



TEST REPORT

Report No. KS2206S2655E01

Applicant······ RPG Brands, LLC

Manufacturer RPG Brands, LLC

Address 3515 East Atlanta Avenue Phoenix, Arizona, 85040, USA

 Product Name······:
 Electric Fireplace

 Trade Mark······:
 MODERN FLAMES

Model/Type reference······: LPS-4414 V2

Standard FCC CFR Title 47 Part 15 Subpart C Section 15.247

Date of receipt of test sample...: June 22, 2022

Date of testing...... June 22, 2022~July 09, 2022

Result..... PASS

Prepared by:

(Printed name+ signature)

Pai Zheng

Approved by:

(Printed Name + Signature)

Sky Dong

Testing Laboratory Name·····: KSIGN(Guangdong) Testing Co., Ltd.

Address...... West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu

Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen,

Guangdong, People's Republic of 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.

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

KDB 558074 D01: The measurement guidance provided herein is applicable only to Digital Transmission System (DTS) devices operating in the 902-928 MHz. 2400-2483.5 MHz and/or 5725-5850 MHz bands under §15.247 of the FCC rules (Title 47 of the Code of Federal Regulations).

1.2. REPORT VERSION

Revised No.	Date of issue	Description
01	July 09, 2022	Original

TRF No. FCC Part 15.247_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China





1.3. TEST DESCRIPTION

FCC Part 15 Subpart C(15.247)				
Took Itam	Standard Section	Daguit	Test Engineer	
Test Item	FCC	Result		
Antenna Requirement	15.203	Pass	Tom Chen	
Conducted Emission	15.207	Pass	Tom Chen	
6dB&99% Bandwidth	15.247(a)(2)	Pass	Tom Chen	
Peak Output Power	15.247(b)	Pass	Tom Chen	
Power Spectral Density	15.247(e)	Pass	Tom Chen	
Restricted Band	15.247(d)/15.205	Pass	Tom Chen	
Band Edge and Spurious Emission(Conducted)	15.247(d)	Pass	Tom Chen	
Spurious Emission(Radiated)	15.247(d)&15.209	Pass	Tom Chen	

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



Address of the report laboratory

KSIGN(Guangdong) Testing Co., Ltd.

West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, People's Republic of China

Laboratory accreditation

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

CNAS-Lab Code: L13261

KSIGN(Guangdong) Testing Co., Ltd. has been assessed and proved to be in Compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 5457.01

KSIGN(Guangdong) Testing Co., Ltd. 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.

ISED#: 25693 CAB identifier.: CN0096

KSIGN(Guangdong) Testing Co., Ltd. has been listed by Innovation, Science and Economic Development Canada to perform electromagnetic emission measurement.

FCC-Registration No.: 294912 Designation Number: CN1328

KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

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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 in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the KSIGN(Guangdong) Testing Co., Ltd. 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 KSIGN(Guangdong) Testing Co., Ltd.

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	3.20 dB	(1)
Radiated Emissions 30~1000MHz	4.70 dB	(1)
Radiated Emissions 1~18GHz	5.00 dB	(1)
Radiated Emissions 18~40GHz	5.54 dB	(1)
Occupied Bandwidth	2.80 dB	(1)

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

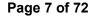
1.6. ENVIRONMENTAL CONDITIONS

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

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050mba

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2. GENERAL INFORMATION

2.1. GENERAL DESCRIPTION OF EUT

Test Sample Number:	1-1-1(Normal Sample),1-1-2(Engineering Sample)
Product Name:	Electric Fireplace
Trade Mark:	MODERN FLAMES
Model/Type reference:	LPS-4414 V2
Listed Model(s):	LPS-5614 V2, LPS-6814 V2, LPS-8014 V2, LPS-9614 V2, SPM-2426 V2, SPM-3026 V2, SPM-3626 V2, SPM-4226 V2, SPM-5426 V2, LPM-4416 V2, LPM-5616 V2, LPM-6816 V2, LPM-8016 V2, LPM-9616 V2, LPM-12016 V2
Model Different:	The difference between the product model is only Dimensions and power of the machine is not the same, the different model name is for the market demand. Other power supply mode, internal structure, circuit and key components are the same, does not affect the safety and electromagnetic compatibility performance.
Power supply(Adapter):	AC 100V~120V
Hardware version:	V1.0
Software version:	V1.0.0
2.4GHz WIFI	
Modulation:	802.11b: DSSS(CCK, DQPSK, DBPSK)
	802.11g/n: OFDM(BPSK,QPSK,16QAM,64QAM)
Operation frequency:	802.11b/g/n(HT20): 2412MHz~2462MHz
	802.11b: 15.98 dBm
Max Peak Output Power:	802.11g: 21.07 dBm
	802.11n (HT20): 19.25 dBm
Channel number:	802.11b/g/n(HT20):11 channels
Test frequency: CH01/03: 2412MHz/2422MHz; CH06: 2437MHz;	
	CH09/11: 2452MHz/2462MHz
Channel separation:	5MHz
Antenna type:	Intenal Antenna
Antenna gain:	2.5dBi

TRF No. FCC Part 15.247_R1

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2.2. 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:

- 1.CH 01~CH 11 for 802.11b/g/n(HT20).
- 2. The display in grey were the channel selected for testing.

Test mode

For RF test items

The engineering test program was provided and enabled to make EUT continuous transmit (duty cycle>98%).

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(duty cycle>98%). The EUT in each of three orthogonal axis emissions had been tested ,but only the worst case (X axis) data Recorded in the report.

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2.3. MEASUREMENT INSTRUMENTS LIST

	Tonscend JS0806-2 Test system				
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until
1	Spectrum Analyzer	R&S	FSV40-N	101798	03/04/2023
2	Vector Signal Generator	Agilent	N5182A	MY50142520	03/04/2023
3	Analog Signal Generator	HP	83752A	3344A00337	03/04/2023
4	Power Sensor	Agilent	E9304A	MY50390009	03/04/2023
5	Power Sensor	Agilent	E9300A	MY41498315	03/04/2023
6	Wideband Radio Communication Tester	R&S	CMW500	157282	03/04/2023
7	Climate Chamber	Angul	AGNH80L	1903042120	03/04/2023
8	Dual Output DC Power Supply	Agilent	E3646A	MY40009992	03/04/2023
9	RF Control Unit	Tonscend	JS0806-2	1	03/04/2023

	Transmitter spurious emissions & Receiver spurious emissions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Until	
1	EMI Test Receiver	R&S	ESR	102525	03/04/2023	
2	High Pass Filter	Chengdu E-Microwave	OHF-3-18-S	0E01901038	03/04/2023	
3	High Pass Filter	Chengdu E-Microwave	OHF-6.5-18- S	0E01901039	03/04/2023	
4	Spectrum Analyzer	HP	8593E	3831U02087	03/04/2023	
5	Ultra-Broadband logarithmic period Antenna	Schwarzbeck	VULB 9163	01230	12/04/2023	
6	Loop Antenna	Beijin ZHINAN	ZN30900C	18050	03/04/2023	
7	Spectrum Analyzer	R&S	FSV40-N	101798	03/04/2023	
8	Horn Antenna	Schwarzbeck	BBHA 9120 D	2023	03/29/2023	
9	Pre-Amplifier	Schwarzbeck	BBV 9745	9745#129	03/04/2023	
10	Pre-Amplifier	EMCI	EMC051835 SE	980662	03/04/2023	
11	Pre-Amplifier	Schwarzbeck	BBV-9721	57	03/04/2023	
12	Horn Antenna	Schwarzbeck	BBHA 9170	00939	03/04/2023	

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	LISN	R&S	ENV432	1326.6105.02	03/04/2023
2	EMI Test Receiver	R&S	ESR	102524	03/04/2023
3	Manual RF Switch	JS TOYO	/	MSW-01/002	03/04/2023

Note:

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¹⁾The Cal. Interval was one year.

²⁾The cable loss has calculated in test result which connection between each test instruments.





2.4. TEST SOFTWARE

Software name	Model	Version
Conducted emission Measurement Software	EZ-EMC	EMC-Con 3A1.1
Radiated emission Measurement Software	EZ-EMC	FA-03A.2.RE
Bluetooth and WIFI Test System	JS1120-3	2.5.77.0418



3. TEST ITEM AND RESULTS

3.1. 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 an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

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.

Test Result

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

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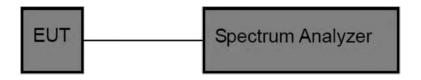


3.2. PEAK OUTPUT POWER

<u>Limit</u>

Test Item	Limit	Frequency Range(MHz)
Peak Output Power	1 Watt or 30 dBm	2400~2483.5

Test Configuration



Test Procedure

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator.
- 2. The measurement is according to ANSI C63.10 (2013) for compliance to FCC 47CFR 15.247 requirements.
- 3. Spectrum Setting:

Set analyser center frequency to DTS channel center frequency.

Set the RBW to: 1MHz Set the VBW to: 3MHz

Detector: peak
Sweep time: auto

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

4. The power sensor video bandwidth is greater than or equal to the DTS bandwidth of the equipment.

Test Mode

Please refer to the clause 2.2

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Bao'an District, Shenzhen, Guangdong, China



Test Result

Mode	Channel frequency (MHz)	Test Result (dBm)	Limit (dBm)		
	2412	15.98			
802.11b	2437	15.83			
	2462	15.42			
802.11g	2412	21.07			
	2437	20.98	30		
	2462	20.38			
802.11n (HT20)	2412	18.94			
	2437	19.25			
	2462	18.70			
Result : PASS					

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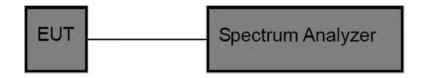


3.3. POWER SPECTRAL DENSITY

<u>Limit</u>

FCC Part 15 Subpart C(15.247)					
Test Item	Limit	Frequency Range(MHz)			
Power Spectral Density	8dBm(in any 3 kHz)	2400~2483.5			

Test Configuration



Test Procedure

- 1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator.
- 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 ANSI C63.10 (2013) for compliance to FCC 47CFR 15.247 requirements.
- 3. Spectrum Setting:

Set analyser 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: 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 2.2

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Test Mode:	802.11b Mode			
hannel Frequency (MHz)	Power Density (dBm/3kHz)			Limit (dBn
2412		-9.69		
2437		-9.70		
2462		-10.03		
	241	2 MHz		
Spectrum				₩ ∀
Ref Level 20.00 dBm O	ffset 8.23 dB = RBW 3 kF WT 152 ms = VBW 10 kF			-(V)
●1Pk View				
10 dBm-	_1 -1 1	MI[i]	1 1	-9,69 dBm 2.4129660 GHz
20 00111				
0 dBm		1		
-10 dBm	regulated at the entire terminates and a tendent and a second a tendent a second	M1	operate resident describerates and the same	
20 dam Mithelandiful	J. Philippe Lymer College	A III	and the state of t	ummindly.
and some whole of		W		My willbrung
-30 dBm				
-40 dBm-				
-50 d8m-			+	
-60 d8m-				
-70 dBm-				
CF 2.412 GHz	100	01 pts		Span 13.62 MHz
			1 14	6







 Test Mode:
 802.11g Mode

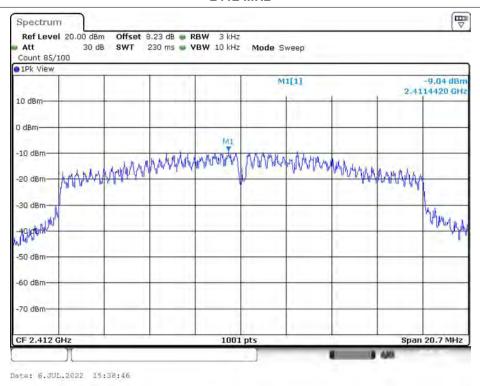
 Channel Frequency (MHz)
 Power Density (dBm/3 kHz)
 Limit(dBm)

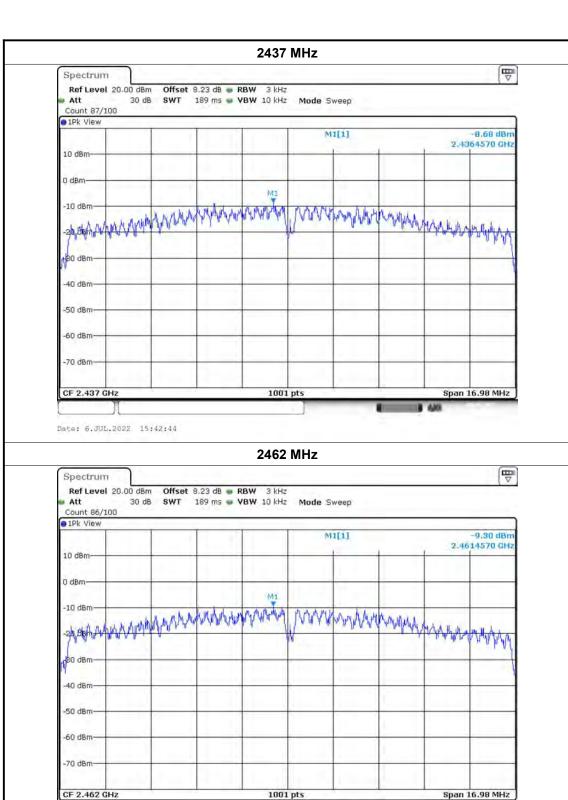
 2412
 -9.04
 8dBm/3kHz

 2437
 -8.68
 8dBm/3kHz

 2462
 -9.30

2412 MHz





Date: 6.JUL.2022 15:45:35

Span 16.92 MHz



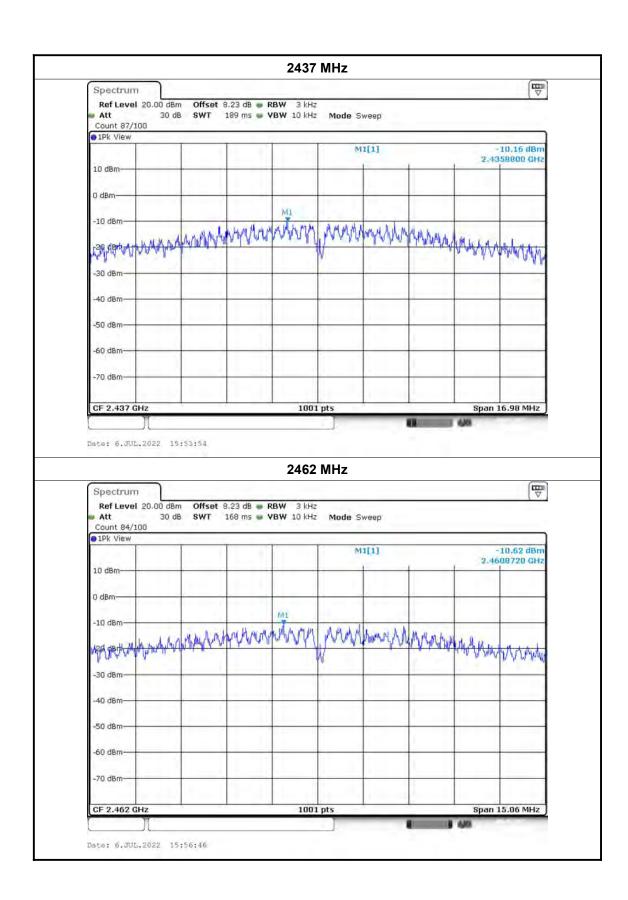
802.11n(HT20) Mode **Test Mode: Channel Frequency Power Density** Limit (dBm) (MHz) (dBm/3 kHz) 2412 -10.14 2437 -10.16 8dBm/3kHz 2462 -10.62 2412 MHz 7 Spectrum Ref Level 20.00 dBm Offset 8.23 dB - RBW 30 dB **SWT** 188 ms **WBW** 10 kHz Count 86/100 1Pk View M1[1] 10,14 dBn 2.4148400 GH 10 dBm-0 dBm MUNAMANANA MANANANA ALL SALVANIA CONTRACTOR OF CON

1001 pts

-60 dBm-

CF 2.412 GHz

Date: 6.JUL.2022 15:49:50



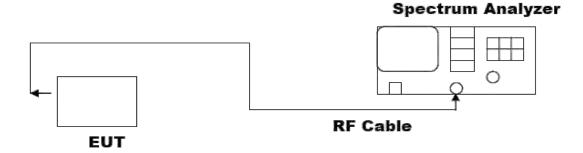


3.4. BANDWIDTH

Limit

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

Test Configuration



Test Procedure

- Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator:
 6db Bandwidth
 - (1) Set RBW = 100 kHz.
 - (2) Set the video bandwidth (VBW) ≥ 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.

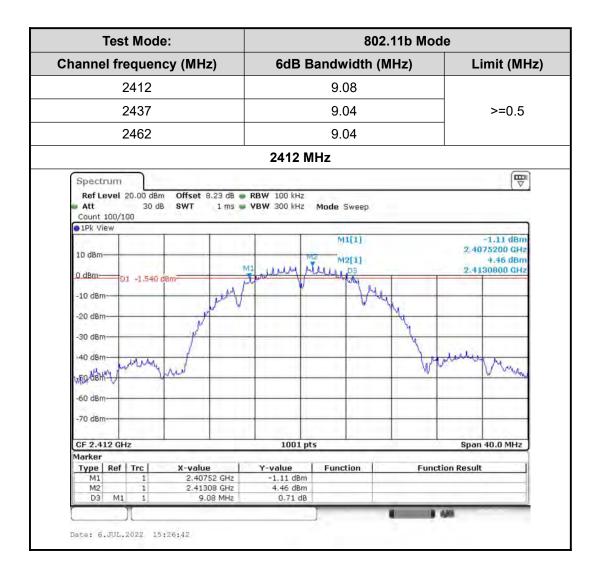
Test Mode

Please refer to the clause 2.2.

TRF No. FCC Part 15.247_R1



Test Results

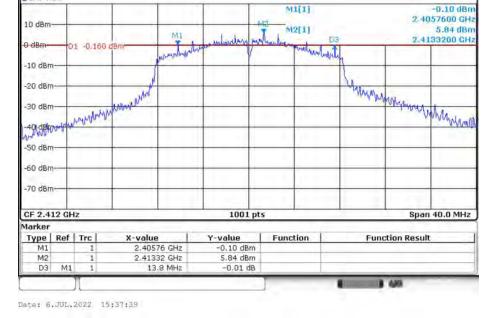


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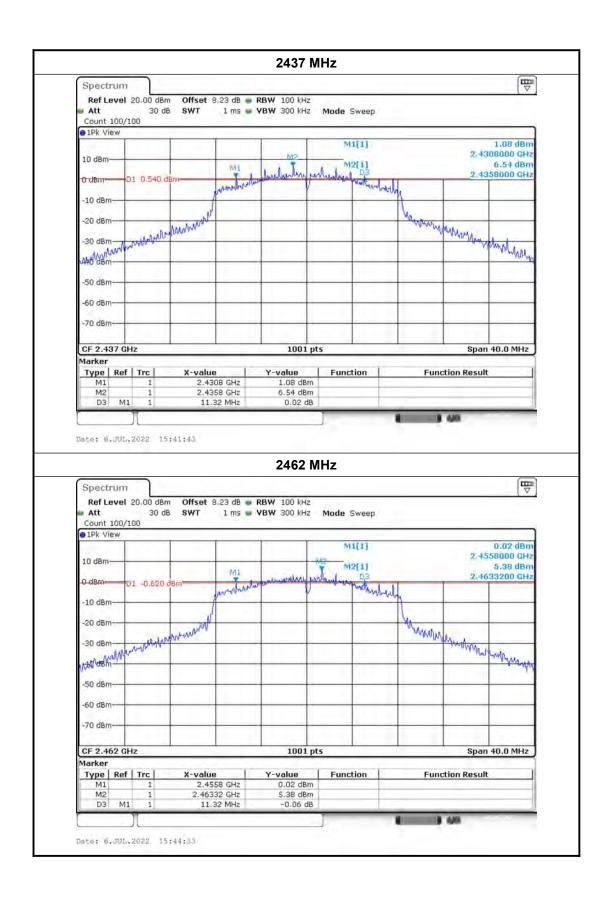




Test Mode: 802.11g Mode Channel frequency (MHz) 6dB Bandwidth (MHz) Limit (MHz) 2412 13.80 2437 11.32 >=0.5 2462 11.32 2412 MHz 8 Spectrum Ref Level 20.00 dBm Offset 8.23 dB - RBW 100 kHz Att 30 dB SWT 1 ms - VBW 300 kHz Mode Sweep Count 100/100 1Pk View M1[1] -0.10 dBn 2.4057600 GH 10 dBm M2[1] 4133200 GHz 0 dBm D1 -0.160 d drewland -10 dBm -20 dBm









 Test Mode:
 802.11n(HT20) Mode

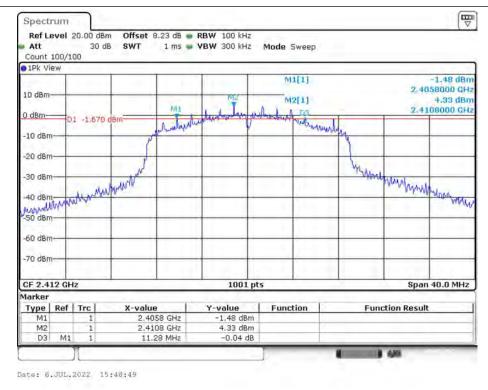
 Channel frequency (MHz)
 6dB Bandwidth (MHz)
 Limit (MHz)

 2412
 11.28
 >=0.5

 2437
 11.32
 >=0.5

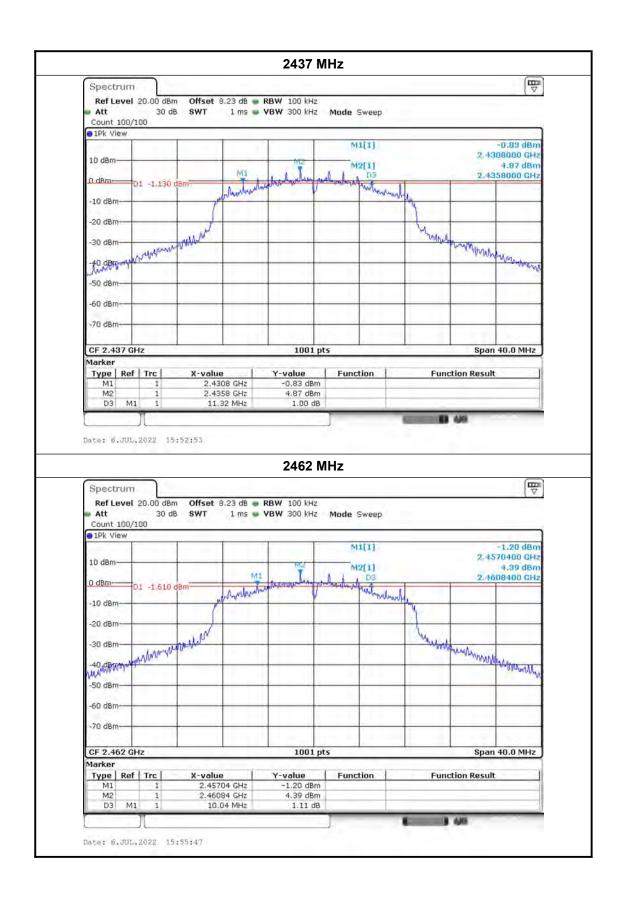
 2462
 10.04
 >=0.5

2412 MHz



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Test Mode: 802.11b Mode 99% Bandwidth (MHz) Channel frequency (MHz) 2412 14.106 2437 14.146 2462 14.146 2412 MHz -Spectrum Offset 8.23 dB - RBW 500 kHz Ref Level 20.00 dBm 30 dB 1 ms w VBW 2 MHz Mode Sweep Count 100/100 1Sa View 2.4105610 GHz 10 dBm 14.105894106 MHz Occ Bw 0 dBm -20 dBm-40 dBmat -60 d8m--70 dBm-Span 40.0 MHz CF 2.412 GHz 1001 pts Type | Ref | Trc | Function **Function Result** X-value Y-value 2.410561 GHz 2.4051269 GHz 5.73 dBm -8.38 dBm Occ Bw 14.105894106 MHz -8.61 dBm

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Test Mode: 802.11g Mode Channel frequency (MHz) 99% Bandwidth (MHz) 2412 16.264 2437 16.464 2462 16.304 2412 MHz 7 Spectrum Ref Level 20.00 dBm Offset 8.23 dB - RBW 500 kHz 30 dB SWT 1 ms w VBW 2 MHz Mode Sweep Count 100/100 1Sa View MI[I] 10.56 dBn 2.4112410 GH 10 dBm 16.263736264 MHz 0 dBm--10 dBm Ward Harry Great marking break many here -20 dBm-40 dBm -50 d8m 70 dBm-Span 40.0 MHz CF 2.412 GHz 1001 pts Marker Y-value 10.56 dBm Type | Ref | Trc Function **Function Result** 2.411241 GHz 2,404048 GHz -0.37 dBm 16.263736264 MHz Occ Bw 2.4203117 GHz

-1.97 dBm

Date: 6.JUL.2022 15:37:57

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TRF No. FCC Part 15.247_R1



Test Mode: 802.11n(HT20) Mode Channel frequency (MHz) 99% Bandwidth (MHz) 2412 16.903 2437 16.983 2462 16.943 2412 MHz 7 Spectrum Ref Level 20.00 dBm Offset 8.23 dB - RBW 500 kHz 30 dB SWT 1 ms w VBW 2 MHz Mode Sweep Att Count 100/100 ●1Sa View M1[1] 8.33 dBn 2.4131190 GH 10 dBm 16,902096903 MHz 0 dBm -10 dBm -modernally populations -20 dBm -30 dBm 40 d8m -50 d8m -60 d8m 70 dBm CF 2.412 GHz 1001 pts Span 40.0 MHz Marker Type | Ref | Trc Function **Function Result** X-value Y-value 2.413119 GHz 2.4036883 GHz 2.4205914 GHz 16.903096903 MHz -2.19 dBm Occ Bw -2.82 dBm

Date: 6.JUL.2022 15:49:06





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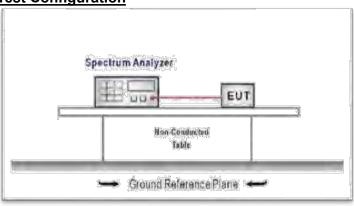
3.5. BAND EDGE AND SPURIOUS EMISSION (CONDUCTED)

Limit

FCC CFR Title 47 Part 15 Subpart C Section15.247 (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 20 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. Connect EUT RF Output port to the Spectrum Analyzer through an RF attenuator.
- 2. Spectrum Setting:

RBW=100KHz

VBW=300KHz.

Detector function: Peak.

Trace: Max hold. Sweep = Auto couple.

Allow the trace to stabilize.

Test Mode

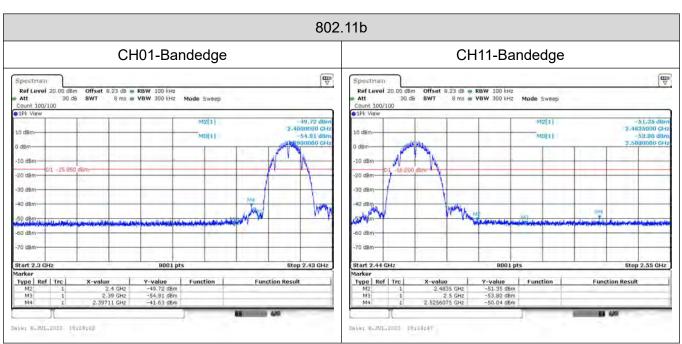
Please refer to the clause 2.2.

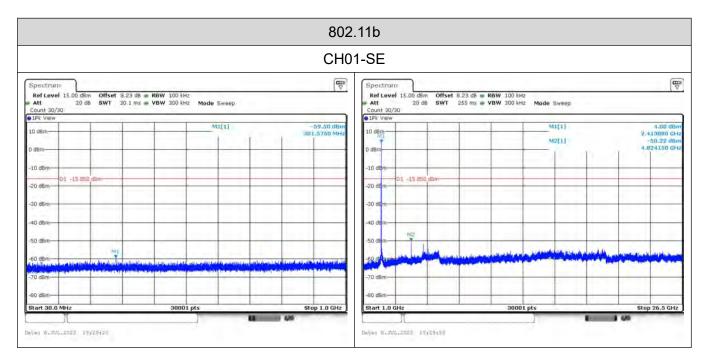
Test Results

TRF No. FCC Part 15.247_R1

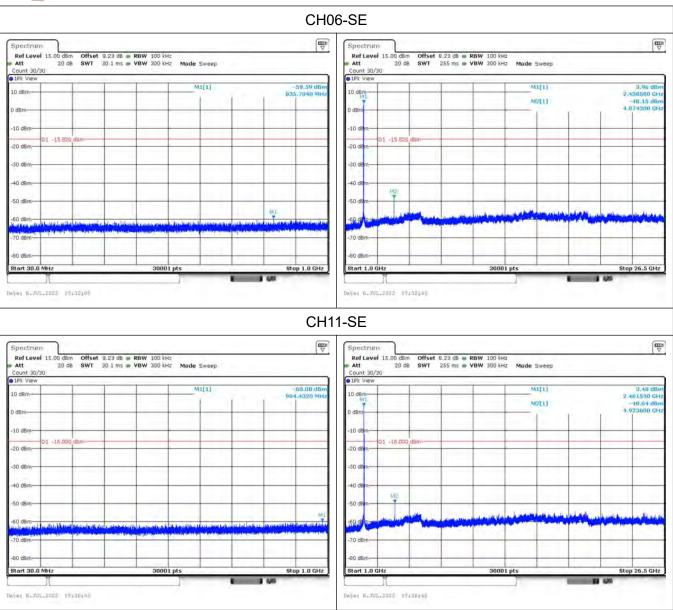
Add:West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

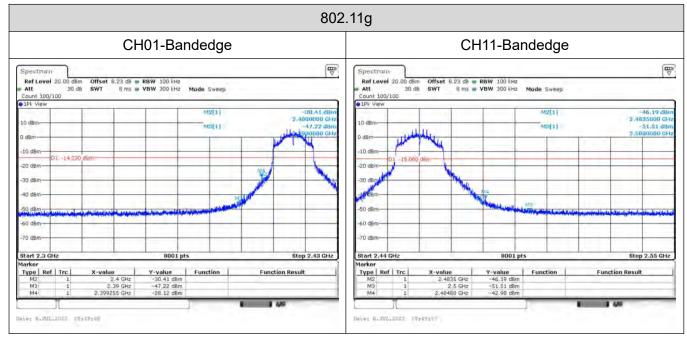








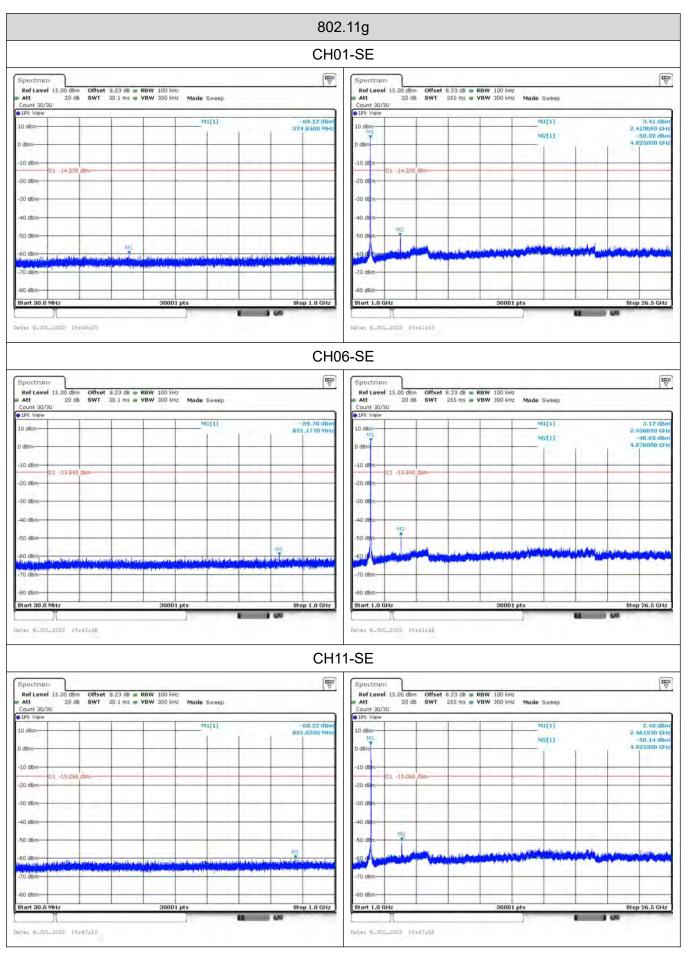




TRF No. FCC Part 15.247_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

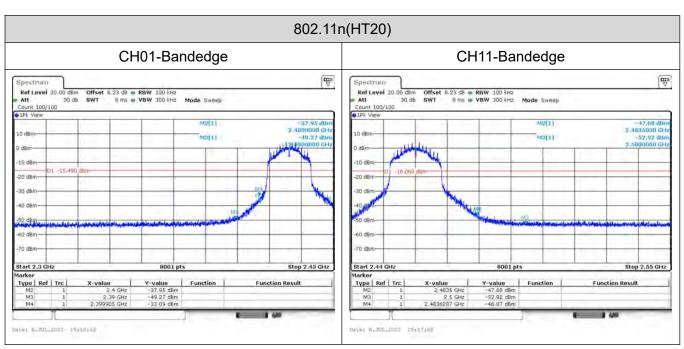


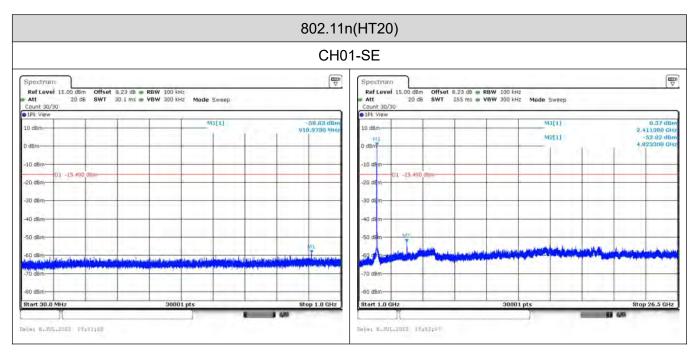


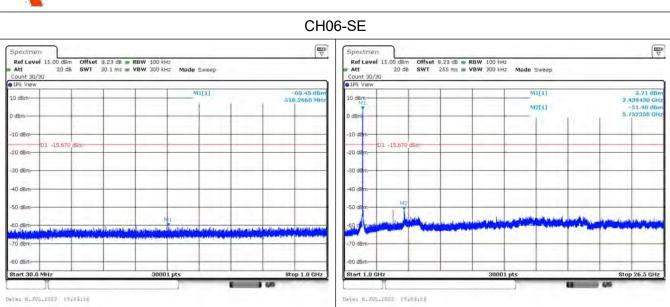
TRF No. FCC Part 15.247_R1

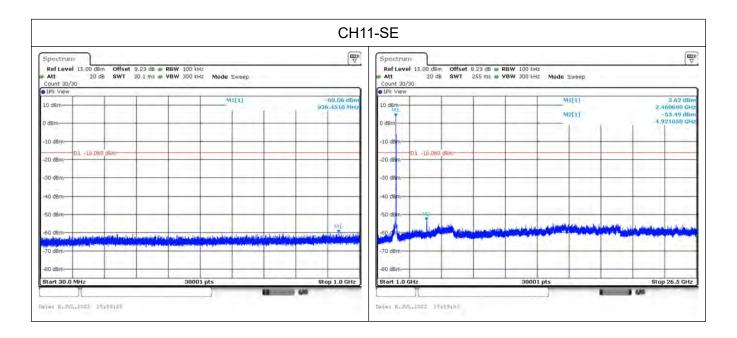
Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China











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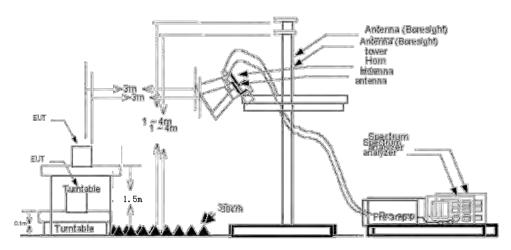
3.6. BAND EDGE EMISSIONS(RADIATED)

Limit

Restricted Frequency Band	(dBuV/m)(at 3m)				
(MHz)	Peak	Average			
2310 ~2390	74	54			
2483.5 ~2500	74	54			
Note: All restriction hands have	hoon tosted only the worst c	aso is roported			

Note: All restriction bands have been tested, only the worst case is reported.

Test Configuration



Test Procedure

- 1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
- 2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 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.
- 5. The receiver set as follow:

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

RBW=1MHz, VBW=10Hz with PEAK detector for Average Value.

Test Mode

Please refer to the clause 2.2.

Test Results

Note:

1.Measurement = Reading level + Correct Factor

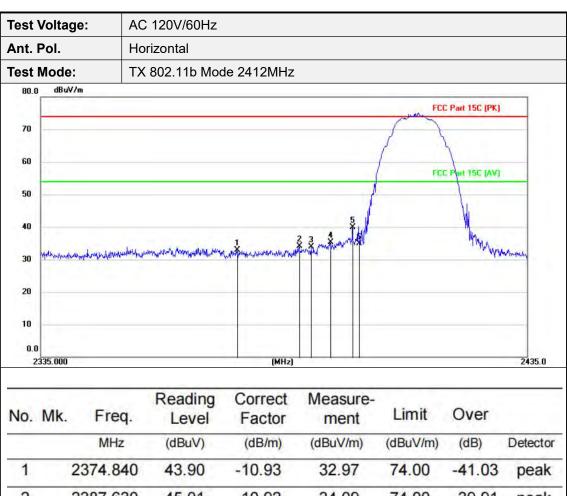
Correct Factor=Antenna Factor + Cable Loss - Preamplifier Factor

2.Pre-scan 802.11b, 802.11g, 802.11n(HT20) mode, and found the 802.11b mode which it is worse case, so only show the test data for worse case.

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No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1	7	2374.840	43.90	-10.93	32.97	74.00	-41.03	peak
2		2387.630	45.01	-10.92	34.09	74.00	-39.91	peak
3		2390.000	44.75	-10.92	33.83	74.00	-40.17	peak
4		2394.020	46.30	-10.92	35.38	74.00	-38.62	peak
5	*	2398.700	50.87	-10.92	39.95	74.00	-34.05	peak
6		2400.000	45.80	-10.92	34.88	74.00	-39.12	peak

2435.0



2335.000

Test Voltage: AC 120V/60Hz Ant. Pol. Vertical **Test Mode:** TX 802.11b Mode 2412 MHz dBuV/m 80.0 FCC Part 15C (PK) 70 60 FEC PAR 15C (AV) 50 40 20 10

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1		2368.180	45.27	-10.93	34.34	74.00	-39.66	peak
2		2380.060	45.76	-10.92	34.84	74.00	-39.16	peak
3		2390.000	45.07	-10.92	34.15	74.00	-39.85	peak
4		2395.010	47.85	-10.91	36.94	74.00	-37.06	peak
5		2398.230	50.35	-10.92	39.43	74.00	-34.57	peak
6	*	2400.000	51.66	-10.92	40.74	74.00	-33.26	peak

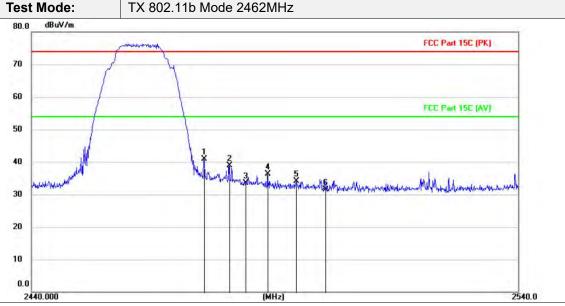
(MHz)



Test Voltage: AC 120V/60Hz Ant. Pol. Horizontal TX 802.11b Mode 2462MHz Test Mode: dBuV/m 80.0 FCC Part 15C (PK) 70 60 FCC Part 15C (AV) 50 40 30 20 10 0.0 2440.000 (MHz) 2540.0 Reading Correct Measure-Limit Over No. Mk. Freq. Level Factor ment MHz (dBuV) (dBuV/m) (dBuV/m) (dB/m) (dB) Detector 50.23 -10.891 2476.970 39.34 74.00 -34.66peak 2 2479.750 49.28 -10.8938.39 -35.61 74.00 peak 3 2483.500 45.68 -10.8834.80 74.00 -39.20peak 4 2485.200 48.29 -10.8837.41 74.00 -36.59peak 5 2490.540 45.67 -10.8934.78 74.00 -39.22peak 6 2500.000 43.05 32.17 74.00 -41.83 -10.88peak



Test Voltage: AC 120V/60Hz
Ant. Pol. Vertical
Test Mode: TX 802 11b Mode 2462MHz



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1	*	2475.020	51.89	-10.89	41.00	74.00	-33.00	peak
2		2480.160	49.78	-10.89	38.89	74.00	-35.11	peak
3		2483.500	44.41	-10.88	33.53	74.00	-40.47	peak
4		2488.020	47.19	-10.88	36.31	74.00	-37.69	peak
5		2493.960	45.05	-10.89	34.16	74.00	-39.84	peak
6	7-3	2500.000	42.37	-10.88	31.49	74.00	-42.51	peak

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3.7. SPURIOUS EMISSION (RADIATED)

Limit

Radiated Emission Limits (9 kHz~1000 MHz)

Frequency (MHz)	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

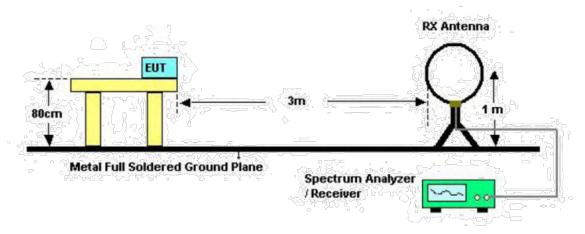
Radiated Emission Limit (Above 1000MHz)

Frequency	Distance Met	ters(at 3m)
(MHz)	Peak	Average
Above 1000	74	54

Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level (dBuV/m)=20log Emission Level (uV/m).

Test Configuration

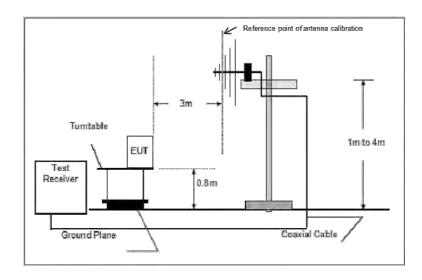


Below 30MHz Test Setup

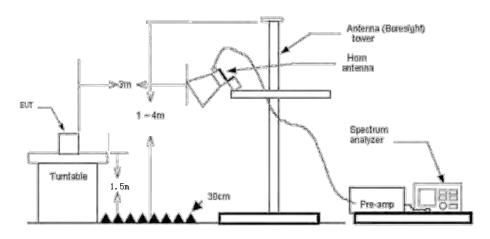
TRF No. FCC Part 15.247_R1

Add:West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China





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.
- 3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable 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.
- 5. Set to the maximum power setting and enable the EUT transmit continuously.
- 6. Use the following spectrum analyzer settings
 - (1) Span shall wide enough to fully capture the emission being measured;

TRF No. FCC Part 15.247_R1

Add:West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

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(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=1MHz Peak detector for Peak value.

RBW=1MHz, VBW=10Hz Peak detector for Peak value.

Test Mode

Please refer to the clause 2.2.

Test Result

9 KHz~30 MHz and 18GHz~25GHz

: Conclusion: PASS

Note:

- Measurement = Reading level + Correct Factor
 Correct Factor=Antenna Factor + Cable Loss -Preamplifier Factor
- 2) From 9 KHz~30 MHz and 18GHz~25GHz, the amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
- 3) Pre-scan 802.11b/g/n(HT20) modulation, and found the 802.11b modulation which it is worse case for above 1GHz, 2412MHz channel which it is worse case for below 1GHz, so only show the test data for worse case. Pre-scan LPM series,SPM series and LPS series,LPS series worst test data was listed in report as representative.

BELOW 30MHz

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

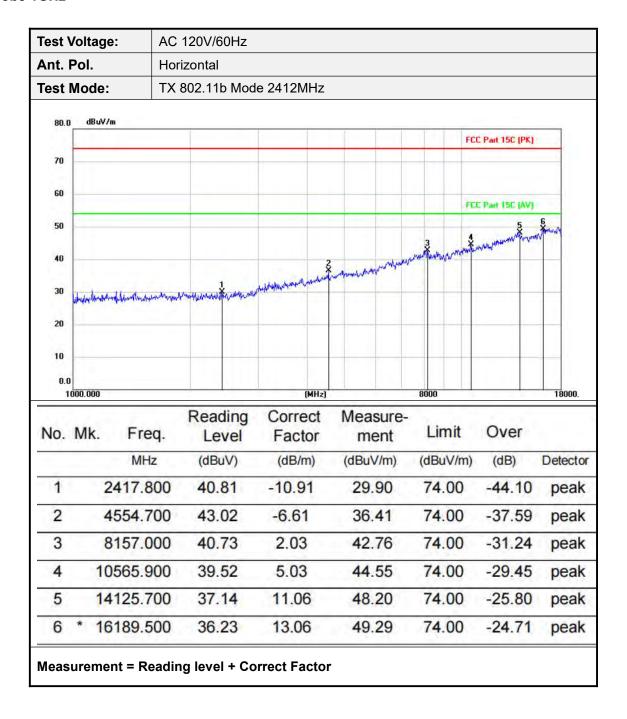
TRF No. FCC Part 15.247_R1

Add:West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Test Voltage:	AC 1	20V/60Hz					
Ant. Pol.	Horiz	ontal					
Test Mode:							
80.0 dBuV/m	1 1	7-7-1	7				150
70							
60						FCC Part 15	8
50						Margin -6 d8	
40		1					
30	1		Zn A	3	A 4 1 . 9		
20.	e Ph	with of the	THANK		1 MALLON	M who who	Papalage
10 4m m		100	VI V			M. Marieta angrad M	1000 0
10 to freshold with	eo	100	(MHz)	The state of the s	500	h the market have made the	1000.0
0.0 30.000		Reading Level	(MHz) Correct Factor	Measure- ment	500	Over	1000.0
0.0 30.000	60	Reading	Correct			Over (dB)	1000.0
0.0 30.000 No. Mk.	Freq.	Reading Level	Correct Factor	ment	Limit	120720	
10 10 10 10 10 10 10 10 10 10 10 10 10 1	Freq.	Reading Level	Correct Factor (dB/m)	ment (dBuV/m)	Limit (dBuV/m)	(dB)	Detector
10 30.000 No. Mk.	Freq. MHz	Reading Level (dBuV) 43.61	Correct Factor (dB/m) -19.83	ment (dBuV/m) 23.78	Limit (dBuV/m) 40.00	(dB) -16.22	Detector
10 30.000 No. Mk. 1 71 2 * 104 3 151	Freq. MHz 1.1302 4.1701	Reading Level (dBuV) 43.61 53.91	Correct Factor (dB/m) -19.83 -17.95	ment (dBuV/m) 23.78 35.96	Limit (dBuV/m) 40.00 43.50	(dB) -16.22 -7.54	Detector QP QP
No. Mk. 1 71 2 * 104 3 151 4 172	Freq. MHz 1.1302 4.1701 1.4378	Reading Level (dBuV) 43.61 53.91 46.00	Correct Factor (dB/m) -19.83 -17.95 -21.36	ment (dBuV/m) 23.78 35.96 24.64	Limit (dBuV/m) 40.00 43.50 43.50	(dB) -16.22 -7.54 -18.86	QP QP QP



Test Voltage: AC 120V/60Hz Ant. Pol. Vertical Test Mode: TX 802.11b Mode 2412MHz dBuV/m 80.0 70 60 FCC Part 158 50 40 30 20 10 0.0 (MHz) 30.000 500 1000.0 Reading Correct Measure-Limit No. Mk. Freq. Over Level Factor ment MHz (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) Detector 57.2115 1 48.61 -17.0831.53 40.00 -8.47QP 52.18 2 69.7715 32.50 -7.50-19.6840.00 QP 3 91.7519 53.76 -19.3634.40 43.50 -9.10QP 108.7995 54.73 -18.3036.43 43.50 -7.07QP 4 5 150.0634 57.24 -21.4035.84 43.50 -7.66QP 6 171.9343 57.30 -20.2537.05 43.50 -6.45QP Measurement = Reading Level+ Correct Factor





20

0.0

Test Voltage: AC 120V/60Hz

Ant. Pol. Vertical

Test Mode: TX 802.11b Mode 2412MHz

80.0 dBuV/m

FCC Part 15C (PK)

50

40

30

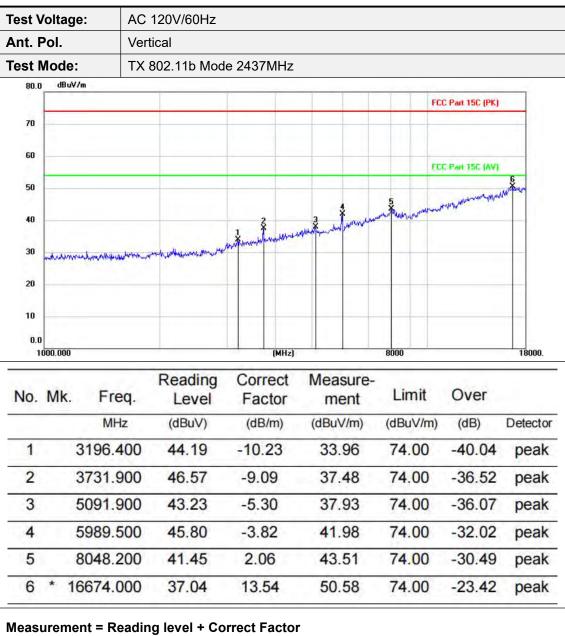
	MHz			ment	Limit	Over	
	IVII IZ	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
9	2412.700	42.51	-10.92	31.59	74.00	-42.41	peak
	4666.900	43.67	-6.30	37.37	74.00	-36.63	peak
	5989.500	45.86	-3.82	42.04	74.00	-31.96	peak
- 0	8056.700	40.87	2.05	42.92	74.00	-31.08	peak
1	3928.500	37.47	11.14	48.61	74.00	-25.39	peak
* 1	7241.800	37.52	13.21	50.73	74.00	-23.27	peak
	1	2412.700 4666.900 5989.500 8056.700 13928.500 * 17241.800	4666.900 43.67 5989.500 45.86 8056.700 40.87 13928.500 37.47	4666.900 43.67 -6.30 5989.500 45.86 -3.82 8056.700 40.87 2.05 13928.500 37.47 11.14	4666.900 43.67 -6.30 37.37 5989.500 45.86 -3.82 42.04 8056.700 40.87 2.05 42.92 13928.500 37.47 11.14 48.61	4666.900 43.67 -6.30 37.37 74.00 5989.500 45.86 -3.82 42.04 74.00 8056.700 40.87 2.05 42.92 74.00 13928.500 37.47 11.14 48.61 74.00	4666.900 43.67 -6.30 37.37 74.00 -36.63 5989.500 45.86 -3.82 42.04 74.00 -31.96 8056.700 40.87 2.05 42.92 74.00 -31.08 13928.500 37.47 11.14 48.61 74.00 -25.39

(MHz)



Test Voltage: AC 120V/60Hz Ant. Pol. Horizontal Test Mode: TX 802.11b Mode 2437MHz dBuV/m 80.0 FCC Part 15C (PK) 70 60 FCC Pair 15C (AV) 50 40 30 20 10 0.0 1000.000 (MHz) 18000. Reading Correct Measure-Over No. Mk. Freq. Limit Level Factor ment MHz (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) Detector 1 2465.400 41.92 -10.8931.03 74.00 -42.97peak 2 4275.900 43.36 -7.51 35.85 74.00 -38.15peak 3 5992.900 43.03 -3.8139.22 74.00 -34.78peak 4 9712.500 40.89 3.44 44.33 74.00 -29.67peak 5 13867.300 37.38 11.06 48.44 74.00 -25.56peak 16784.500 37.36 -23.276 13.37 50.73 74.00 peak







Test Voltage: AC 120V/60Hz Ant. Pol. Horizontal Test Mode: TX 802.11b Mode 2462MHz dBuV/m 80.0 FCC Part 15C (PK) 70 60 FCC Part 15C (AV) 50 40 20 10 0.0 1000.000 (MHz) 8000 18000 Reading Correct Measure-Limit Over No. Mk. Freq. Level Factor ment MHz (dBuV) (dB/m) (dBuV/m) (dBuV/m) (dB) Detector 2436.500 -10.901 43.95 33.05 74.00 -40.95peak 2 4818.200 43.24 -5.8837.36 74.00 -36.64peak 3 5994.600 43.22 -3.8139.41 74.00 -34.59peak 4 8029.500 40.67 2.06 42.73 74.00 -31.27peak 5 15030.100 37.99 11.58 74.00 -24.4349.57 peak -20.676 17365.900 40.03 13.30 53.33 74.00 peak



Test Voltage: AC 120V/60Hz Ant. Pol. Vertical **Test Mode:** TX 802.11b Mode 2462MHz dBuV/m 80.0 FCC Part 15C (PK) 70 60 FCC Part 15C (AV) 50 40 30 20 10 1000.000 (MHz) 8000 18000 Reading Correct Measure-Limit Over No. Mk. Freq. Level Factor ment (dBuV) Detector MHz (dB/m) (dBuV/m) (dBuV/m) (dB) 2436.500 42.68 -10.9031.78 74.00 -42.22peak 2 3721.700 44.81 -9.1235.69 74.00 -38.31peak 3 -32.895996.300 44.92 -3.8141.11 74.00 peak 4 8061.800 41.39 2.06 43.45 74.00 -30.55peak 5 10173.200 4.36 74.00 -29.0540.59 44.95 peak 16446.200 37.07 50.75 74.00 -23.2513.68 peak

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3.8.CONDUCTED EMISSION

Limit

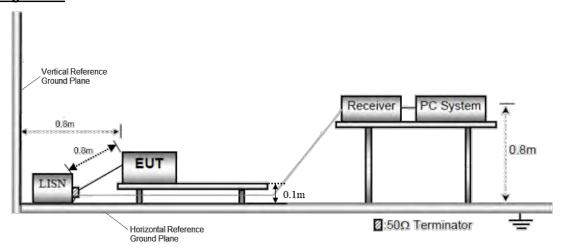
Conducted Emission Test Limit

Eroguanav	Maximum RF Lir	ne Voltage (dBμV)
Frequency	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

Notes:

- (1) *Decreasing linearly with logarithm of the frequency.
- (2) The lower limit shall apply at the transition frequencies.
- (3) The limit decrease in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

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 0.1m above the conducting ground plane. The vertical conducting plane was located 80 cm to the rear of the EUT. All other surfaces of EUT were at least 0.8m 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 2.2.

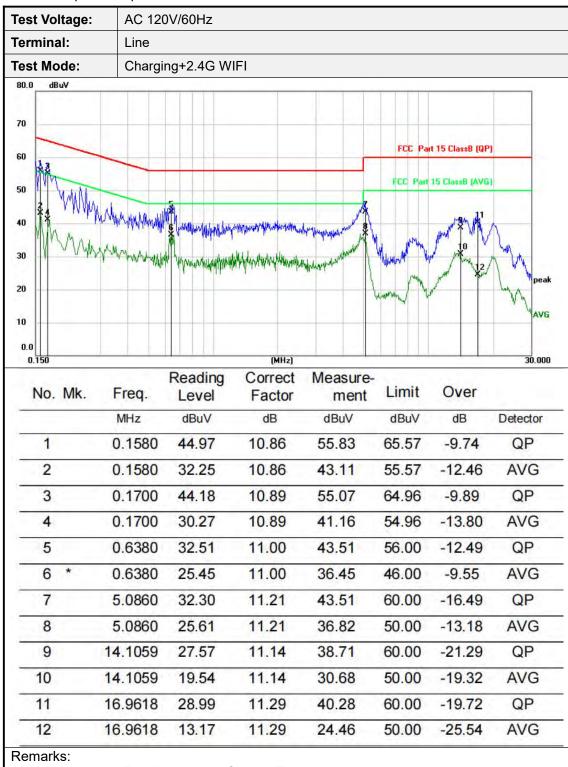
TRF No. FCC Part 15.247_R1

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China



Test Results

Pre-scan 802.11b/g/n(HT20) modulation, and found the 802.11b modulation 2412MHz which it is worse case, so only show the test data for worse case. Pre-scan LPM series,SPM series and LPS series,LPS series worst test data was listed in report as representative.



^{1.}Measurement = Reading Level+ Correct Factor

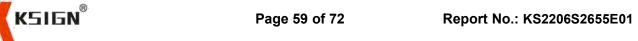
^{2.}Over = Measurement -Limit



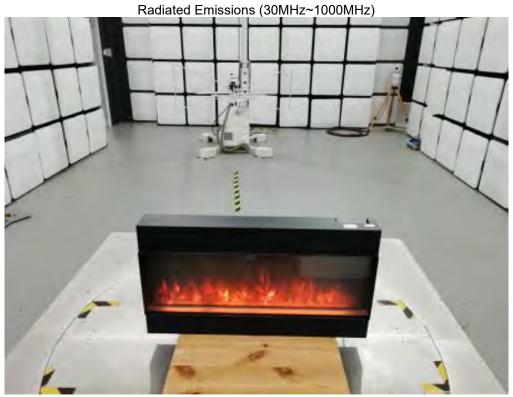
Test Voltage: AC 120V/60Hz Terminal: Neutral Test Mode: Charging+WIFI 70 60 FCC Pa 50 40 30 20 10 0.0 (MHz) 30.000 Reading Correct Measure-No. Mk. Limit Over Freq. Level Factor ment MHz dBuV dB dBuV dBuV dB Detector 1 0.1660 47.69 10.48 58.17 65.16 -6.99QP 2 38.87 0.1660 28.39 10.48 55.16 -16.29AVG 3 0.2020 42.29 10.51 52.80 63.53 -10.73QP 0.2020 26.65 10.51 37.16 53.53 -16.37AVG 4 34.40 10.73 -10.87QP 5 0.6500 45.13 56.00 6 0.6500 26.96 10.73 37.69 46.00 -8.31 AVG 7 5.0700 34.69 11.08 45.77 60.00 -14.23QP 8 27.27 11.08 38.35 -11.65AVG 5.0700 50.00 QP 9 13.7339 33.71 11.41 45.12 -14.8860.00 13.7339 11.41 -12.00AVG 10 26.59 38.00 50.00 16.4939 QP 11 37.79 11.56 49.35 60.00 -10.6512 16.4939 27.56 11.56 39.12 50.00 -10.88AVG

^{1.}Measurement = Reading Level+ Correct Factor

^{2.}Over = Measurement -Limit



4.EUT TEST PHOTOS

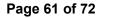


Radiated Emissions (Above 1GHz)











5.PHOTOGRAPHS OF EUT CONSTRUCTIONAL







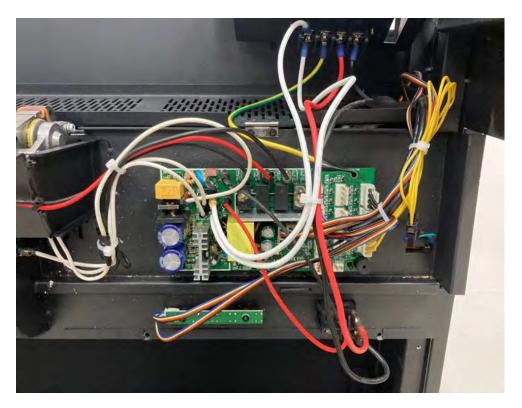






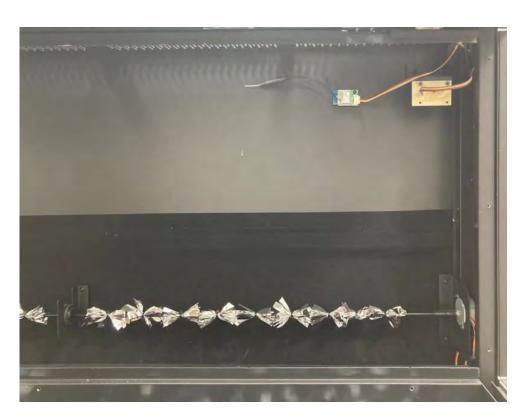






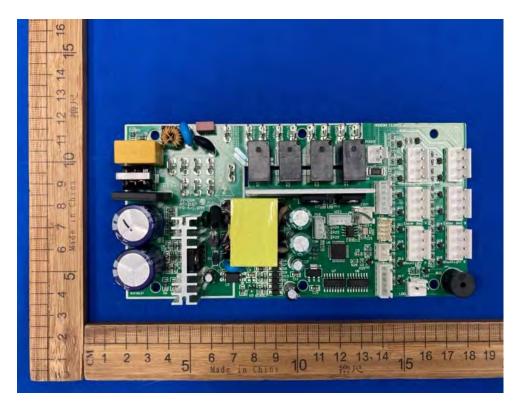


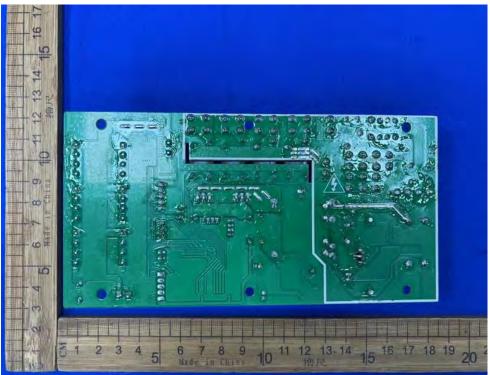




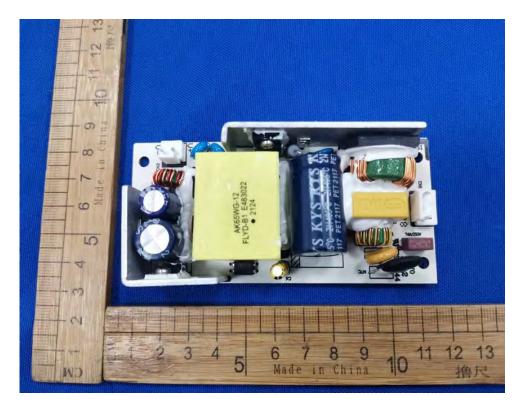


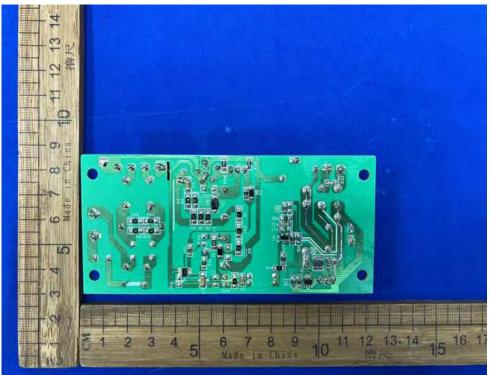












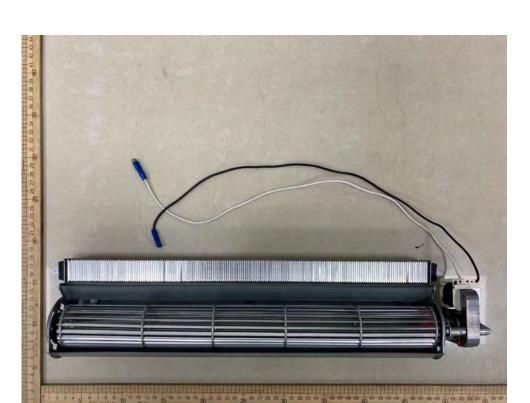




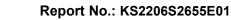




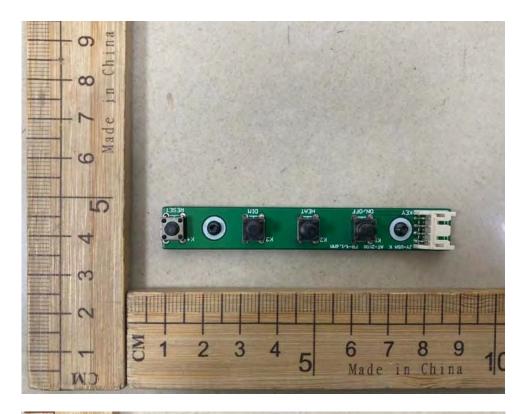






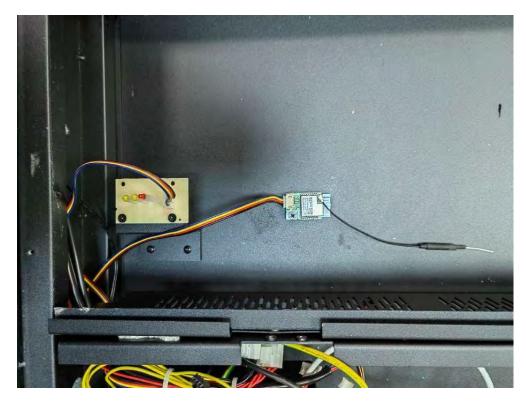


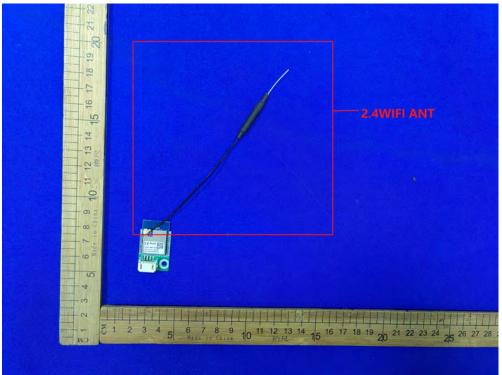




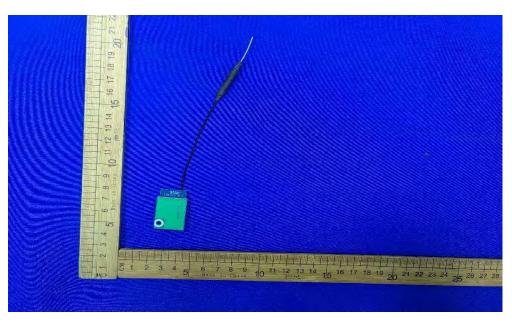






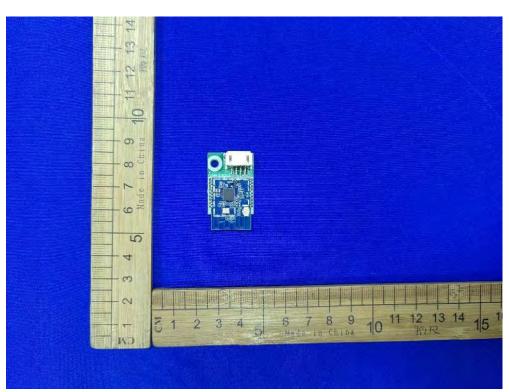


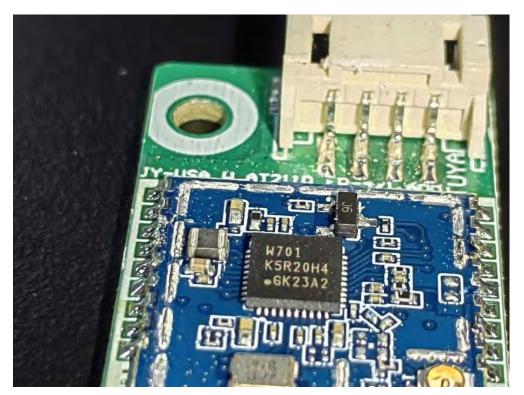












The end