

GD Midea Heating & Ventilating Equipment Co., Ltd.

TEST REPORT •

SCOPE OF WORK EMC TESTING-KJRH-120L2/BMWFNKDOU-E

REPORT NUMBER 240306019GZU-001

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TEST REPORT

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Manufacturing Site	:	Same as applicant
Manufacturer	:	Same as applicant
Intertek Report No:		240306019GZU-001
FCC ID:		2BF3F-KJRH-120L2
ISED ID:		32486-KJRH120L2

Test standards

47 CFR PART 15 Subpart C: 2023 section 15.247 RSS-247 Issue 3: August 2023 RSS-Gen Issue 5: April 2018+A1: March 2019+A2: February 2021

Sample Description

Product	:	Wired Controller
Model No.	:	KJRH-120L2/BMWFNKDOU-E
Electrical Rating	:	12V DC
Serial No.	:	Test sample 1
Date Received	:	18 March 2024
Date Test	:	10 April 2024-15 April 2024
Conducted		

Prepared and Checked By

Ace Yao Engineer

Approved By:

Lm

Dean Liu Sr. Project Engineer

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Intertek Testing Services Shenzhen Ltd. Guangzhou Branch

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1.0 TEST RESULT SUMMARY

Test Item	Test Requirement	Test Method	Result
Antenna Requirement	FCC PART 15 C section 15.247 (c) and Section 15.203 RSS-Gen Clause 8.3	FCC PART 15 C section 15.247 (c) and Section 15.203 RSS-Gen Clause 6.8	PASS
6 dB Bandwidth (DTS bandwidth) 99% Bandwidth	FCC PART 15 C section 15.247 (a)(2) RSS-247 Clause 5.2(a)	ANSI C63.10: Clause 11.8 RSS-Gen clause 6.7	PASS
Maximum Peak Conducted Output Power	FCC PART 15 C section 15.247(b)(3) RSS-247 Clause 5.4(d)	ANSI C63.10: Clause 11.9.1.2 RSS-Gen clause 6.12	N/A
Duty Cycle	FCC KDB 558074 D01 15.247 Meas Guidance v05r02, Clause 6	ANSI C63.10: Clause 11.6	PASS
Maximum Average Conducted Output Power	FCC PART 15 C clause 5.247(b)(3) RSS-247 Clause 5.4(d)	ANSI C63.10: Clause 11.9.2.3.1 RSS-Gen clause 6.12	PASS
Peak Power Spectral Density	FCC PART 15 C section 15.247(e) RSS-247 Clause 5.2(b)	ANSI C63.10: Clause 11.10.2 RSS-Gen clause 6.13	PASS
Out of Band Conducted Emissions	FCC PART 15 C section 15.209 &15.247(d) RSS-247 Clause 5.5	ANSI C63.10: Clause 11.11 RSS-Gen clause 6.13	PASS
Out of Band Radiated Emission	FCC PART 15 C section 15.209 &15.247(d) RSS-247 Clause 5.5	ANSI C63.10: Clause 11.11, 6.4, 6.5 and 6.6 RSS-Gen clause 6.13	N/A
Radiated Emissions in Restricted Bands	FCC PART 15 C section 15.209 &15.247(d) RSS-247 Clause 5.5	ANSI C63.10: Clause 11.12.1, 6.4, 6.5 and 6.6 RSS-Gen clause 8.10	PASS
Band Edges Measurement	FCC PART 15 C section 15.247 (d) &15.205 RSS-247 Clause 5.5	ANSI C63.10: Clause 11.11 and 11.13 RSS-Gen clause 6.13	PASS
Conducted Emissions at Mains Terminals	FCC PART 15 C section 15.207 RSS-Gen Clause 8.8	ANSI C63.10: Clause 6.2	PASS

N/A: not applicable. Refer to the relative section for the details.

EUT: In this whole report EUT means Equipment Under Test.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radio Frequency.

ANSI C63.10: the detail version is ANSI C63.10:2013 in the whole report PMN: Wired Controller



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HVIN: KJRH-120L2/BMWFNKDOU-E
FVIN:N/A
HMN:N/A

2.0 General Description

2.1 Product Description

Operating	2412 MHz to 2462 MHz for 802.11b/g/n(HT20) 2422 MHz to
Frequency:	2452 MHz for 802.11n(HT40)
Type of Modulation:	802.11b: DSSS(CCK/QPSK/BPSK)
	802.11g: OFDM(BPSK/QPSK/16QAM/64QAM)
	802.11n: OFDM (BPSK/QPSK/16QAM/64QAM)
Transmit Data Rate:	802.11b :1/2/5.5/11 Mbps
	802.11g :6/9/12/18/24/36/48/54 Mbps
	802.11n(HT20): 6.5/13/19.5/26/39/52/58.5/65 Mbps/72.2Mbps
	802.11n(HT40): 13.5/27/40.5/54/81/108/121.5/135/150Mbps
Number of Channels	11 Channels for 802.11b/g/n(HT20)
	7 Channels for 802.11n(HT40)
Channel Separation:	5 MHz
Antenna Type	PCB antenna
Function:	Wired Controller with 2.4 GHz WIFI
EUT Power Supply:	DC 12V

EUT channels and frequencies list:

For 802.11b/g/n(HT20): test frequencies are lowest channel 1: 2412 MHz, middle channel 6: 2437 MHz and highest channel 11: 2462 MHz.

For 802.11n(HT40): test frequencies are lowest channel 3: 2422 MHz, middle channel 6: 2437 MHz and highest channel 9: 2452 MHz.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	/	



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2.2 Related Submittal(s) Grants

This is an application for certification of: DTS- Part 15 Digital Transmission Systems (WIFI transmitter portion)

Remaining portions are subject to the following procedures: 1. Receiver portion of WIFI: exempt from technical requirement of this Part.

2.3 Test Methodology

Both AC mains line-conducted and radiated emission measurements were performed according to the procedures in ANSI C63.10. Radiated emission measurement was performed in semi-anechoic chamber and conducted emission measurement was performed in shield room. For radiated emission measurement, preliminary scans and final tests were performed in the semi-anechoic chamber to determine the worst case modes. All radiated tests were performed at an antenna to EUT distance of 3 meters, unless stated otherwise.

2.4 Test Facility

All tests were performed at: Intertek Testing Services Shenzhen Ltd. Guangzhou Branch Room102/104, No 203, KeZhu Road, Science City, GETDD Guangzhou, China Except Conducted Emissions was performed at: Room101/301/401/102/202/302/402/502/602/702/802, No. 7-2, Caipin Road, Huangpu District, Guangzhou, Guangdong, China

A2LA Certificate Number 0078.10

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch is accredited by A2LA and Listed in FCC website. FCC accredited test labs may perform both Certification testing under Parts 15 and 18 and Declaration of Conformity testing.

Intertek Testing Services Shenzhen Ltd. Guangzhou Branch is recognized by ISED, the ISED Conformity Assessment Body Identification Number (CAB ID) is CN0024.

3.0 System Test Configuration

3.1 Justification

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply



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voltages during testing. During testing, AC power line was manipulated to produce worst case emissions. It was powered by AC 120V/60Hz supply.

The signal is maximized through rotation and placement in the three orthogonal axes. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters. Radiated emissions are taken at three meters unless the signal level is too low for measurement at that distance. If necessary, a pre-amplifier is used and/or the test is conducted at a closer distance.

All readings are extrapolated back to the equivalent three meters reading using inverse scaling with distance. The spurious emissions more than 20 dB below the permissible value are not reported.

For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in the following table:

Lowest frequency generated in the device	Upper frequency range of measurement	
9 kHz to below 10 GHz	10th harmonic of highest fundamental frequency or to 40 GHz, whichever is lower	
At or above 10 GHz to below 30 GHz	5th harmonic of highest fundamental frequency or to 100 GHz, whichever is lower	
At or above 30 GHz	5th harmonic of highest fundamental frequency or to 200 GHz, whichever is lower, unless otherwise specified	

Frequency range of radiated emission measurements

Number of fundamental frequencies to be tested in EUT transmit band

Frequency range in which device	Number of	Location in frequency
operates	frequencies	range of operation
1 MHz or less	1	Middle
1 MHz to 10 MHz	2	1 near top and 1 near bottom
More than 10 MHz	3	1 near top, 1 near middle and 1 near bottom

3.2 EUT Exercising Software

Description	Manufacturer	Model No.	SN/Version	Supplied by
For fixing frequency		EspRFTestTool	V2.8	client



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3.3 Special Accessories

No special accessories used.

3.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
	20 dB Bandwidth	
1	6dB Bandwidth	2.3%
	99% Bandwidth	
2	Carrier Frequencies Separated	2.3%
3	Dwell Time	1.2%
4	Maximum Peak Conducted Output Power	1.5dB
5	Peak Power Spectral Density	1.5dB
6	Out of Band Conducted Emissions	1.5dB
7	Band edges measurement	1.5dB
		4.7 dB (25 MHz-1 GHz)
8	Radiated Emissions	4.8 dB (1 GHz-18 GHz)
0		5.21dB (18GZH-26GHz)
9	Conducted Emissions at Mains Terminals	2.58dB
10	Temperature	0.5 °C
11	Humidity	0.4 %
12	Time	1.2%

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.

Measurement uncertainty is calculated in accordance with ETSI TR 100 028-2001. The measurement uncertainty is given with a confidence of 95%, k=2.

When determining of the test conclusion, the Measurement Uncertainty of test has been considered.

Uncertainty and Compliance – Unless the standard specifically states that measured values are to be extended by the measurement uncertainty in determining compliance, all compliance determinations are based on the actual measured value

3.5 Equipment Modification

Any modifications installed previous to testing by GD Midea Heating & Ventilating Equipment Co., Ltd. will be incorporated in each production model sold / leased in the United States and Canada.



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No modifications were installed by Intertek Testing Services Shenzhen Ltd. Guangzhou Branch.

3.6 Support Equipment List and Description

This product was tested with corresponding support equipment as below:

Cable

Description Model No.		Connector type	Cable length/type	Supplied by
Antenna cable	RF-01	SMA	0.2 m(shielded)	Intertek
USB cable		USB-A	2m(shielded)	client
Control cable			1m (shielded)	client

Support equipment

Description	Model No.	Rating	Supplied by
NoteBook	Latitude 5400		Intertek
Load box		120V 60Hz	client



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4.0 Measurement Results

4.1 Antenna Requirement

Standard requirement:

15.203 requirement:

For intentional device. According to 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.

15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz bands that are used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi 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 6 dBi.

RSS-GEN section 8.3

The applicant for equipment certification, as per RSP-100, must provide a list of all antenna types that may be used with the licence-exempt transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna.

Licence-exempt transmitters that have received equipment certification may operate with different types of antennas. However, it is not permissible to exceed the maximum equivalent isotropically radiated power (e.i.r.p.) limits specified in the applicable standard (RSS) for the licence-exempt apparatus.

Testing shall be performed using the highest gain antenna of each combination of licenceexempt transmitter and antenna type, with the transmitter output power set at the maximum level.9 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 a measurement or on data from the antenna manufacturer.

User manuals for transmitters equipped with detachable antennas shall also contain the following notice in a conspicuous location:

This radio transmitter (identify the device by certification number or model number if Category II) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types approved for use with the transmitter, indicating the maximum permissible antenna gain (in dBi).

EUT Antenna

The antenna is an integral antenna and no consideration of replacement. The best case gain of the antenna is 0.42 dBi as declared by applicant.

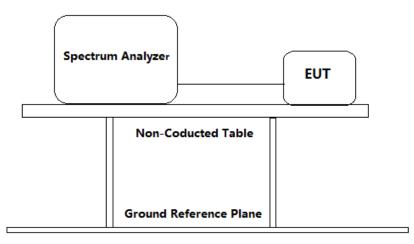


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4.2 6 dB Bandwidth (DTS bandwidth)

Test Requirement:	FCC Part 15 C section 15.247 RSS-247 Clause 5.2(a)
	(a)(2)Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5MHz, and 5725- 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Method:	ANSI C63.10: Clause 11.8
	RSS-Gen clause 6.7
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test Configuration:



Test Procedure:

- Remove the antenna from the EUT and then connect a low attention attenuation RF cable (cable loss =1 dB, with a 10dB attenuator) from the antenna port to the spectrum.
- 2. Set the spectrum analyzer:
 - a) Set RBW = 100 kHz
 - b) Set the VBW \geq [3 × RBW]
 - c) Detector = peak.
 - d) Trace mode = max hold.
 - e) Sweep = auto couple
 - f) Allow the trace to stabilize.

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



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- h) Span=2*BW~5*BW
- 3. Repeat until all the test status is investigated.
- 4. Report the worst case.

Used Test Equipment List

Spectrum Analyzer. Refer to Clause 5 Test Equipment List for details.

6 dB bandwidth

Channel No.	Frequency (MHz)	Mode	Data Rate	Measured 6dB bandwidth (MHz)	Limit	Result
1	2412		1 Mbps	10.188		Pass
6	2437	802.11b	1 Mbps	10.188		Pass
11	2462		1 Mbps	10.130		Pass
1	2412		6 Mbps	16.498		Pass
6	2437	802.11g	6 Mbps	16.440		Pass
11	2462		6 Mbps	16.440		Pass
1	2412	802.11n	6.5 Mbps	17.713	– ≥500KHz	Pass
6	2437	(HT20)	6.5 Mbps	17.713		Pass
11	2462		6.5 Mbps	17.714		Pass
3	2422	802.11n	13.5 Mbps	32.880	1	Pass
6	2437	(HT40)	13.5 Mbps	32.880		Pass
9	2452		13.5 Mbps	32.880		Pass

99% bandwidth

Channel No.	Frequency (MHz)	Mode	Data Rate	Measured 99%bandwidth (MHz)	Limit	Result				
1	2412		1 Mbps	12.909		Pass				
6	2437	802.11b	1 Mbps	12.851		Pass				
11	2462		1 Mbps	12.793		Pass				
1	2412		6 Mbps	16.845		Pass				
6	2437	802.11g	6 Mbps	17.077		Pass				
11	2462		6 Mbps	16.903	,	Pass				
1	2412	802.11n	6.5 Mbps	18.003	/	Pass				



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6	2437	(HT20)	6.5 Mbps	17.887	Pass
11	2462		6.5 Mbps	18.061	Pass
3	2422	802.11n	13.5 Mbps	34.616	Pass
6	2437	(HT40)	13.5 Mbps	34.616	Pass
9	2452		13.5 Mbps	34.501	Pass

Result plot as follows:

6dB bandwidth:

802.11b mode with 1 Mbps data rate

Channel 1: 2.412GHz

01 7.710 dBm 01 7.710 dBm 0 dBm 02 1.710 dBm 10 dBm 04 40 40 40 40 40 40 40 40 40 40 40 40 4	Spectrum				
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D2[1] 1.54 dB 10 dBm M1[1] 0 dBm 2.4069059 GHz 0 dBm D2 1.710 dBm 0 dBm D2 1.710 dBm 10 dBm M1[1] 20 dBm M1[1] 10 dBm			VBW 300 kHz Mode	Auto FFT	
10.1880 MHz 10.1880 MHz 1.37 dBm 2.4069059 GHz 0 dBm 10 dBm </td <td>Controlled by EMC32 O1F</td> <td>Pk Max</td> <td></td> <td></td> <td></td>	Controlled by EMC32 O1F	Pk Max			
20 dBm			D	2[1]	
20 dBm D1 7.710 dBm 2.4069059 GHz 0 dBm D2 1.710 dBm 0 10 dBm 0 0 10 dBm 0 0 20 dBm 0 0 30 dBm 0 0 50 dBm 0 0 60 dBm 0 0 50 dBm 0				1[1]	
0 dBm 01 7.710	20 dBm		m	1[1]	
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40 dBm					
40 dBm	-30 dBm			4	
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60 dBm		And C		ľ ľu	Mann
60 dBm	1 martine W				4 Warman
	-50 dBm				
	-60 dBm				
	CF 2.412 GHz		691 pts		Span 40.0 MHz



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Channel 6: 2.437GHz:

Spectrum	Spectrum 2	Spect	trum 3 🛛 🗴	Spectrum 4	X		
Ref Level 31.00		11.00 dB 👄 RBV					
	30 dB SWT	94.8 µs 👄 VBV	V 300 kHz Mod	e Auto FFT			
Controlled by EMC3	32 😑 1 Pk Max						
20 dBm				D2[1] M1[1]			0.76 dB .1880 MHz -2.91 dBm 19059 GHz
10 dBm							
D1 6.4	130 dBm		and men	1			
0 dBm-D	2 0.430 dBm	man					
-10 dBm							
-20 dBm		F					
-30 dBm	- I will						
-40 dBm	tophy and the second				- Jun May	petturner	howen
-50 dBm							- wh
-60 dBm							
CF 2.437 GHz			691 pts			Span	40.0 MHz

Channel 11: 2.462GHz:

Spectrum	ר ז Sp	ectrum 2	× SI	bectrum 3	x s	Spectrum -	4 X		
	31.00 dBm			RBW 100 k					
e Att	30 dB		94.8 µs 👄	VBW 300 ki	Hz Mode	Auto FFT			
Controlled b	у ЕМСЗ2 😑	1Pk Max							
					D	2[1]			-2.98 dB
								10	.1300 MHz
20 dBm					M	1[1]		0.45	0.67 dBm
						I.	I	2.45	69640 GHz
10 dBm									
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-60 dBm									
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802.11g mode with 6 Mbps data rate

Channel 1: 2.412GHz:

Spectrum	Spe	ectrum 2	🛛 🗴 Sp	ectrum 3	x s	pectrum ·	4 🗶		
Ref Level				RBW 100 k					
e Att	30 dB		94.8 µs 👄	VBW 300 ki	Hz Mode	Auto FFT			
Controlled by	EMC32 🔵 1	Pk Max							
					D	2[1]			-0.01 dB
									.4980 MHz
20 dBm					IVI	1[1]			-5.67 dBm 37220 GHz
							1	2.40	37220 GH2
10 dBm									
0 dBm D	1 1.620 dB								
U UBIII	D2 -4.3	Mi	alterburke	Kirturtory	perilandrah	hardrowland	12		
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-20 dBm							<u> </u>		
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n 18-10 n.									
-50 dBm									
-50 UBM									
-60 dBm									
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				071				opan	

Channel 6: 2.437GHz:

Spectrum	Spectrum 2	X Spe	ctrum 3	Spect	rum 4 🛛 🛛		
Ref Level 31.00		11.00 dB 👄 RE					
	BO dB SWT	94.8 µs 🖷 VE	3W 300 kHz	Mode Auto	FFT		
Controlled by EMC3	2 OIPK Max	1 1		00[1]			0.01.40
				D2[1]		16	-0.01 dB 5.4400 MHz
20 dBm				M1[1]			-5.62 dBm
20 UBIII						2.42	87800 GHz
10 dBm							
0 dBm D1 1.4	M	12 portrenter of	marken nor	tentry aporto	Marsh -		
D2	2 -3.600 dBm						
-10 dBm							
					L.		
-20 dBm	کمر 📃				\		
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-30 dBm	al al				×		
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UTR OBRINING AND						horner	mount
-50 dBm							
-60 dBm							
CF 2.437 GHz		1	691 pts	5		Span	40.0 MHz



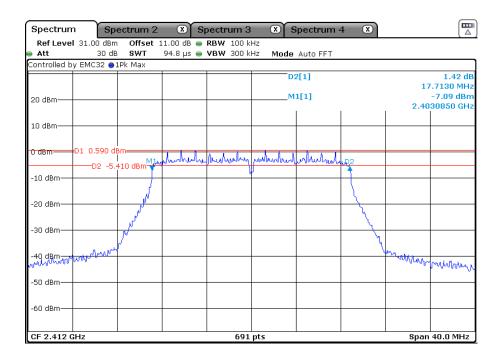
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Channel 11: 2.462GHz:

Spectrum	Spe	ectrum 2	× Sp	ectrum 3	x 5	Spectrum -	4 🗶		
Ref Level Att	31.00 dBm 30 dB			RBW 100 k VBW 300 k		Auto FFT			
Controlled by	EMC32 😑 1	Pk Max							
20 dBm						2[1] 1[1]			0.29 dB .4400 MHz -5.87 dBm 37800 GHz
10 dBm									
0 dBmC	01 1.350 dB	M	uturturtur	histortry	pertantina	whenter	2		
-10 dBm		- A							
-20 dBm		A MARKED AND AND AND AND AND AND AND AND AND AN					- North - Nort		
	Announ	⁷					٩	w may go	Harrier
-50 dBm									
-60 dBm									
CF 2.462 GH	Hz			691	pts			Span	40.0 MHz

802.11n(HT20) mode with 6.5 Mbps data rate

Channel 1: 2.412GHz:





TEST REPORT

Channel 6: 2.437GHz:

Spectrum	Spectrum 2	Speci	trum 3 🛛 🗴	Spectrum 4	4 X		
Ref Level 31.00		11.00 dB 👄 RBV					
	O dB SWT	94.8 µs 👄 VB\	N 300 kHz M	ode Auto FFT			
Controlled by EMC3	2 🕤 1PK Max						0.00.10
				D2[1]		17	0.20 dB .7130 MHz
20 dBm				_M1[1]			-7.62 dBm
20 UBIII						2.42	81430 GHz
10 dBm							
0 dBm D1 0.1	90 dBm		here been nastern	rid altertart			
D2	? -5.810 dBm 🕎 🗠	www.white	1 400 CD 10 10 10 00 0	on of the second of the	Mapa		
-10 dBm					1		
	1						
-20 dBm	<u>J</u> `				<u> </u>		
	NV						
-30 dBm	J.				 _		
	u M				٦,	<u>An</u>	
-40 dBm						Muren with the second	MMM
							VI
-50 dBm							
-60 dBm							
CF 2.437 GHz		· · · · ·	691 pts			Span	40.0 MHz

Channel 11: 2.462GHz:

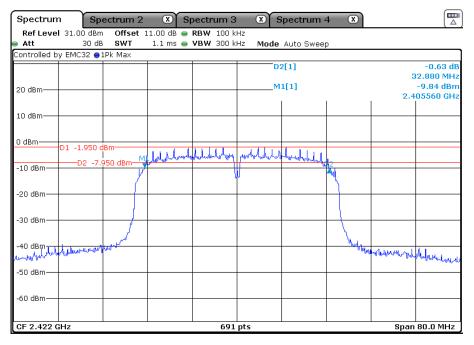
Spectrum	n Spe	ectrum 2	X SI	bectrum 3	× E	Spectrum ·	4 X		
Ref Level	31.00 dBm 30 dB			RBW 100 k VBW 300 k		Auto FFT			
Controlled b			эн.о µз 🍯	1011 300 K	nz moue	AULOFFI			
20 dBm						1[1] 2[1]		2.45	-7.74 dBm 31430 GHz 0.31 dB .7135 MHz
10 dBm									
0 dBm	•D1 0.180 de	3m	hinkulni	purmity	putterstrug	whited	WB ₂		
-10 dBm					-		1		
-20 dBm—		- للرس الرس					L.		
-30 dBm	ر ا مورد ا	, W ^N					h h	Hun II	
-40 dBm	un de la companya de							the Analytic	Mummum
-50 dBm									
-60 dBm									
CF 2.462 C	Hz			691	pts	-		Span	40.0 MHz



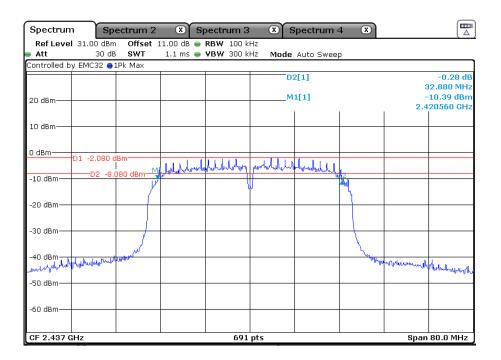
TEST REPORT

802.11n(HT40) mode with 13.5 Mbps data rate

Channel 3: 2.422GHz:



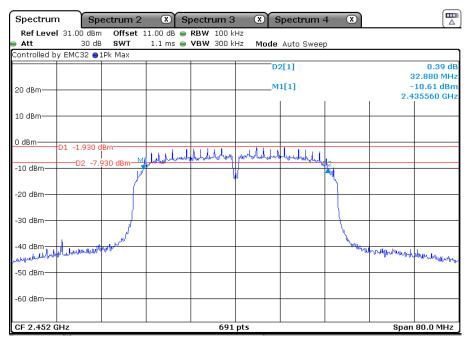
Channel 6: 2.437GHz:





TEST REPORT

Channel 9: 2.452GHz:

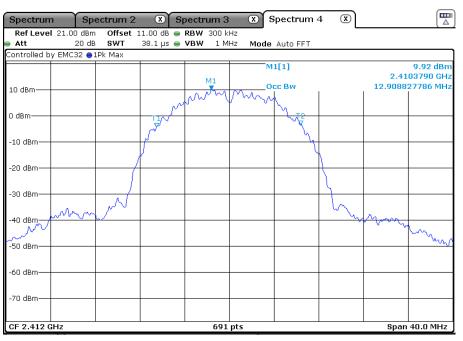


Result plot as follows:

99% bandwidth:

802.11b mode with 1 Mbps data rate

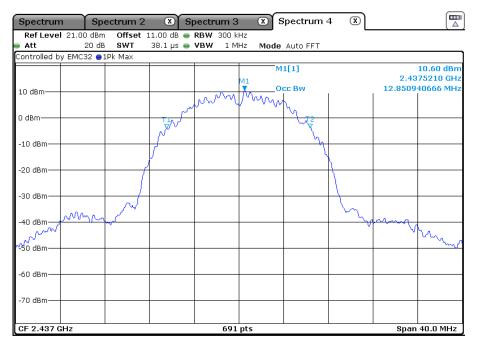
Channel 1: 2.412GHz



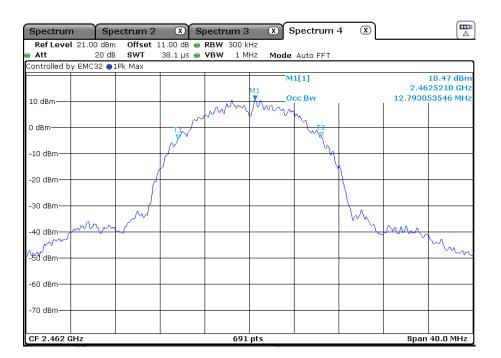


TEST REPORT

Channel 6: 2.437GHz:



Channel 11: 2.462GHz:

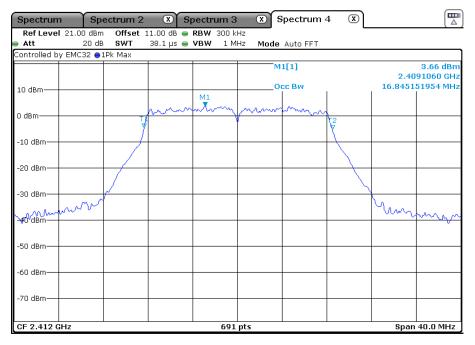




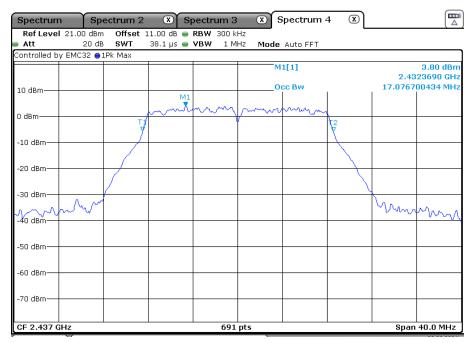
TEST REPORT

802.11g mode with 6 Mbps data rate

Channel 1: 2.412GHz:



Channel 6: 2.437GHz:





TEST REPORT

Channel 11: 2.462GHz:

Spectrum	Spe	ctrum 2	🗶 Sp	ectrum 3	× 5	pectrum ·	4 🕱		
Ref Level 2				RBW 300 k					
Att Controlled by E	20 dB		38.1 µs 😑	VBW 1M	Hz Mode	Auto FFT			
	10032 01	PK IVIdX			м	1[1]		2.46	4.21 dBm 41420 GHz
10 dBm					O	cc Bw		16.9030	39074 MHz
0 dBm		т (non	m	m	n we want	12		
-10 dBm		Ĭ					<		
-20 dBm									
-30 dBm		٢						<u></u>	
-30 dBm ∽40 dBm	www							hm	mon
-50 dBm									
-60 dBm									
-70 dBm									
CF 2.462 GHz	z			691	pts			Span	40.0 MHz

802.11n(HT20) mode with 6.5 Mbps data rate Channel 1: 2.412GHz:

Spectrum	n Spe	ectrum 2	× Sp	ectrum 3	x s	Spectrum -	4 🗶		
Ref Level Att	21.00 dBm 20 dB		.1.00 dB 👄 38.1 μs 👄	RBW 300 ki VBW 1 Mi		Auto FFT			
Controlled by			30.1 µs 🖷	ADM TIM	nz Moue	AULO FFI			
	, 211002					1[1]			2.45 dBm 69200 GHz
10 dBm					0	CC BW	I	18.0028	94356 MHz
0 dBm		امر ــــــــــــــــــــــــــــــــــــ	nym	many	ma	M1	~		
		7							
-10 dBm									
-20 dBm									
-30 dBm									
v4Q.d6n.∧.∕	mm							Jam	m
									·····
-50 dBm									
-60 dBm									
-70 dBm									
CF 2.412 G	Hz			691	pts			Span	40.0 MHz

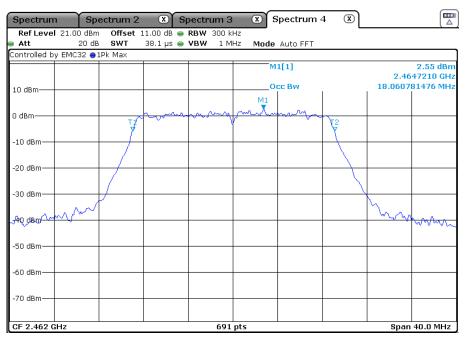


TEST REPORT

Channel 6: 2.437GHz:

Spectrum	Spectrum 2	🗶 Spec	trum 3	Spectrum 4	×		
Ref Level 21.0	0 dBm Offset 20 dB SWT	11.00 dB 👄 RBN 38.1 µs 👄 VBN		Mode Auto FFT	_		
Controlled by EMC		50.1 ps 🖕 🖓 D	FR 1 101112	HOUE AUTOFFT			
				M1[1]			2.29 dBm
10 dBm				Occ Bw			16310 GHz 20116 MHz
				M1			
0 dBm	T	harmon	m	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	<u>1</u> 2		
-10 dBm					Ň		
					$\langle \rangle$		
-20 dBm					$\overline{}$		
-30 dBm							
	m					m	
V40vdBm~~~	0						
-50 dBm							
-60 dBm							
-70 dBm							
CF 2.437 GHz			691 pts			Span	40.0 MHz

Channel 11: 2.462GHz:





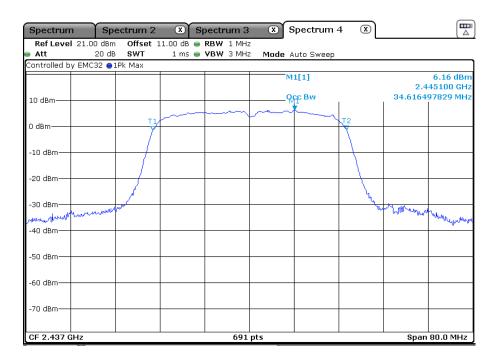
TEST REPORT

802.11n(HT40) mode with 13.5 Mbps data rate

Channel 3: 2.422GHz:



Channel 6: 2.437GHz:





TEST REPORT

Channel 9: 2.452GHz:

Spectrum Spe	ctrum 2 🛛 🗴 S	pectrum 3	Spectrum 4	×		
RefLevel 21.00 dBm Att 20 dB	Offset 11.00 dB SWT 1 ms	RBW 1 MHz VBW 3 MHz	Mode Auto Sweep			
Controlled by EMC32 OI	-	YDYY 3 MHZ	Mode Auto Sweep			
			M1[1]		2.4	6.37 dBm 60100 GHz
10 dBm			AFF BW		34.5007	23589 MHz
	TI		T2			
0 dBm	/		7	(
-10 dBm						
-20 dBm						
-30 dBm	w ^{ul}			- Ver	Mullimmen -	Yes
-40 dBm						- Ubugurt
-50 dBm						
-60 dBm						
-70 dBm						
CF 2.452 GHz		691 pt:	s		 Span	80.0 MHz



TEST REPORT

4.3 **Duty Cycle**

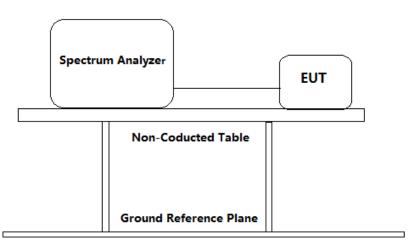
Test Requirement: FCC KDB 558074 D01 15.247 Meas Guidance v05r02, Clause

antenna diversity architecture). Following channel(s) was

(were) selected for the final test as listed below.

	6
Test Method:	ANSI C63.10: Clause 11.6
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available
	modulations, data rates and antenna ports (if EUT with

Test Configuration:



Test Procedure:

- 1. Remove the antenna from the EUT and then connect a low attention attenuation RF cable (cable loss =1dB, with a 10dB attenuator) from the antenna port to the spectrum.
- 2. Set the spectrum analyser:
 - a) Set the center frequency of the instrument to the center frequency of the transmission.Set the VBW \geq [3 x RBW]
 - b) Set RBW \ge OBW if possible; otherwise, set RBW to the largest available value. Span = Zero span
 - c) Set VBW \geq RBW. Set detector = peak or average. Trace mode = Free run
- 3. Report the worst case.

Used Test Equipment List

Spectrum Analyzer. Refer to Clause 5 Test Equipment List for details.



TEST REPORT

Test result:

Channel No.	Frequency (MHz)	Mode	Duty Cycle (%)
6	2437	802.11b	100
6	2437	802.11g	100
6	2437	802.11n (HT20)	100
6	2437	802.11n (HT40)	100

Result plot as follows:

802.11b mode

Channel 6: 2437 MHz:

Spectrum Spectrum 2 🛞	
RefLevel 31.00 dBm Offset 11.00 dB 👄 RBW 10 MHz	
● Att 30 dB ● SWT 100 ms ● VBW 10 MHz	
SGL	
Controlled by EMC32 1Pk Max	
20 dBm	
10 dBm	
0 dBm	
-10 dBm	
-20 dBm	
-30 dBm	
-40 dBm	
-50 dBm	
-60 dBm	
CF 2.437 GHz 691 pts	10.0 ms/



TEST REPORT

802.11g mode

Channel 6: 2437 MHz:

Spectrum	Spe	ectrum 2	×						
			11.00 dB 👄	RBW 10 M	IHz				
Att	30 dB	SWT	100 ms 😑	VBW 10 M	IHz				
SGL									
Controlled by	EMC32 🔵 1	Pk Max				1			
ARQuelBCD-connetto	Mana	data wadata ya	-	andananda	handrad	and the second	attorna and the second second	matura	-
10 dBm									
0 dBm									
-10 dBm									
-20 dBm									
-20 0611									
-30 dBm									
-40 dBm									
-40 UBIII									
-50 dBm									
60 d0-									
-60 dBm									
CF 2.437 GH	-lz			691	pts				10.0 ms/

802.11n(HT 20) mode

Channel 6: 2437 MHz:

Spectrum		ectrum 2	×					
Ref Level Att	31.00 dBm 30 dB	Offset SWT	11.00 dB 👄 100 ms 👄	RBW 10 M				
SGL		_						
Controlled b	y EMC32 😑	LPk Max						
20.dBm		man						
10 dBm	phanglatenninglat	and the second for			unglunne	ho-manghoute-margh	ale march a month	
0 dBm								
-10 dBm								
-20 dBm								
-30 dBm								
-40 dBm								
-50 dBm								
-60 dBm								
CF 2.437 G				691	nte			10.0 ms/
GF 2.437 U				091	prs 🔪			10.0 ms/



TEST REPORT

802.11n(HT 40) mode

Channel 6: 2437 MHz:

Spectrum	Spe	ectrum 2	×						
Ref Level 3	31.00 dBm	Offset	11.00 dB 👄	RBW 10 M	IHz				
🖷 Att	30 dB	🔵 SWT	100 ms 👄	VBW 10 M	IHz				
SGL									
Controlled by E	EMC32 🔵 1	.Pk Max							
20 dBm									
when when	المحاسبة المحاسبة	م التي التي التي	المحافد المداحد	And when the As	An de de la	A she at a	يابير بابد بابد الأبر	at at when the	when the state state
10 dBm									
10 dBm									
o do-									
0 dBm									
-10 dBm									
-20 dBm									
-30 dBm									
-40 dBm									
-50 dBm									
-60 dBm									
CF 2.437 GH	z			691	pts				10.0 ms/

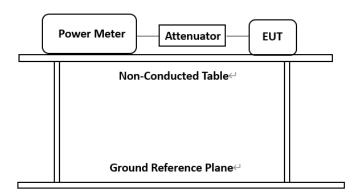


TEST REPORT

4.4 Maximum Average Conducted Output Power

Test Requirement:	FCC Part 15 C section 15.247 RSS-247 Clause 5.4(d)
	Section 15.247: (b)(3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.
	Clause 5.4(d): For DTSs employing digital modulation techniques operating in the bands 902-928 MHz and 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1W. The e.i.r.p. shall not exceed 4 W.
	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.
Test Method:	ANSI C63.10: Clause 11.9.2.3.1 RSS-Gen clause 6.12
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test Configuration:



Test Procedure:

- 1. Remove the antenna from the EUT and then connect a low attention attenuation RF cable (cable loss =1 dB, with a 10dB attenuator) from the antenna port to the power meter.
- 2. The EUT is configured to transmit continuously or to transmit with a constant duty cycle.
- 3. If the EUT is transmitting at all times, it must be transmitting at its maximum power control level.



TEST REPORT

- 4. If the EUT does not transmit continuously, measure the duty cycle and adjust the measurement in dBm by adding 10log(1/x) where x is the duty cycle of transmitter output signal. This measurement is an average over both the ON and OFF periods of the transmitter.
- 5. Report the worst case.

Used Test Equipment List

Power meter. Refer to Clause 5 Test Equipment List for details.

Channel No.	Frequency (MHz)	(MHz) Pov		Measured Power	e.i.r.p (dBm)	Limit	Result	
				(dBm)		Measured Channel Power	e.i.r.p	
1	2412		1 Mbps	18.2	18.6			Pass
6	2437	802.11b	1 Mbps	18.0	18.4			Pass
11	2462		1 Mbps	17.8	18.2		4W (36dBm)	Pass
1	2412		6 Mbps	14.8	15.2			Pass
6	2437	802.11g	6 Mbps	17.9	18.3			Pass
11	2462		6 Mbps	17.6	18.0	1W		Pass
1	2412	802.11n	6.5 Mbps	14.0	14.4	- (30dBm) -		Pass
6	2437	(HT20)	6.5 Mbps	17.4	17.8			Pass
11	2462	(20)	6.5 Mbps	17.4	17.8			Pass
3	2422	802.11n	13.5 Mbps	13.5	13.9			Pass
6	2437	(HT40)	13.5 Mbps	16.1	16.5			Pass
9	2452		13.5 Mbps	16.5	16.9			Pass

Test result:

Remark:

The measured power in the table has considered the compensation of duty cycle, cable loss and attenuator. cable lose=1.0 dB Antenna gain=0.42 dBi e.i.r.p=output power + antenna gain

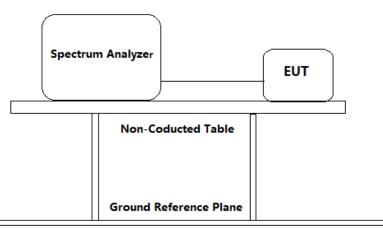


TEST REPORT

4.4 Peak Power Spectral Density

Test Requirement:	FCC Part 15 C section 15.247 RSS-247 Clause 5.2(b)
	(e) For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.
	This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to
	determine the power spectral density.
Test Method:	ANSI C63.10: Clause 11.10.2
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
T 10 C 11	

Test Configuration:



Test Procedure:

- 1. Remove the antenna from the EUT and then connect a low attention attenuation RF cable(cable loss =1 dB, with a 10dB attenuator) from the antenna port to the spectrum analyzer or power meter.
- 2. Set the spectrum analyzer:
 - a) Set analyzer center frequency to DTS channel center frequency.
 - b) Set the span= 1.5 × DTS bandwidth.
 - c) Set the RBW to 3 kHz \leqslant RBW \leqslant 100 kHz.
 - d) Set the VBW \geq [3 × RBW].
 - e) Detector = peak.
 - f) Sweep time = auto couple.
 - g) Trace mode = max hold.
 - h) Allow trace to fully stabilize.



TEST REPORT

- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.
- 3. Measure the Power Spectral Density of the test frequency with special test status.
- 4. Repeat until all the test status is investigated.
- 5. Report the worst case.

Used Test Equipment List

Spectrum Analyzer. Refer to Clause 5 Test Equipment List for details.

Test result:

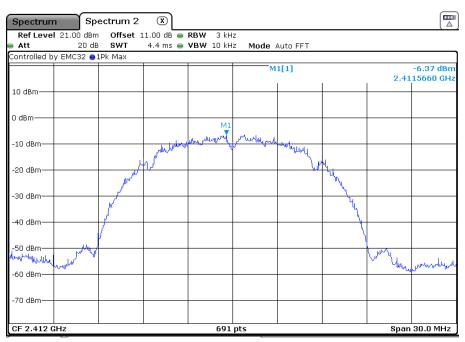
Channel No.	Frequency (MHz)	Mode	Data Rate	Measured Peak Power Spectral Density (dBm/3kHz)	Limit	Result
1	2412		1 Mbps	-6.37		Pass
6	2437	802.11b	1 Mbps	-7.25		Pass
11	2462		1 Mbps	-7.37		Pass
1	2412		6 Mbps	-12.18		Pass
6	2437	802.11g	6 Mbps	-12.52	8dBm/	Pass
11	2462		6 Mbps	-12.71		Pass
1	2412	802.11n	6.5 Mbps	-12.73	3 KHz	Pass
6	2437	(HT20)	6.5 Mbps	-12.84		Pass
11	2462	(1120)	6.5 Mbps	-12.93		Pass
3	2422	802.11n	13.5 Mbps	-15.05		Pass
6	2437	(HT40)	13.5 Mbps	-15.13		Pass
9	2452		13.5 Mbps	-15.19		Pass



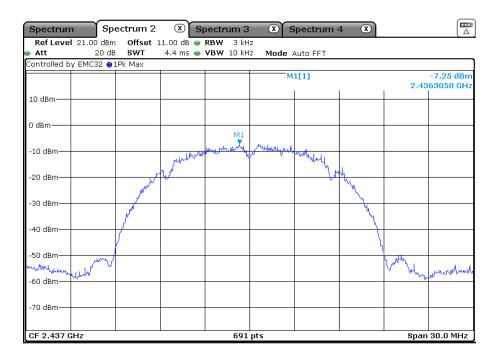
TEST REPORT

Result plot as follows:

802.11b mode with 1Mbps data rate Channel 1: 2.412GHz:



Channel 6: 2.437GHz:





TEST REPORT

Channel 11: 2.462GHz:

Spectrum	Spectrum 2	🗴 Sp	ectrum 3	× 5	spectrum -	4 🗶		
RefLevel 2: Att	L.00 dBm Offset 20 dB SWT	11.00 dB 😐 I	RBW 3 kH VBW 10 kH		Auto FFT			
	MC32 O1Pk Max							
				м	1[1]		2.46	-7.37 dBm 33890 GHz
10 dBm								
0 dBm				M1				
-10 dBm		, UNAVIP	way when the way of	WII . Juniti Jung mar	with.			
-20 dBm		Mr.			- Wy	l		
-30 dBm	ر میں میں اور					White		
	Wa					and a		
-40 dBm						Γ)		
-50 dBm	have the second second						1 may line	port-montalit
-60 dBm	• 						~~~~	<u>ب</u>
-70 dBm								
CF 2.462 GHz			691	pts			Span	30.0 MHz

802.11g mode with 6Mbps data rate Channel 1: 2.412GHz:

Spectrum	1 Sp	ectrum 2	🗴 St	ectrum 3	xs	pectrum -	4 🗶			
	21.00 dBm		1.00 dB 🔵							
Att	20 dB		4.4 ms 😑	VBW 10 kH	z Mode /	Auto FFT				
Controlled by EMC32 1Pk Max										
					M	1[1]	I	-12.18 dBm 2.4038810 GHz		
10 dBm										
0 dBm										
-10 dBm		M1								
-20 dBm		print	MMMM	manun	phonester	hharphile	MMM			
		3		6)					
-30 dBm		N					ԴԿ	Ma.		
-40 dBm	alleland							- May		
-50 dBm-+	Mu							M The		
-50 dBm									MMMM .	
-60 dBm										
-70 dBm										
CF 2.412 0	Hz			691	pts			Span	30.0 MHz	



TEST REPORT

Channel 6: 2.437GHz:

Spectrum	n Spe	ectrum 2	🗴 sı	pectrum 3	X 5	Spectrum -	4 X		
Ref Level Att	l 21.00 dBm 20 dB	Offset 1 SWT	1.00 dB 🔵 4.4 ms 👄	RBW 3 kH VBW 10 kH	-	Auto FFT			
Controlled b	y EMC32 🔵 1	Pk Max							
					M	1[1]	1		12.52 dBm 88810 GHz
10 dBm									
0 dBm									
-10 dBm—		M1							
-20 dBm		putt	www	mander	production	handala	rithing		
-30 dBm				, ·	,				
	white	N					પ	W.	
-40 dBm	white							My My	
-50 dBm	p ^{pv ·}							<u> </u>	Mar Marine
-60 dBm									100
-70 dBm									
CF 2.437 G	Hz			691	pts			Span	30.0 MHz

Channel 11: 2.462GHz:

Spectrun	1 Sp	ectrum 2	🗴 SI	bectrum 3	× s	pectrum -	4 🗶		
	21.00 dBm		1.00 dB 🔵						<u>`</u>
Att	20 dB		4.4 ms 😑	VBW 10 kH	z Mode/	Auto FFT			
Controlled b	y EMC32 🔵 1	LPk Max							1
					М	1[1]	1		12.71 dBm 25640 GHz
10 dBm									
0 dBm									
-10 dBm		1		الم الم الم	M1	L. L. A. L. L. L.			
-20 dBm—		print	www	mannali	provisions	NWVNN	VWW		
-30 dBm		, A		, · · · · · · · · · · · · · · · · · · ·)				
-40 dBm	, hh	<i>"</i> I					ակ	Widy With	
	a all all a							Why way	
-50 dBm	μ ί ν `								www.
-60 dBm									
-70 dBm—									
CF 2.462 (Hz			691	pts			Span	30.0 MHz

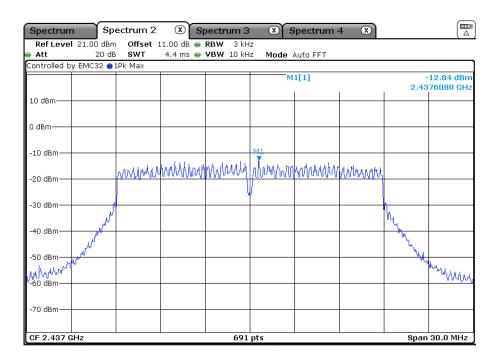




802.11n(HT20) mode with 6.5Mbps data rate Channel 1: 2.412GHz:

Spectrum	sp.	ectrum 2	x st	bectrum 3	× s	pectrum -	4 🗶		
	21.00 dBm			RBW 3 kH	-				
Att Controlled b ⁱ	20 dB		4.4 ms 😑	VBW 10 kH	z Mode /	Auto FFT			
Controlleu b	y EMC32 ♥.	LPK Max				1[1]			12.73 dBm
						1[1]			26080 GHz
10 dBm									
0 dBm									
-10 dBm					м1				
-20 dBm		man	WALLAN	mounty	Northan	MAMAN	MANAM		
					ļ				
-30 dBm	Ň							N.	
-40 dBm—	- Jan -							- Mu	
-50 dBm	all and a second se							- Nut-	
-60 dBm	N								www.
-00 0811									
-70 dBm									
CF 2.412 G	Hz			691	pts	1		Span	30.0 MHz

Channel 6: 2.437GHz:





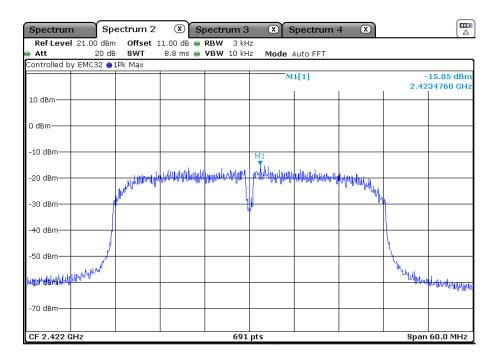
TEST REPORT

Channel 11: 2.462GHz:

Spectrum	Spe	ectrum 2	🗴 Sp	ectrum 3	xs	pectrum -	4 🗶		
Ref Level Att	21.00 dBm 20 dB		1.00 dB	RBW 3 kH VBW 10 kH		Auto FFT			
Controlled by			4.4 1115 💻	ADM IOKU	2 Moue A	AULO FFI			
	,				M	1[1]			12.93 dBm 26080 GHz
10 dBm									
0 dBm									
-10 dBm				بالدمة م	M1 Jakik ho				
-20 dBm		ANAMAN	www.ww	nuturity	IUUUUIANUU	MANANA	MUMAGAM		
-30 dBm	J.							hu	
-40 dBm	and a start							My Un	
-50 dBm -50 dBm -60 dBm	W ^{ext}								Mundulid
-70 dBm									
CF 2.462 G	:H2			691	nts			Snan	30.0 MHz
0. 2.102 0				071	PC3			opun	0010 10112

802.11n(HT40) mode with 13.5Mbps data rate

Channel 3: 2.422GHz:





TEST REPORT

Channel 6: 2.437GHz:

Spectrum	Sp	ectrum 2	🗴 SI	bectrum 3	× 5	spectrum 4	4 🗶		
	21.00 dBm		.1.00 dB 😑						
Att	20 dB		8.8 ms 👄	VBW 10 kH	z Mode	Auto FFT			
Controlled by	y EMC32 😑:	1Pk Max							
					м	1[1]			15.13 dBm 84760 GHz
10 dBm									
0 dBm									
-10 dBm					M1				
-20 dBm		, Alternation	Alphabeter was	humany and	politiqueipurp	<mark>Anderlike ander ander</mark>	himpy .		
-30 dBm		he.			ļ		- Wh		
-40 dBm									
-50 dBm								A.	
1945 ang 1844 ang 1949	halmman.							ไก้เรา	WARTHNEW
-70 dBm									
CF 2.437 G	iHz			691	pts			Span	60.0 MHz

Channel 9: 2.452GHz:

Spectrum	Sp	ectrum 2	🗴 St	ectrum 3	x s	pectrum 4	4 🗶		
			.1.00 dB 🔵						
Att Controlled by	20 dB		8.8 ms 👄	VBW 10 kH:	z Mode i	Auto FFT			
Controlled by	у ЕМС32 — .	LPK Max			м	1[1]			15.19 dBm 34760 GHz
10 dBm									
0 dBm									
-10 dBm					M1				
-20 dBm		hall work of	nde in felonold	heer warder	polichadatellaadh 	udhullahan uy	hipindan duku		
-30 dBm		yw)		W		
-40 dBm								l	
-50 dBm	. la u. Millow							hunder .	
hue and an and a state of the second se	Mollik, o.							- Panchy	U. U. Mayddagaa
-70 dBm									
CF 2.452 G	Hz			691	pts			Span	60.0 MHz



TEST REPORT

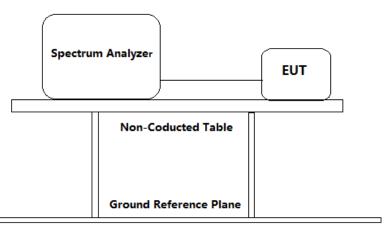
4.5 Out of Band Conducted Emissions

Test Requirement: FCC Part 15 C section 15.247 RSS-247 Clause 5.5

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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. Provided the transmitter demonstrates compliance with the peak conducted power limits.

- Test Method: ANSI C63.10: Clause 11.11
- RSS-Gen clause 6.13
- Test Status: Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.

Test Configuration:



Test Procedure:

- Remove the antenna from the EUT and then connect a low RF cable (cable loss =1 dB, with a 10dB attenuator) from the antenna port to the spectrum analyzer or power meter.
- 2. Establish a reference level by using the following procedure:
 - a) Set instrument center frequency to DTS channel center frequency.
 - b) Set the span to \geq 1.5 \times DTS bandwidth.
 - c) Set the RBW = 100 kHz.
 - d) Set the VBW \geq [3 × RBW].
 - e) Detector = peak.
 - f) Sweep time = auto couple.
 - g) Trace mode = max hold.



TEST REPORT

h) Allow trace to fully stabilize.

i) Use the peak marker function to determine the maximum PSD level. Note that the channel found to contain the maximum PSD level can be used to establish the reference level

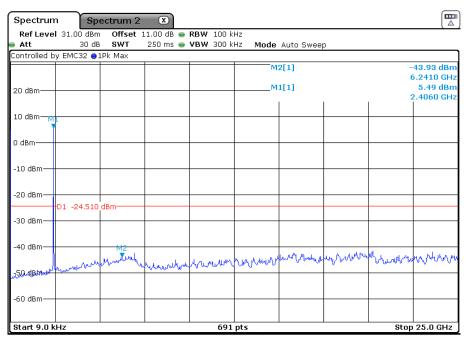
- 3. Emission level measurement
 - a) Set the center frequency and span to encompass frequency range to be measured.
 - b) Set the RBW = 100 kHz.
 - c) Set the VBW \geq [3 × RBW].
 - d) Detector = peak.
 - e) Sweep time = auto couple.
 - f) Trace mode = max hold.
 - g) Allow trace to fully stabilize.
 - h) Use the peak marker function to determine the maximum amplitude level.
- 4. Measure the Conducted unwanted Emissions of the test frequency with special test status.
- 5. Repeat until all the test status is investigated.
- 6. Report the worst case.

Used Test Equipment List

Spectrum Analyzer. Refer to Clause 5 Test Equipment List for details.

Result plot as follows:

802.11b mode with 1Mbps data rate Channel 1: 2.412GHz:



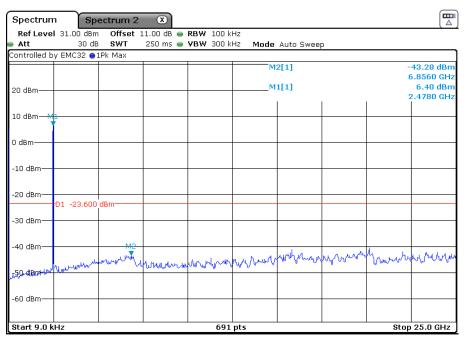


Channel 6: 2.437GHz:

Ref Level 31.00 dBm Offset 11.00 dB RBW 100 kHz Att 30 dB SWT 250 ms VBW 300 kHz Mode Auto Sweep Controlled by EMC32 10k Max M2[1] -42.70 dE 6.6390 G 6.6390 G 6.6390 G 6.6390 G 5.90 dE 5.90 dE 6.6390 G 6.6390 G <t< th=""></t<>
Controlled by EMC32
M2[1] -42.70 de 6.6390 G
6.6390 G
MI[1] E 00 df
2.4420 G
10 dBm //
0 dBm
-10 dBm
-20 dBm
D1 -24.100 dBm
-30 dBm
40.40m
-40 dBm
a mental and a second
m5A-dBm w have been been been been been been been be
-60 dBm
Start 9.0 kHz 691 pts Stop 25.0 GH

In any 100kHz bandwidth, the Conducted Spurious Emissions from 9 kHz to 25 GHz were greater than 30dB below the peak emission within the band that contains the highest level of the desired power.

Channel 11:2.462 GHz:





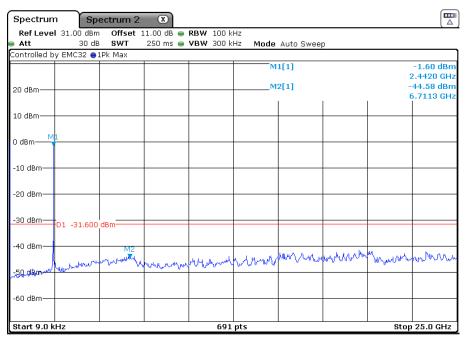
802.11g mode with 6Mbps data rate

Channel 1: 2.412GHz:

Spectrum Spe	ctrum 2 🛛 🛞					
RefLevel 31.00 dBm	Offset 11.00 dB					
Controlled by EMC32 OIF		VBW 300 kHz	Mode Auto Sw	sep		
			M1[1]			0.24 dBm 2.4060 GHz
20 dBm			M2[1]	I		44.54 dBm 5.7113 GHz
10 dBm						
0 dBm						
-10 dBm						
-20 dBm						
-30 dBm - 1 D1 -29.760 d						
-40 dBm	M2 hubor My yumor hulp	unturpent	mumour	muham	mun	wWhentre
-60 dBm						
Start 9.0 kHz		691 pt	s		Stop	25.0 GHz

In any 100kHz bandwidth, the Conducted Spurious Emissions from 9 kHz to 25 GHz were greater than 30dB below the peak emission within the band that contains the highest level of the desired power.

Channel 6: 2.437GHz:



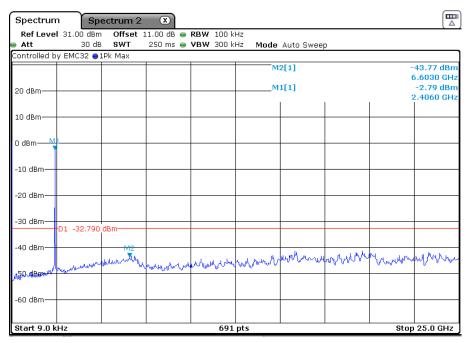


Channel 11: 2.462 GHz:

Spectrum S	pectrum 2 🛛 🛞			
Ref Level 31.00 dB				
Att 30 c		VBW 300 kHz Mode	Auto Sweep	-
Controlled by Emicsz (M	12[1]	-44.74 dBm
		1	12[1]	6.7113 GHz
20 dBm		M	11[1]	-1.90 dBm
20 00111				2.4780 GHz
10 dBm				
10 UBIII				
M1				
0 dBm				
-10 dBm				
-20 dBm				
-30 dBm-01 -31.90	0 dBm			
-40 dBm	M2			
	upunty	and my a high in truly by	morpowning	the for an and the particular
-50 d Book Way Mount	we w	and the man and the start		un hour and when
UP CONT OF ONE OF				
-60 dBm				
Start 9.0 kHz		691 pts		Stop 25.0 GHz

In any 100kHz bandwidth, the Conducted Spurious Emissions from 9 kHz to 25 GHz were greater than 30dB below the peak emission within the band that contains the highest level of the desired power.

802.11n(HT20) mode with 6Mbps data rate Channel 1: 2.412GHz:



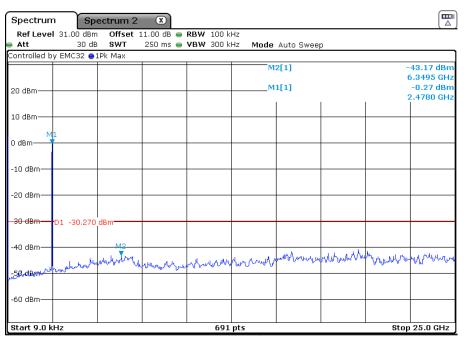


Channel 6: 2.437GHz:

Spectrum Spectrum 2 🗴	
Ref Level 31.00 dBm Offset 11.00 dB 🖷 RBW 100 kHz	
🖷 Att 🛛 30 dB SWT 250 ms 🖷 VBW 300 kHz Mode Auto Sweep	
Controlled by EMC32 1Pk Max	
	00 dBm
M1[1]	50 GHz 30 dBm
	20 GHz
10 dBm	
0 dBm	
-10 dBm	
-20 dBm	
-30 dBm	
D1 -33.000 dBm	
40 dbm	
-40 dBm	بالحميلة
and the second the second the second and the second	~~V~ @~
-60 dBm	
Start 9.0 kHz 691 pts Stop 25	0 GHz

In any 100kHz bandwidth, the Conducted Spurious Emissions from 9 kHz to 25 GHz were greater than 30dB below the peak emission within the band that contains the highest level of the desired power.

Channel 11:2.462 GHz:





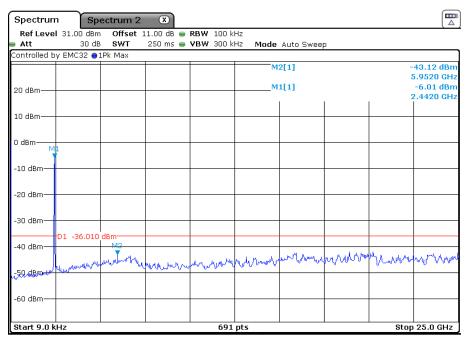


802.11n(HT40) mode with 13.5Mbps data rate Channel 3: 2.422GHz:

Spectrum	Spe	ectrum 2	×						
Ref Level 3	1.00 dBm	Offset 1	1.00 dB 😑	RBW 100 k	Hz				
Att 🛛	30 dB	SWT	250 ms 😑	VBW 300 ki	Hz Mode	Auto Swee	р		
Controlled by E	EMC32 🔵 1	Pk Max							
					M	2[1]			43.96 dBm
						1[1]			5.5666 GHz -5.69 dBm
20 dBm					N	1[1]			-5.69 uBm 2.4420 GHz
								1	
10 dBm									
0 dBm									
·· M1									
-10 dBm									
-10 000									
00.40									
-20 dBm									
-30 dBm									
D1	-35.690 (dBm							
-40 dBm		M2				1		L.	
-40 dBm	مللعون براء	Amarana	1.0.0 1.000	mound	wwwww	morran	Mrnn	Month	Monthe
50 dBm - Hud	man		and the law		· · · ·				•
N~									
-60 dBm									
Start 9.0 kHz	2			691	pts			Stop	25.0 GHz

In any 100kHz bandwidth, the Conducted Spurious Emissions from 9 kHz to 25 GHz were greater than 30dB below the peak emission within the band that contains the highest level of the desired power.

Channel 6: 2.437GHz:





Channel 9: 2.452 GHz:

Spectrum Spe	ctrum 2 🛛 🗶			
RefLevel 31.00 dBm Att 30 dB		RBW 100 kHz		
Att 30 dB Controlled by EMC32		VBW 300 kHz Mode	Auto Sweep	,
		M	1[1]	-4.92 dBm 2.4420 GHz
20 dBm		M:	2[1]	-44.11 dBm 6.7113 GHz
10 dBm				
0 dBm M1				
-10 dBm				
-20 dBm				
-30 dBm	IBm			
-40 dBm			እለሉሳ / እም	any an a summer marshine
5ademal youther have	une Multurelan	where we we want to a construct to a construction of the construct		Adminia - C
-60 dBm				
Start 9.0 kHz		691 pts		Stop 25.0 GHz

In any 100kHz bandwidth, the Conducted Spurious Emissions from 9 kHz to 25 GHz were greater than 30dB below the peak emission within the band that contains the highest level of the desired power.

4.6 Out of Band Radiated Emissions

For out of band radiated emissions into Non-Restricted Frequency Bands were performed at a 3m separation distance to determine whether these emissions complied with the 20dB attenuation requirement.

- [×] Not required, since all emissions are more than 20dB below fundamental
- [] See attached data sheet

4.7 Radiated Emissions in Restricted Bands

Test Requirement:	FCC Part 15 C section 15.247 RSS-247 Clause 5.5
	section 15.247: (d) In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).
	Clause 5.5: Category I licence-exempt equipment is required to comply with the provisions in RSS-Gen with respect to emissions falling within restricted frequency bands. These restricted



TEST REPORT	
	frequency bands are listed in RSS-Gen.
Test Method:	ANSI C63.10: Clause 11.12.1, 6.4, 6.5 and 6.6 RSS-Gen clause 8.10
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)
Limit:	40.0 dBμV/m between 30MHz & 88MHz;
	43.5 dBμV/m between 88MHz & 216MHz;
	46.0 dBμV/m between 216MHz & 960MHz;
Detector:	54.0 dBμV/m above 960MHz. For Peak and Quasi-Peak value: RBW =
	$ \begin{array}{l} 1 \mbox{ MHz for } f \geq 1 \mbox{ GHz}, \\ 200 \mbox{ Hz for } 9 \mbox{ kHz to } 150 \mbox{ kHz} \\ 9 \mbox{ kHz for } 150 \mbox{ kHz to } 30 \mbox{ MHz} \\ 120 \mbox{ kHz for } 30 \mbox{ MHz to } 1 \mbox{ GHz} \\ 120 \mbox{ kHz for } 30 \mbox{ MHz to } 1 \mbox{ GHz} \\ \hline \end{tabular} \\ VBW \geq \end{tabular} \\ VBW \geq \end{tabular} \\ Sweep = \mbox{ auto} \\ Detector \mbox{ function } = \mbox{ peak for } f \geq 1 \mbox{ GHz}, \mbox{ QP for } f < 1 \mbox{ GHz} \\ Trace = \mbox{ max hold} \\ \end{array} $
	For AV value: RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz VBW=10 Hz Sweep = auto Trace = max hold
Field Strength Calculation:	
Where:	The field strength is calculated by adding the reading on the Spectrum Analyzer to the factors associated with preamplifiers (if any), antennas, cables, pulse desensitization and average factors (when specified limit is in average and measurements are made with peak detectors). A sample calculation is included below: FS = RA + AF + CF - AG + PD + AV FS = RA + Correct Factor + AV $FS = Field Strength in dB\muV/m$ $RA = Receiver Amplitude (including preamplifier) in dB\muV$ AF = Antenna Factor in dB CF = Cable Attenuation Factor in dB AG = Amplifier Gain in dB PD = Pulse Desensitization in dB
	AV = Average Factor in –dB Correct Factor = AF + CF – AG + PD



TEST REPORT

In the radiated emission table which follows, the reading shown on the data table may reflect the preamplifier gain. An example of the calculations, where the reading does not reflect the preamplifier gain, follows:

FS = RA + AF + CF - AG + PD + AV

Assume a receiver reading of $62.0 \text{ dB}\mu\text{V}$ is obtained. The antenna factor of 7.4 dB/m and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted. The pulse desensitization factor of the spectrum analyzer was 0 dB, and the resultant average factor was -10 dB. The net field strength for comparison to the appropriate emission limit is $32 \text{ dB}\mu\text{V/m}$.

RA = 62.0 dBµV AF = 7.4 dB/m CF = 1.6 dB AG = 29.0 dB PD = 0 dB AV = -10 dB Correct Factor = 7.4 + 1.6 - 29.0 + 0 = -20 dB

$$FS = 62 + (-20) + (-10) = 32 dB\mu V/m$$

Section 15.205 Restricted bands of operation.

(a) Except as shown in paragraph (d) of this section. Only spurious emissions are permitted in any of the frequency bands listed below:

FCC Part 15 C section 15.247

MHz	MHz	MHz	GHz
$\begin{array}{c} 0.090 - 0.110 \\ 10.495 - 0.505 \\ 2.1735 - 2.1905 \\ 4.125 - 4.128 \\ 4.17725 - 4.17775 \\ 4.20725 - 4.20775 \\ 6.215 - 6.218 \\ 6.26775 - 6.26825 \\ 6.31175 - 6.31225 \\ 8.291 - 8.294 \\ 8.362 - 8.366 \\ 8.37625 - 8.38675 \\ 8.41425 - 8.41475 \\ 12.29 - 12.293 \\ 12.51975 - 12.52025 \\ 12.57675 - 12.57725 \\ 13.36 - 13.41 \end{array}$	$\begin{array}{c} 16.42 - 16.423 \\ 16.69475 - 16.69525 \\ 16.80425 - 16.80475 \\ 25.5 - 25.67 \\ 37.5 - 38.25 \\ 73 - 74.6 \\ 74.8 - 75.2 \\ 108 - 121.94 \\ 123 - 138 \\ 149.9 - 150.05 \\ 156.52475 - \\ 156.52525 \\ 156.7 - 156.9 \\ 162.0125 - 167.17 \\ 167.72 - 173.2 \\ 240 - 285 \\ 322 - 335.4 \end{array}$	399.9 - 410 608 - 614 960 - 1240 1300 - 1427 1435 - 1626.5 1645.5 - 1646.5 1660 - 1710 1718.8 - 1722.2 2200 - 2300 2310 - 2390 2483.5 - 2500 2655 - 2900 3260 - 3267 3332 - 3339 3345.8 - 3358 3600 - 4400	$\begin{array}{r} 4.5 - 5.15 \\ 5.35 - 5.46 \\ 7.25 - 7.75 \\ 8.025 - 8.5 \\ 9.0 - 9.2 \\ 9.3 - 9.5 \\ 10.6 - 12.7 \\ 13.25 - 13.4 \\ 14.47 - 14.5 \\ 15.35 - 16.2 \\ 17.7 - 21.4 \\ 22.01 - 23.12 \\ 23.6 - 24.0 \\ 31.2 - 31.8 \\ 36.43 - 36.5 \end{array}$



TEST REPORT

RSS-247 Clause 5.5

MHz
0.090 - 0.110
0.495 - 0.505
2.1735 - 2.1905
3.020 - 3.026
4.125 - 4.128
4.17725 - 4.17775
4.20725 - 4.20775
5.677 - 5.683
6.215 - 6.218
6.26775 - 6.26825
6.31175 - 6.31225
8.291 - 8.294
8.362 - 8.366
8.37625 - 8.38675
8.41425 - 8.41475
12.29 - 12.293
12.51975 - 12.52025
12.57675 - 12.57725
13.36 - 13.41
16.42 - 16.423
16.69475 - 16.69525
16.80425 - 16.80475
25.5 - 25.67
37.5 - 38.25
73 - 74.6
74.8 - 75.2
108 - 138

MHz
149.9 - 150.05
156.52475 - 156.52525
156.7 - 156.9
162.0125 - 167.17
167.72 - 173.2
240 - 285
322 - 335.4
399.9 - 410
608 - 614
960 - 1427
1435 - 1626.5
1645.5 - 1646.5
1660 - 1710
1718.8 - 1722.2
2200 - 2300
2310 - 2390
2483.5 - 2500
2655 - 2900
3260 - 3267
3332 - 3339
3345.8 - 3358
3500 - 4400
4500 - 5150
5350 - 5460
7250 - 7750
8025 - 8500

GHz
9.0 - 9.2
9.3 - 9.5
10.6 - 12.7
13.25 - 13.4
14.47 - 14.5
15.35 - 16.2
17.7 - 21.4
22.01 - 23.12
23.6 - 24.0
31.2 - 31.8
36.43 - 36.5
Above 38.6

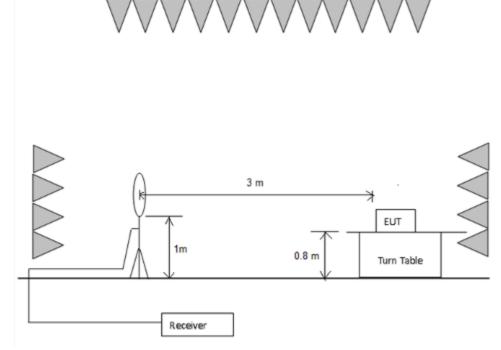
* Certain frequency bands listed in table 7 and in bands above 38.6 GHz are designated for licenceexempt applications. These frequency bands and the requirements that apply to related devices are set out in the 200 and 300 series of RSSs.



TEST REPORT

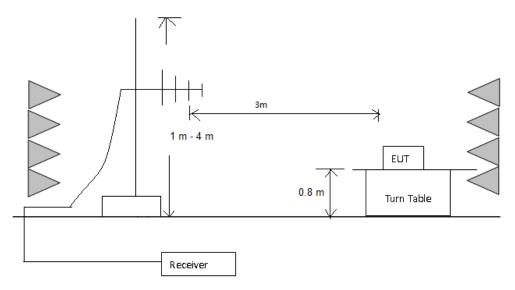
Test Configuration:

1) 9 kHz to 30 MHz emissions:



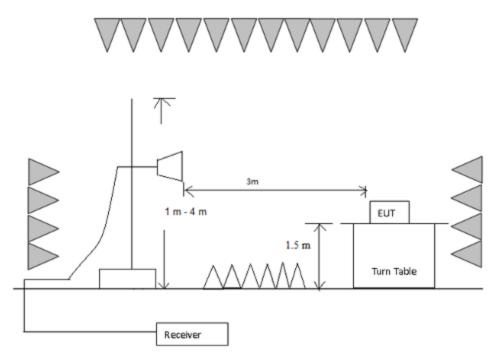
2) 30 MHz to 1 GHz emissions:





3) 1 GHz to 40 GHz emissions:





Test Procedure:

Test site with RF absorbing material covering the ground plane that met the site validation criterion called out in CISPR 16-1-4:2010 was used to perform radiated emission test above 1 GHz.

The receiver was scanned from 9 kHz to 25 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.

Used Test Equipment List:

3m Semi-Anechoic Chamber, EMI Test Receiver (9 kHz~7 GHz), Signal and Spectrum Analyzer (10 Hz~40 GHz), Loop antenna (9 kHz-30 MHz). TRILOG Super Broadband test Antenna(30 MHz-3 GHz) (RX), Bouble-Ridged Waveguide Horn Antenna (800 MHz-18 GHz)(RX) and High Frequency Antenna & preamplifier(18 GHz~26.5 GHz) (RX). Refer to Clause 5 Test Equipment List for details.

9 kHz~30 MHz Field Strength of Unwanted Emissions. Quasi-Peak Measurement The measurements with active loop antenna were greater than 20dB below the limit, so the test data were not recorded in the test report.

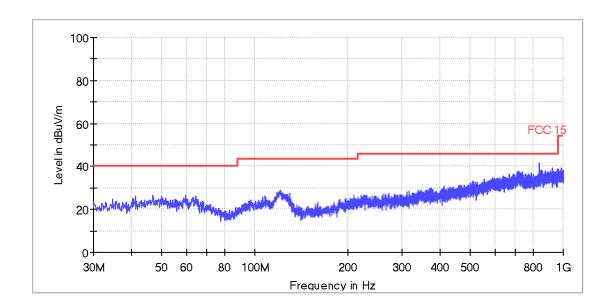


TEST REPORT

30 MHz~1 GHz Spurious Emissions. Quasi-Peak Measurement

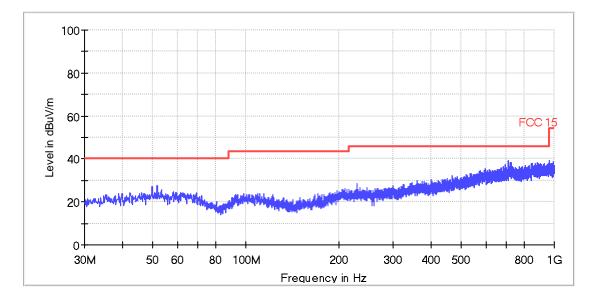
Pre-scan all modes, worst case as below

802.11b mode with 1Mbps data rate Test at Channel 1 (2.412 GHz) in transmitting status Vertical:



All emission levels are more than 6dB below the limit.

Horizontal:



All emission levels are more than 6dB below the limit.



1~25 GHz Radiated Emissions.

802.11b mode with 1Mbps data rate as below

Test at Channel 1 (2.412 GHz) in transmitting status

PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBµV/m)	(dBµV/m)	
4822.9	56.0	-1.1	54.9	74	Н
4825.0	53.2	-1.1	52.1	74	V

AV Measurement:

Frequency	AV Reading Level	Correction factors	AV Emission Level	AV Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
4822.9	51.3	-1.1	50.2	54	Н

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Test at Channel 6 (2.437 GHz) in transmitting status

PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBµV/m)	(dBµV/m)	
4873.9	56.1	-1.0	55.1	74	Н
4873.9	52.7	-1.0	51.7	74	V

AV Measurement:

Frequency	AV Reading Level	Correction factors	AV Emission Level	AV Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
4873.9	51.7	-1.0	50.7	54	Н

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded



Test at Channel 11 (2.462 GHz) in transmitting status

PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBµV/m)	(dBµV/m)	
4922.8	55.0	-0.9	54.1	74	Н
4922.8	50.0	-0.9	49.1	74	V

AV Measurement:

Frequency	AV Reading Level	Correction factors	AV Emission Level	AV Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
4922.8	51.0	-0.9	50.1	54	Н

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11g mode with 6Mbps data rate as below

Test at Channel 1 (2.412 GHz) in transmitting status

PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBµV/m)	(dBµV/m)	
4822.9	48.3	-1.1	47.2	74	Н
4825.0	44.2	-1.1	43.1	74	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Test at Channel 6 (2.437 GHz) in transmitting status

PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBµV/m)	(dBµV/m)	
4886.6	46.9	-1.0	45.9	74	Н
4865.4	47.6	-1.0	46.6	74	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded



Test at Channel 11 (2.462 GHz) in transmitting status

PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBµV/m)	(dBµV/m)	
4922.8	52.7	-0.9	51.8	74	Н
4920.6	51.5	-0.9	50.6	74	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11n20 mode with 6.5Mbps data rate as below

Test at Channel 1 (2.412 GHz) in transmitting status

PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBµV/m)	(dBµV/m)	
4833.5	45.4	-1.1	44.3	74	Н
4814.4	45.9	-1.1	44.8	74	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Test at Channel 6 (2.437 GHz) in transmitting status **PK Measurement**:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization			
(MHz)	(dBuV)	(dB)	(dBµV/m)	(dBµV/m)				
4882.4	52.1	-1.0	51.1	74	Н			
7315.5	48.5	2.4	50.9	74	Н			
4869.6	50.8	-1.0	49.8	74	V			

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded



Test at Channel 11 (2.462 GHz) in transmitting status

PK Measuremen	t:				
Frequency	PK Reading	Correction	PK Emission	PK Limit	Antenna
requercy	Level	factors	Level		polarization
(MHz)	(dBuV)	(dB)	(dBµV/m)	(dBµV/m)	
4920.6	50.8	-0.9	49.9	74	Н
4924.9	51.8	-0.9	50.9	74	V

PK Measurement:

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11n40 mode with 13.5Mbps data rate as below

Test at Channel 3 (2.422 GHz) in transmitting status

PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBµV/m)	(dBµV/m)	
4850.5	44.5	-1.0	43.5	74	Н
4854.8	43.3	-1.0	42.3	74	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Test at Channel 6 (2.437 GHz) in transmitting status

PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBµV/m)	(dBµV/m)	
4873.9	47.5	-1.0	46.5	74	Н
4882.4	47.8	-1.0	46.8	74	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded

Test at Channel 9 (2.452 GHz) in transmitting status

PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBµV/m)	(dBµV/m)	
4899.4	48.2	-1.0	47.2	74	Н
4903.6	51.1	-1.0	50.1	74	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.



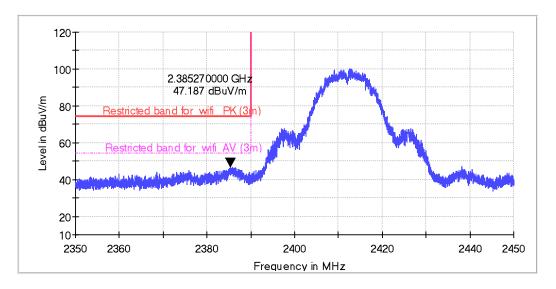
TEST REPORT

Restricted Bands Measurement

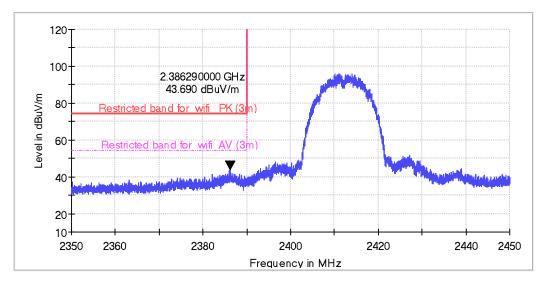
802.11b mode with 1Mbps data rate

Test at Channel 1 (2.412 GHz) in transmitting status

Horizontal



Vertical



PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
2385.3	55.4	-8.2	47.2	74	Н
2386.3	51.9	-8.2	43.7	74	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

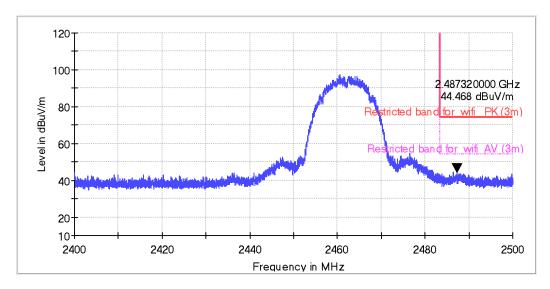


TEST REPORT

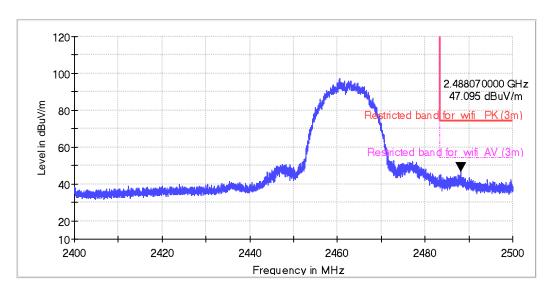
802.11b mode with 1Mbps data rate

Test at Channel 11 (2.462 GHz) in transmitting status

Horizontal



Vertical



PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
2487.3	52.3	-7.8	44.5	74	Н
2488.1	54.9	-7.8	47.1	74	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

Version: 26 August 2024

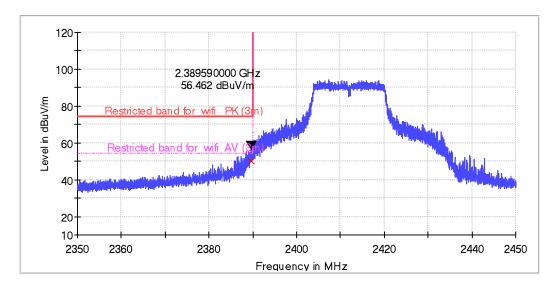


TEST REPORT

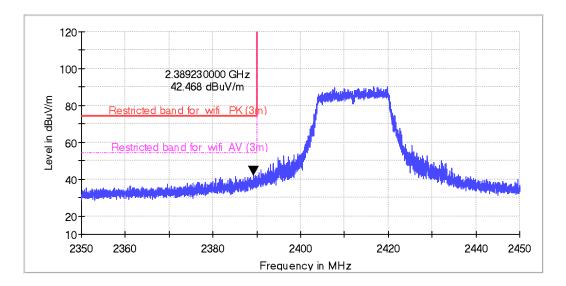
802.11g mode with 6Mbps data rate

Test at Channel 1 (2.412 GHz) in transmitting status

Horizontal



Vertical



PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
2389.6	64.7	-8.2	56.5	74	Н
2389.2	50.7	-8.2	42.5	74	V



AV Measurement:

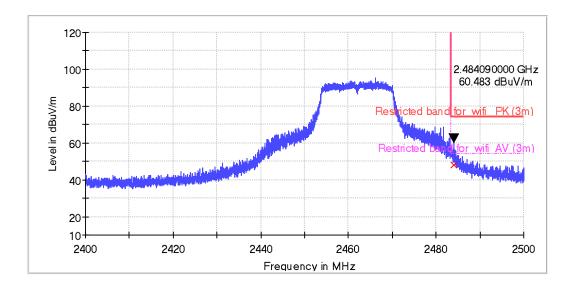
Frequency	AV Reading Level	Correction factors	AV Emission Level	AV Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
2389.6	58.2	-8.2	50.0	54	Н
2389.2	/	-8.2	/	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11g mode with 6Mbps data rate

Test at Channel 11 (2.462 GHz) in transmitting status

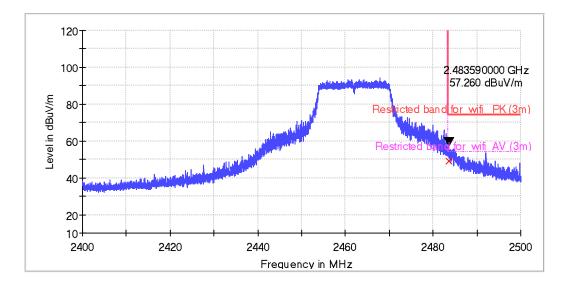
Horizontal





TEST REPORT





PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
2484.1	68.3	-7.8	60.5	74	Н
2483.6	65.1	-7.8	57.3	74	V

AV Measurement:

Frequency	AV Reading Level	Correction factors	AV Emission Level	AV Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
2484.1	56.1	-7.8	48.3	54	Н
2483.6	56.8	-7.8	49.0	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

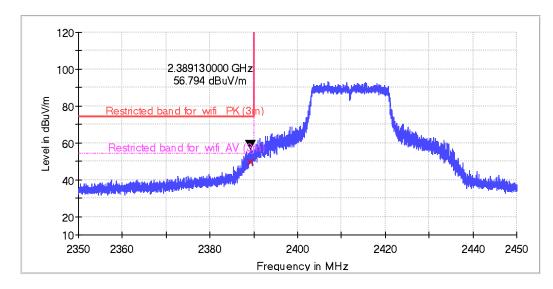


TEST REPORT

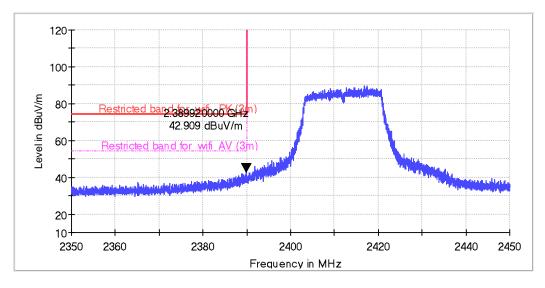
802.11n20 mode with 6.5Mbps data rate

Test at Channel 1 (2.412 GHz) in transmitting status

Horizontal



Vertical



PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
2389.1	65.0	-8.2	56.8	74	Н
2389.9	51.1	-8.2	42.9	74	V



AV Measurement:

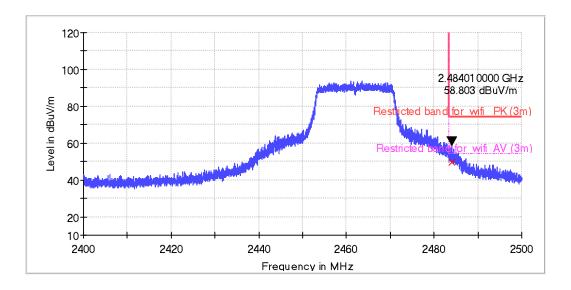
Frequency	AV Reading Level	Correction factors	AV Emission Level	AV Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
2389.1	57.7	-8.2	49.5	54	Н
2389.9	/	-8.2	/	54	V

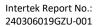
Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11n20 mode with 6.5Mbps data rate

Test at Channel 11 (2.462 GHz) in transmitting status

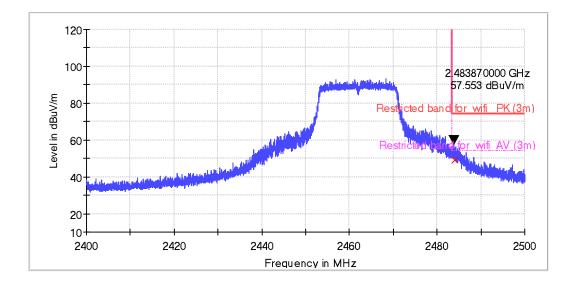
Horizontal







Vertical



PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
2484.0	66.6	-7.8	58.8	74	Н
2483.9	65.4	-7.8	57.6	74	V

AV Measurement:

Frequency	AV Reading Level	Correction factors	AV Emission Level	AV Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
2484.0	57.4	-7.8	49.6	54	Н
2483.9	57.0	-7.8	49.2	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

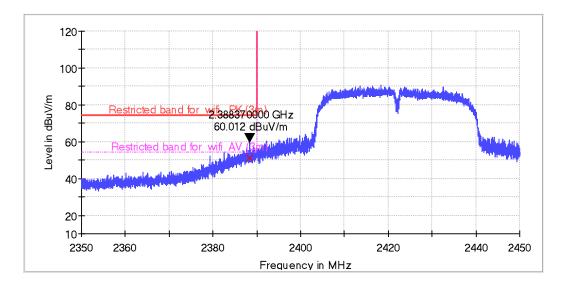


TEST REPORT

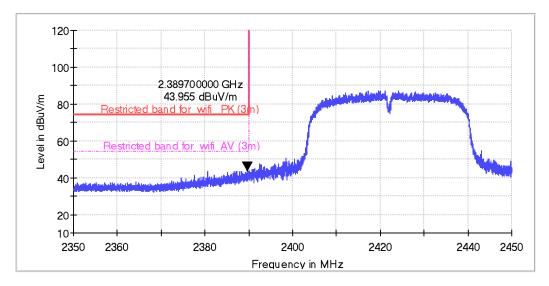
802.11n40 mode with 13.5Mbps data rate

Test at Channel 3 (2.422 GHz) in transmitting status

Horizontal



Vertical



PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
2388.4	68.2	-8.2	60.0	74	Н
2389.7	52.2	-8.2	44.0	74	V



AV Measurement:

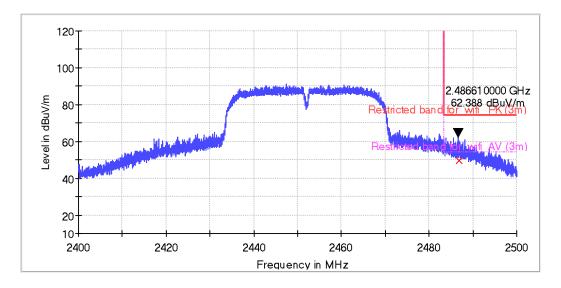
Frequency	AV Reading Level	Correction factors	AV Emission Level	AV Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
2388.4	59.4	-8.2	51.2	54	Н
2389.7	/	-8.2	/	54	V

Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.

802.11n40 mode with 13.5Mbps data rate

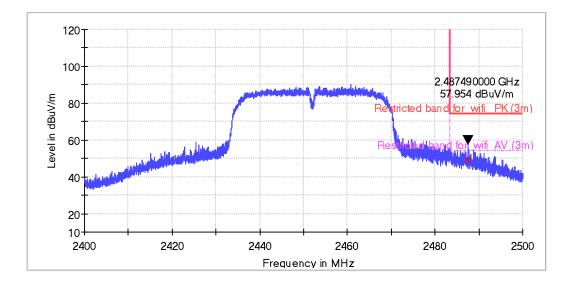
Test at Channel 9 (2.452 GHz) in transmitting status

Horizontal









PK Measurement:

Frequency	PK Reading Level	Correction factors	PK Emission Level	PK Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
2486.6	70.2	-7.8	62.4	74	Н
2487.5	65.8	-7.8	58.0	74	V

AV Measurement:

Frequency	AV Reading Level	Correction factors	AV Emission Level	AV Limit	Antenna polarization
(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	
2486.6	57.2	-7.8	49.4	54	Н
2487.5	56.7	-7.8	48.9	54	V

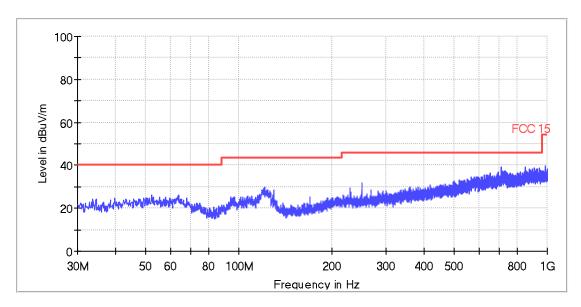
Remark: When Peak emission level was below AV limit, the AV emission level did not be recorded.



TEST REPORT

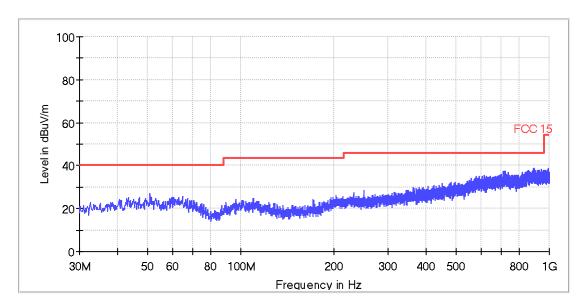
BLE and WiFi transmit simultaneously, the worst case is recorded as follow 30 MHz~1 GHz Spurious Emissions .Quasi-Peak Measurement,

Vertical:



All emission levels are more than 6 dB below the limit.





All emission levels are more than 6 dB below the limit.



1~25 GHz Radiated Emissions. Peak & Average Measurement

Peak Measurement:

Frequency (MHz)	Reading Level (dBµV)	Correct Factor	Emission Level (dBµV/m)	Limit (dBµV/m)	Antenna polarization	
4823.6	54.5	-1.1	53.4	74	Н	
4824.0	52.7	-1.1	51.6	74	V	

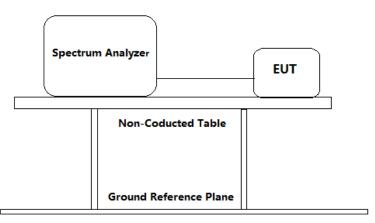
Remark:

When Peak emission level was below AV limit, the AV emission level did not be recorded.



4.8 Band Edges Requirement

Test Requirement:	FCC Part 15 C section 15.247
rest nequirement.	RSS-247 Clause 5.5
	(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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. Provided the transmitter demonstrates compliance with the peak conducted power limits.
Frequency Band:	2400 MHz to 2483.5 MHz
Test Method:	ANSI C63.10: Clause 11.11 and 11.13
	RSS-Gen clause 6.13
Test Status:	Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture). Following channel(s) was (were) selected for the final test as listed below.
Test Configuration:	For Band Edges Emission in Radiated mode, please refer to clause 4.7



Test Procedure: For Band Edges Emission in Radiated mode, Please refer to clause 4.7

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum analyzer.

a) Set instrument center frequency to the frequency of the emission to be measured (must be within 2 MHz of the authorized band edge).b) Set the center frequency and span to encompass frequency range to be

- measured.
- c) RBW = 100 kHz.
- d) VBW \geq [3 × RBW].



TEST REPORT

- e) Detector = peak.
- f) Sweep time = auto.
- g) Trace mode = max hold.

h) Allow sweep to continue until the trace stabilizes (required measurement time may increase for low-duty-cycle applications).

i) For radiated Band-edge emissions within a restricted band and within 2 MHz of an authorized band edge, integration method is considered.

- 2. Repeat until all the test status is investigated.
- 3. Report the worst case.

Used Test Equipment List:

3m Semi-Anechoic Chamber, EMI Test Receiver (9 kHz~7 GHz), Signal and Spectrum Analyzer (10 Hz~40 GHz), Loop antenna (9 kHz-30 MHz). TRILOG Super Broadband test Antenna(30 MHz-3 GHz) (RX), Bouble-Ridged Waveguide Horn Antenna (800 MHz-18 GHz)(RX) and High Frequency Antenna & preamplifier(18 GHz~26.5 GHz) (RX). Refer to Clause 5 Test Equipment List for details.

Test result with plots as follows: For conduct mode:

The band edges were measured and recorded Result:

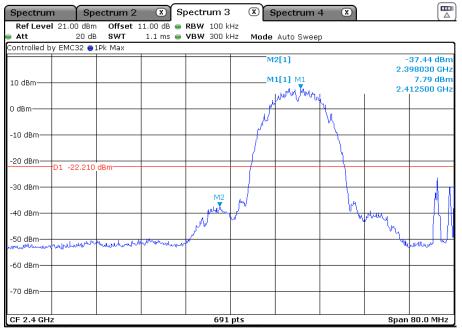
The Lower Edges attenuated more than 30dB.

The Upper Edges attenuated more than 30dB.

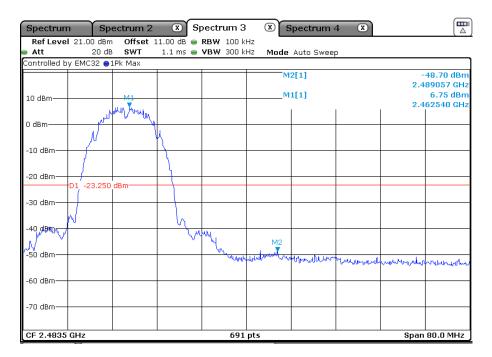


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Result plots as follows: 802.11b mode with 1 Mbps data rate Channel1: 2.412 GHz



Channel 11: 2.462 GHz

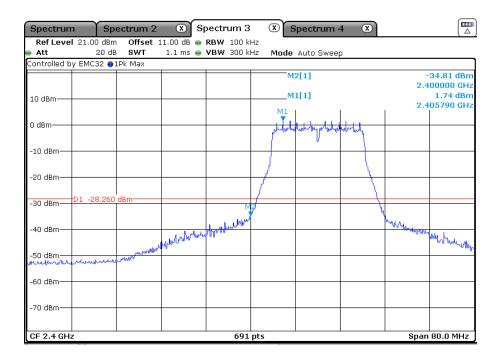




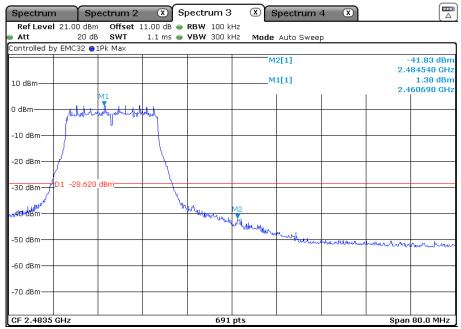
TEST REPORT

802.11g mode with 6 Mbps data rate

Channel1: 2.412 GHz



Channel 11: 2.462 GHz

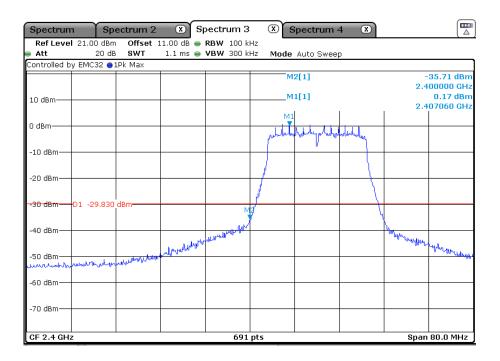




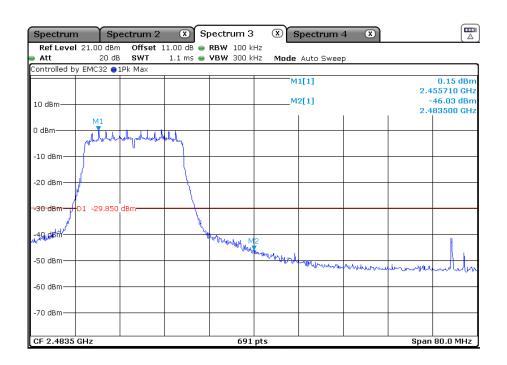
TEST REPORT

802.11n(HT20) mode with 6.5Mbps data rate

Channel 1: 2.412 GHz



Channel 11: 2.462 GHz

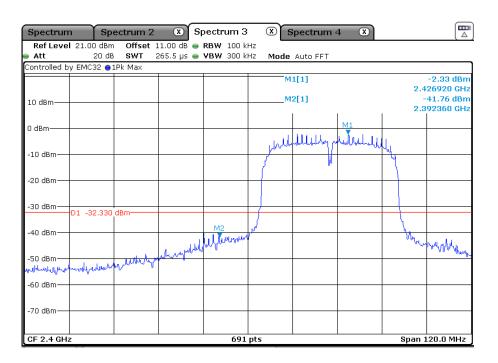




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802.11n(HT40) mode with 13.5 Mbps data rate

Channel 3: 2.422 GHz



Channel 9: 2.452 GHz

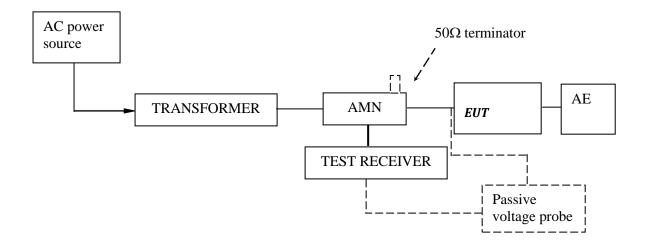
Spectrum	n Spe	ectrum 2	X S	bectrum 3	x	Spectrum -	4 X		
	21.00 dBm			RBW 100 ki					
Att	20 dB		265.5 µs 👄	VBW 300 ki	Hz Mode	Auto FFT			
Controlled b	y EMC32 🔵 1	.Pk Max							
					M	2[1]			47.29 dBm
					м	1[1]			83500 GHz -1.99 dBm
10 dBm						1[1]			55710 GHz
								1	
0 dBm		M1							
	hunder	uhy mildle	hull .						
-10 dBm	No.		~~~						
l n		M	l l						
-20 dBm									
-20 00111									
			{						
-30 dBm	D1 -31.990	dBm							
5									
-40, dB/M				Mar I I					
~() w				mound	My IN				
-50 dBm					- and May And	Walkinghur			
						. U. ~ QAU	mumu	work brough	why pheronen
-60 dBm								www.	Ť
00 0.0111									
70 40									
-70 dBm									
CF 2.4835	GHz			691	pts			Span 1	20.0 MHz



TEST REPORT

4.9 Conducted Emission Test

Test Configuration:



Test Setup and Procedure:

Test was performed according to ANSI C63.10 Clause 6.2. The EUT was set to achieve the maximum emission level. The mains terminal disturbance voltage was measured with the EUT in a shielded room. The EUT was connected to AC power source through an Artificial Mains Network which provides a 50Ω linear impedance Artificial hand is used if appropriate (for handheld apparatus). The load/control terminal disturbance voltage was measured with passive voltage probe if appropriate.

The table-top EUT was placed on a 0.8m high non-metallic table above earthed ground plane (Ground Reference Plane). And for floor standing EUT, was placed on a 0.1m high non-metallic supported on GRP. The EUT keeps a distance of at least 0.8m from any other of the metallic surface. The Artificial Mains Network is situated at a distance of 0.8m from the EUT.

During the test, mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m

The bandwidth of test receiver was set at 9 kHz. The frequency range from 150 kHz to 30MHz was checked.



TEST REPORT

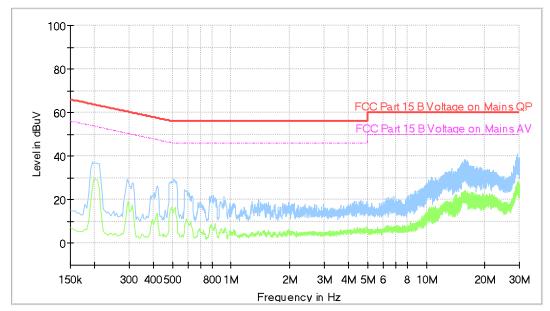
Test Data and Curve

At main terminal: Pass

Tested Wire: Live

Operation Mode: transmitting mode

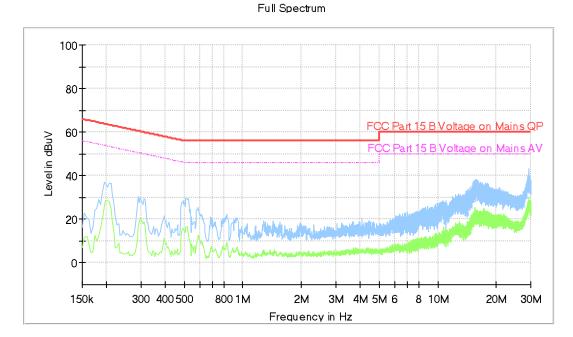
Full Spectrum



All emission levels are more than 10 dB below the limit.

Tested Wire: Neutral

Operation Mode: transmitting mode



All emission levels are more than 10 dB below the limit.



TEST REPORT

5.0 Test Equipment List

Radiated Emission/Radio

Equipment No.	Equipment	Model	Manufacturer	Cal. Due date (YYYY-MM-DD)	Calibration Interval
EM030-04	3m Semi-Anechoic Chamber	9×6×6 m ³	ETS• LINDGRE N	2025-04-09	1Y
EM031-02	EMI Test Receiver (9 kHz~7 GHz)	R&S ESR7	R&S	2024-11-15	1Y
EM031-03	Signal and Spectrum Analyzer (10 Hz~40 GHz)	R&S FSV40	R&S	2024-11-12	1Y
EM011-04	Loop antenna (9 kHz-30 MHz)	HFH2-Z2	R&S	2024-07-02	1Y
EM033-01	TRILOG Super Broadband test Antenna(30 MHz-3 GHz) (RX)	VULB 9163	SCHWARZBECK	2024-12-05	1Y
EM033-02	Bouble-Ridged Waveguide Horn Antenna (800 MHz-18 GHz)(RX)	R&S HF907	R&S	2024-07-02	1Y
EM033-03	High Frequency Antenna & preamplifier(18 GHz~26.5 GHz) (RX)	R&S SCU-26	R&S	2024-04-22	1Y
EM033-04	High Frequency Antenna & preamplifier (26 GHz-40 GHz)	R&S SCU-40	R&S	2024-04-22	1Y
EM031-02-01	Coaxial cable(9 kHz-1 GHz)	N/A	R&S	2025-04-09	1Y
EM033-02-02	Coaxial cable(1 GHz-18 GHz)	N/A	R&S	2025-04-09	1Y
EM033-04-02	Coaxial cable(18 GHz~40 GHz)	N/A	R&S	2024-04-22	1Y
EM031-01	Signal Generator (9 kHz~6 GHz)	SMB100A	R&S	2025-03-17	1Y
EM040-01	Band Reject/Notch Filter	WRHFV	Wainwright	N/A	1Y
EM040-02	Band Reject/Notch Filter	WRCGV	Wainwright	N/A	1Y
EM040-03	Band Reject/Notch Filter	WRCGV	Wainwright	N/A	1Y
EM022-03	2.45 GHz Filter	BRM50702	Micro-Tronics	2024-05-09	1Y
SA016-29	Climatic Test Chamber	MHU-80L	JIANQIAO	2025-01-03	1Y
EM046-05	Power meter	NPR6A	R&S	2024-04-19	1Y
EM046-06	Power meter	NPR6A	R&S	2024-04-19	1Y
EM045-01-01	EMC32 software (RE/RS)	V10.01.00	R&S	N/A	N/A

Conducted Disturbance-Mains Terminal(2)

Equipment No.	Equipment	Model	Manufacturer	Cal. Due date	Calibration
				(DD-MM-YYYY)	Interval
EM031-04	EMI receiver	ESR3	R&S	04/01/2025	1Y
EM006-06	LISN	ENV216	R&S	04/09/2024	1Y
SA047-111	Digital Temperature-Humidity Recorder	RS210	YIJIE	22/10/2024	1Y
EM004-03	EMC shield Room	8m×4m×3m	Zhongyu	03/01/2025	1Y
EM031-04-01	EMC32 software (CE)	V10.01.00	R&S	N/A	1Y

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