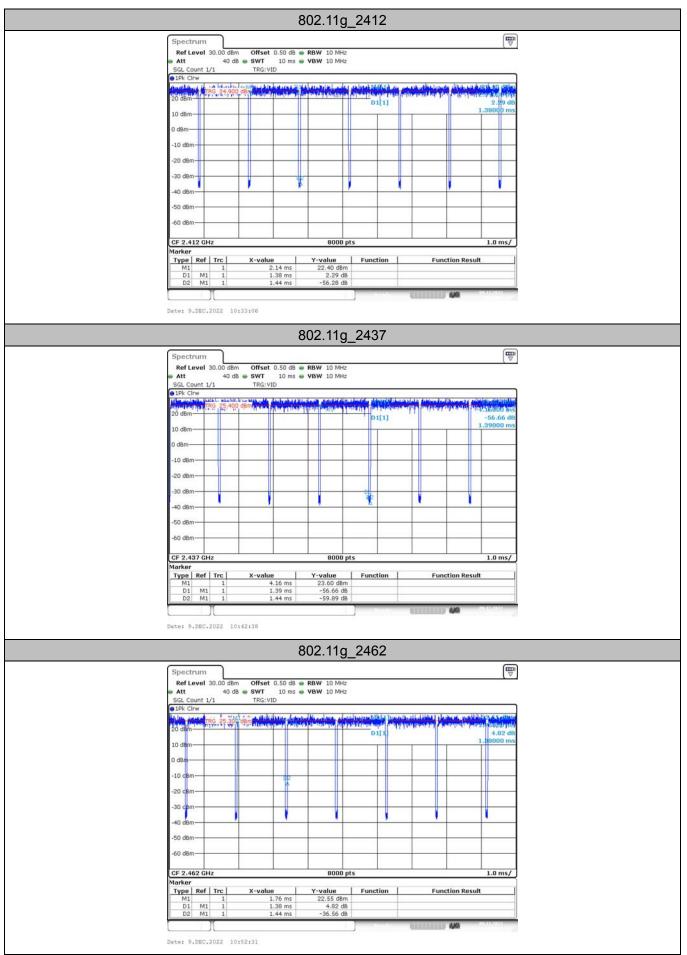


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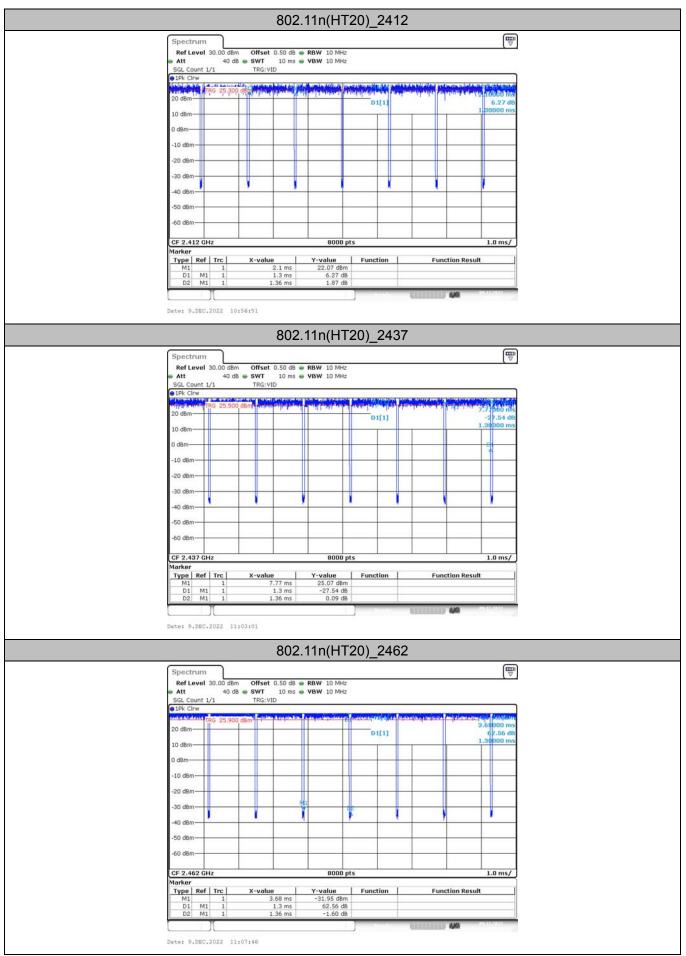














3.9. Antenna requirement

Requirement

FCC CFR Title 47 Part 15 Subpart C Section 15.203:

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 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.

FCC CFR Title 47 Part 15 Subpart C Section 15.247(c) (1)(i):

(i) Systems operating in the 2400~2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

<u>Test Result</u>

The directional gain of the antenna less than 6dBi, please refer to the EUT internal photographs antenna photo.