

# **FCC Test Report**

Report No.: 2405Z104533EC

**Applicant:** Shenzhen Baida Moxing Co.,Ltd.

Address: Room 2005-2, Building 6, Tian'an Cloud Park, Gangtou Community,

Bantian St., Longgang Dist. Shenzhen China

Product Name: LiteRadio 4 Radio Transmitter

Product Model: LiteRadio 4 SE

Multiple Models: LiteRadio 4

Trade Mark: 

BETAFPV

FCC ID: 2AT6X-LITERADIO4SE

Standards: FCC CFR Title 47 Part 15C (§15.247)

Test Date: 2024-11-21 to 2025-03-17

Test Result: Complied

Report Date: 2025-04-11

Reviewed by:

Approved by:

Abel Chen

**Project Engineer** 

Jacob Kong

Jacob Gong

Manager

### Prepared by:

World Alliance Testing & Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China



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## **Revision History**

Version No.	Issued Date	Description
00	2025-04-11	Original

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### 1 General Information

### 1.1 Client Information

Applicant:	Shenzhen Baida Moxing Co.,Ltd.
Address:	Room 2005-2, Building 6, Tian'an Cloud Park, Gangtou Community, Bantian St., Longgang Dist. Shenzhen China
Manufacturer:	Shenzhen Baida Moxing Co.,Ltd.
Address:	Room 2005-2, Building 6, Tian'an Cloud Park, Gangtou Community, Bantian St., Longgang Dist. Shenzhen China

## 1.2 Product Description of EUT

The EUT is LiteRadio 4 Radio Transmitter that contains BLE, 2.4G WLAN and 2.4G SRD radios, this report covers the full testing of the 2.4G WLAN radio.

Sample Serial Number	2UDZ-1(LiteRadio 4 SE), 2UDZ-6(LiteRadio 4) for CE Test, 2UDZ-2(LiteRadio 4 SE), 2UDZ-6(LiteRadio 4) for RE test, 2UDZ-3(LiteRadio 4 SE) for RF conducted test (assigned by WATC)
Sample Received Date	2024-11-13
Sample Status	Good Condition
Frequency Range	2412MHz - 2472MHz(802.11b, g, n-HT20)
Maximum Conducted Peak Output Power	18.32dBm
Modulation Technology	DSSS, OFDM
Antenna Gain#	-19.4dBi
Spatial Streams <sup>#</sup>	SISO (1TX, 1RX)
Power Supply	DC 3.7V from battery or DC 5.0V from type C port
Adapter Information	N/A
Modification	Sample No Modification by the test lab

### 1.3 Antenna information

### 15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### **Device Antenna information:**

The Wi-Fi antenna is an internal antenna which cannot replace by end-user. Please see product internal photos for details.

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## 1.4 Related Submittal(s)/Grant(s)

FCC Part 15, Subpart C, Equipment Class: DSS, FCC ID: 2AT6X-LITERADIO4SE

### 1.5 Measurement Uncertainty

in additional on our tarity			
meter	Expanded Uncertainty (Confidence of 95%(U = 2Uc(y)))		
cted Emissions	±3.14dB		
Below 30MHz	±2.78dB		
Below 1GHz	±4.84dB		
Above 1GHz	±5.44dB		
	1.75dB		
	0.74dB		
	150Hz		
	0.34%		
	0.74dB		
	Below 30MHz Below 1GHz Above 1GHz		

**Note:** The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

## 1.6 Laboratory Location

World Alliance Testing & Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China

Tel: +86-755-29691511, Email: qa@watc.com.cn

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 463912, the FCC Designation No.: CN5040.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0160.

## 1.7 Test Methodology

FCC CFR 47 Part 2

FCC CFR 47 Part 15

KDB 558074 D01 15.247 Meas Guidance v05r02

ANSI C63.10-2013

Unless otherwise stated there are no any additions to, deviations, or exclusions from the method

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## 2 Description of Measurement

## 2.1 Test Configuration

<u> </u>							
Operating channels:							
Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)		
1	2412	6	2437	11	2462		
2	2417	7	2442	12	2467		
3	2422	8	2447	13	2472		
4	2427	9	2452	/	/		
5	2432	10	2457	/	/		

According to ANSI C63.10-2013 chapter 5.6.1 Table 11 requirement, select lowest channel, middle channel, and highest channel in the frequency range in which device operates for testing. The detailed frequency points are as follows:

802.11b, 802.11g, 802.11n-HT20							
Lowest channel Middle channel Highest channel							
Channel No. Frequency (MHz)		Channel No. Frequency (MHz)		Channel No.	Frequency (MHz)		
1	2412	7	2442	13	2472		

Test Mode:						
Transmitting mode:	Keep the EUT in	Keep the EUT in continuous transmitting with modulation				
Exercise software <sup>#</sup> :	EspRFTestTool_	v3.6_Manual				
	Worst-case	Power Level Setting <sup>#</sup>				
Mode	Data rate	Low Channel	Middle Channel	High Channel		
802.11b	1Mbps	36	36	36		
802.11g	6Mbps	36	36	36		
802.11n-HT20	6.5Mbps	6.5Mbps 36 36 36				
The exercise software and the maximum power setting that provided by manufacturer.						

#### **Worst-Case Configuration:**

For radiated emissions, EUT was investigated in three orthogonal orientation, the worst-case orientation was recorded in report

For AC power line conducted emission and radiated emission 9kHz-1GHz and above 18GHz were performed with the EUT transmits at the channel with highest output power as worst-case scenario.

For radiated emissions below 30MHz, three antenna orientations (parallel, perpendicular, gound-parallel) were tested, only record the worse case test data in report.

EUT model LiteRadio 4 SE and LiteRadio 4 are electrical identical, except model LiteRadio 4 with two more fine-tune joystick, detail please refer EUT photo and DOS letter provided by applicant, model LiteRadio 4 SE was selected for full test, model LiteRadio 4 were check AC line conducted emission and radiated emission of below 1GHz

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2.2 Test Auxiliary Equipment

Manufacturer	Description	Model	Serial Number
Xiaomi	Adapter	MDY-08-ES	unknown

## 2.3 Interconnecting Cables

Manufacturer	Description	Length(m)	From	То
unknown	USB Cable	1.0/0.2	Adapter	EUT

## 2.4 Block Diagram of Connection between EUT and AE



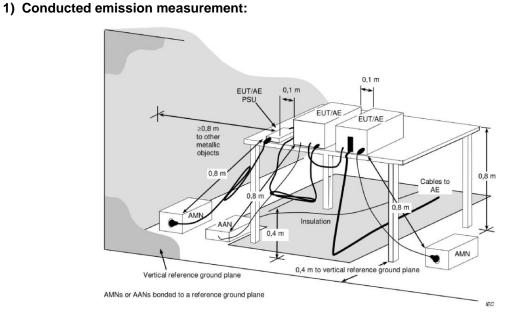
Note: for reference only, the actual connection setup used for testing please refer to the test photos.

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## 2.5 Test Setup

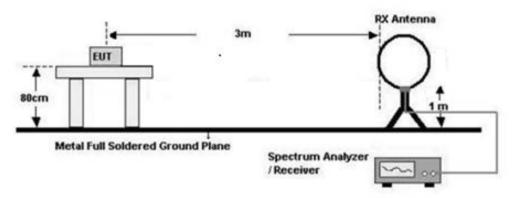
## 2.5 lest Setup



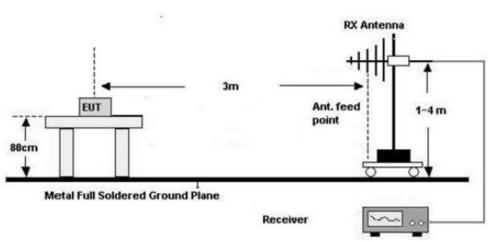
**Note:** The 0.8 m distance specified between EUT/AE/PSU and AMN/AAN, is applicable only to the EUT being measured. If the device is AE then it shall be >0.8 m.

### 2) Radiated emission measurement:

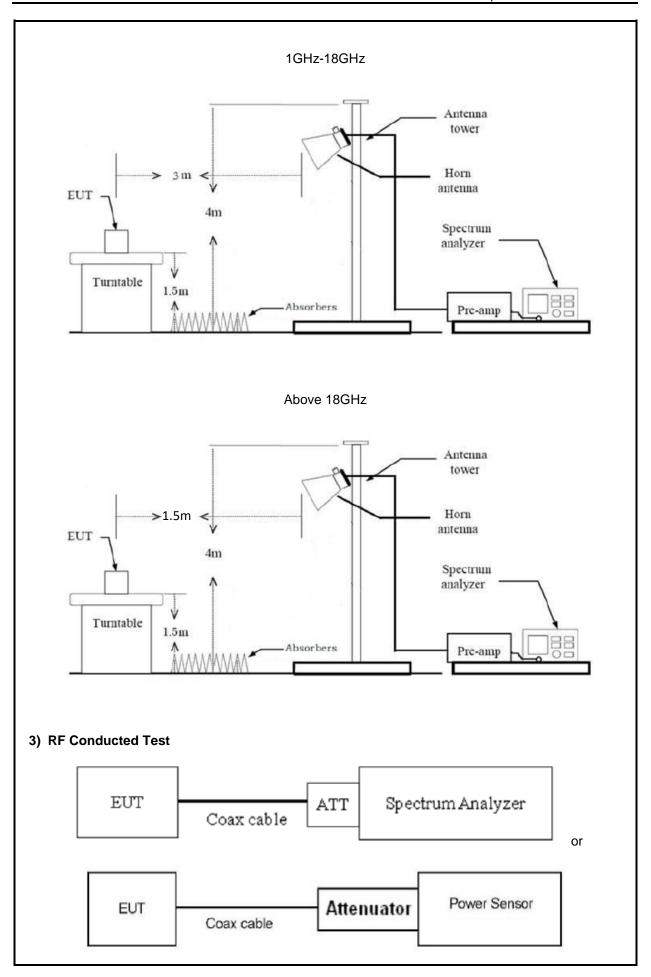
### Below 30MHz (3m SAC)



30MHz-1GHz (3m SAC)









### 2.6 Test Procedure

#### Conducted emission:

- 1. The E.U.T is placed on a non-conducting table 40cm from the vertical ground plane and 80cm above the horizontal ground plane (Please refer to the block diagram of the test setup and photographs).
- Both sides of A.C. line are checked for maximum conducted interference. In order to find the
  maximum emission, the relative positions of equipment and all of the interface cables must be
  changed according to ANSI C63.10 on conducted measurement.
- 3. Line conducted data is recorded for both Line and Neutral

#### **Radiated Emission Procedure:**

#### a) For below 30MHz

- 1. All measurements were made at a test distance of 3 m. The measured data was extrapolated from the test distance (3m) to the specification distance (300 m from 9-490 kHz and 30 m from 490 kHz- 30 MHz) to clearly show the relative levels of fundamental and spurious emissions and demonstrate compliance with the requirement that the level of any spurious emissions be below the level of the intentionally transmitted signal. The extrapolation factor for the limits were 40\*Log (test distance / specification distance).
- 2. Loop antenna use, investigation was done on the three antenna orientations (parallel, perpendicular, gound-parallel)
- 3. The RBW/VBW of receiver is set to 300Hz/1kHz for 9kHz to 150kHz range, to 10kHz/30kHz for 150kHz to 30MHz range for scan Peak emission, 200Hz/9kHz IF BW was used for final measurement in the Quasi-peak or average detection mode for frequency range 9~150kHz/150kHz~30MHz respectively.
- 4. If the Peak emission complies with the QP limit, then perform final measurement is optional.

#### b) For 30MHz-1GHz:

- 1. The EUT was placed on the tabletop of a rotating table 0.8 m the ground at a 3 m semi anechoic chamber. The measurement distance from the EUT to the receiving antenna is 3 m.
- 2. EUT works in each mode of operation that needs to be tested. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.
- 3. The RBW/VBW of receiver is set to 100kHz/300kHz for scan Peak emission, 120kHz IF BW was used for final measurement in the Quasi-peak detection mode.
- 4. If the Peak emission complies with the QP limit, then perform final measurement is optional.

#### c) For above 1GHz:

- The EUT was placed on the tabletop of a rotating table 1.5 m the ground at a 3 m chamber. The
  measurement distance from the EUT to the receiving antenna is 3 m (1-18GHz) and 1.5 m (above
  18GHz).
- 2. EUT works in each mode of operation that needs to be tested, and having the EUT continuously working. The highest signal levels relative to the limit shall be determined by rotating the EUT from 0° to 360° and with varying the measurement antenna height between 1 m and 4 m in vertical and horizontal polarizations.

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- 3. The RBW/VBW of spectrum analyzer is set to 1MHz/3MHz for scan Peak emission, for measured average emission, reduce the VBW to 10Hz(for duty cycle≥98%), or ≥1/T(for duty cycle<98%). T is minimum transmission duration. (Note: a high VBW (for example 1kHz, not less than 1/T) may used to scan average emissions to avoid long sweep time.)
- 4. If the Peak emission complies with the Average limit, then perform average measurement is optional.
- 5. Open the test software to control the test antenna and test turntable. Perform the test, save the test results, and export the test data.
- 6. Base on FCC 15.31 (f): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

#### **RF Conducted Test:**

- 1. The antenna port of EUT was connected to the RF port of the test equipment (Power Meter or Spectrum analyzer) through Attenuator and RF cable.
- 2. The cable assembly insertion loss of 8.0dB (including 6.0 dB Attenuator and 2.0 dB cable) was entered as an offset in the power meter. Note: Actual cable loss was unavailable at the time of testing, therefore a loss of 2.0dB was assumed as worst case. This was later verified to be true by laboratory. ( if the RF cable provided by client, the cable loss declared by client)
- 3. The EUT is keeping in continuous transmission mode and tested in all modulation modes.

### 2.7 Measurement Method

Description of Test	Measurement Method	
AC Line Conducted Emissions	ANSI C63.10-2013 Section 6.2	
Maximum Conducted Output Power	ANSI C63.10-2013 Section 11.9.1.2 PKPM1 Peak power meter method or	
	ANSI C63.10-2013 Section 11.9.2.3.2 Method AVGPM-G	
Power Spectral Density	ANSI C63.10-2013 Section 11.10.2 Method PKPSD (peak PSD)	
6 dB Emission Bandwidth	ANSI C63.10-2013 Section 11.8.1	
99% Occupied Bandwidth	ANSI C63.10-2013 Section 6.9.3	
100kHz Bandwidth of Frequency Band Edge	ANSI C63.10-2013 Section 6.10	
Radiated emission	ANSI C63.10-2013 Section 11.11&11.12	
Duty Cycle	ANSI C63.10-2013 Section 11.6	

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## 2.8 Measurement Equipment

Manufacturan	Description	Model	Management	Calibration	Calibration		
Manufacturer	Decomparen	Model	No.	Date	Due Date		
AC Line Conducted Emission Test							
ROHDE&	EMI TEST	ESR	101817	2024/6/4	2025/6/3		
SCHWARZ	RECEIVER						
R&S	LISN	ENV216	101748	2024/6/4	2025/6/3		
N/A	Coaxial Cable	NO.12	N/A	2024/6/4	2025/6/3		
Farad	Test Software	EZ-EMC	Ver. EMEC-3A1	/	/		
		Radiated Emission	n Test				
R&S	EMI test receiver	ESR3	102758	2024/6/4	2025/6/3		
ROHDE&	SPECTRUM	FSV40-N	101608	2024/6/4	2025/6/3		
SCHWARZ	ANALYZER	F3V40-IN	101000	2024/0/4	2023/0/3		
SONOMA INSTRUMENT	Low frequency amplifier	310	186014	2024/6/4	2025/6/3		
A.H. Systems	PREAMPLIFIER	PAM-0118P	531	2024/6/4	2025/6/3		
COM-POWER	Amplifier	PAM-840A	461306	2024/8/7	2025/8/6		
BACL	Loop Antenna	1313-1A	4010611	2024/2/7	2027/2/6		
SCHWARZBECK	Log - periodic wideband antenna	VULB 9163	9163-872	2023/7/7	2026/7/6		
Astro Antenna Ltd	Horn antenna	AHA-118S	3015	2023/7/6	2026/7/5		
Ducommun technologies	Horn Antenna	ARH-4223-02	1007726-03	2023/7/10	2026/7/9		
Oulitong	Band Reject Filter	OBSF-2400-248 3.5-50N	OE02103119	2024/6/4	2025/6/3		
Unknown	6.7G High Pass Filter	Unknown	6.7G	2024/6/4	2025/6/3		
N/A	Coaxial Cable	NO.9	N/A	2024/6/4	2025/6/3		
N/A	Coaxial Cable	NO.13	N/A	2024/8/7	2025/8/6		
N/A	Coaxial Cable	NO.15	N/A	2024/6/4	2025/6/3		
N/A	Coaxial Cable	NO.16	N/A	2024/6/4	2025/6/3		
N/A	Coaxial Cable	NO.17	N/A	2024/6/4	2025/6/3		
Audix	Test Software	E3	191218 V9	/	/		
		RF Conducted	Test				
ROHDE&	SPECTRUM	FSV40	101419	2024/6/4	2025/6/3		
SCHWARZ ANRITSU	ANALYZER USB Power Sensor	MA24410A	12620	2024/6/4	2025/6/2		
		MA24418A			2025/6/3		
narda	6dB attenuator	603-06-1	N/A	2024/6/4	2025/6/3		

Note: All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or International standards.



## 3 Test Results

## 3.1 Test Summary

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance
§15.247(b)(3)	Maximum Conducted Output Power	Compliance
§15.247(e)	Power Spectral Density	Compliance
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliance
-	99% Occupied Bandwidth	Report only
§15.247(d)	100kHz Bandwidth of Frequency Band Edge	Compliance
§15.205, §15.209, §15.247(d)	Radiated emission	Compliance
-	Duty Cycle	Report only





## 3.2 Limit

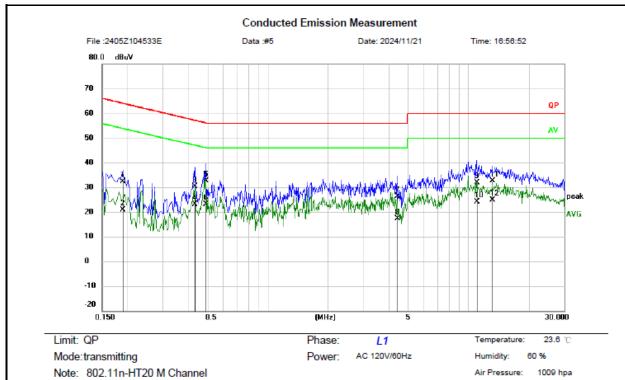
Test items	Limit
AC Line Conducted Emissions	See details §15.207 (a)
Conducted Output Power	For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.
6dB Emission Bandwidth	The minimum 6 dB bandwidth shall be at least 500 kHz.
Power Spectral Density	For 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.
Spurious Emissions, 100kHz Bandwidth of Frequency Band Edge	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 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).



## 3.3 AC Line Conducted Emissions Test Data

Test Date:	2024-11-21~2025-04-09	Test By:	Lirou Li; Ryan Zhang	
Environment condition:	Temperature: 23.6~24.8°C; Re 100.9~101.0kPa	lative Humidity:60~79%;	ATM Pressure:	

Model: LiteRadio 4 SE



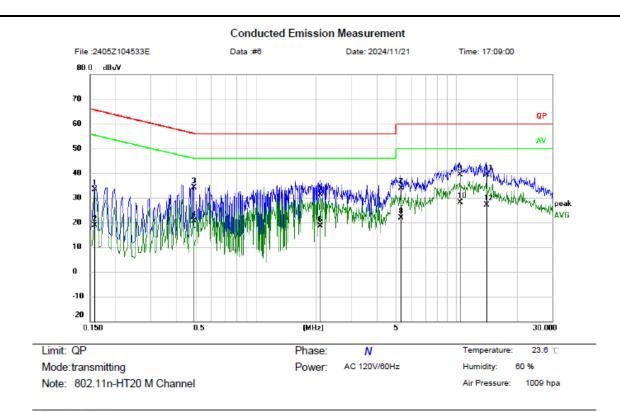
Receiver Setting:

9~150kHz(if apply): Pre-scan: RBW: 200Hz, DET: PK/AV; Final measure: RBW: 200Hz, DET: QP/AV 0.15~30MHz: Pre-scan: RBW: 9kHz, DET: PK/AV; Final measure: RBW: 9kHz, DET: QP/AV

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1900	22.07	10.33	32.40	64.04	-31.64	QP	
2		0.1900	10.44	10.33	20.77	54.04	-33.27	AVG	
3		0.4340	19.82	10.50	30.32	57.18	-26.86	QP	
4		0.4340	12.72	10.50	23.22	47.18	-23.96	AVG	
5		0.4940	22.13	10.51	32.64	56.10	-23.46	QP	
6	*	0.4940	12.65	10.51	23.16	46.10	-22.94	AVG	
7		4.4260	15.72	10.58	26.30	56.00	-29.70	QP	
8		4.4260	6.77	10.58	17.35	46.00	-28.65	AVG	
9		10.9900	21.50	10.38	31.88	60.00	-28.12	QP	
10		10.9900	13.79	10.38	24.17	50.00	-25.83	AVG	
11		13.1500	22.30	10.34	32.64	60.00	-27.36	QP	
12		13.1500	14.60	10.34	24.94	50.00	-25.06	AVG	

\*:Maximum data x:Over limit !:over margin Engineer Signature: Lirou





#### Receiver Setting:

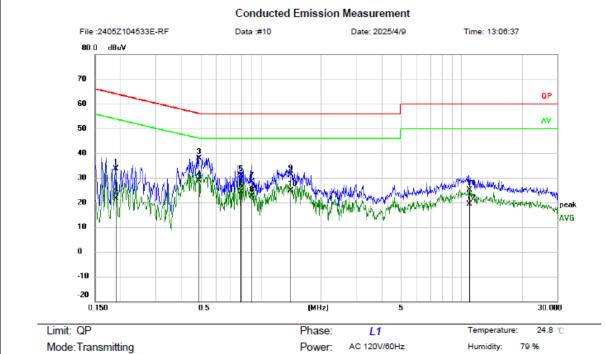
9~150kHz(if apply): Pre-scan: RBW: 200Hz, DET: PK/AV; Final measure: RBW: 200Hz, DET: QP/AV 0.15~30MHz: Pre-scan: RBW: 9kHz, DET: PK/AV; Final measure: RBW: 9kHz, DET: QP/AV

No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over Limit		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1580	23.08	10.23	33.31	65.57	-32.26	QP	
2	0.1580	8.61	10.23	18.84	55.57	-36.73	AVG	
3	0.4900	23.74	10.50	34.24	56.17	-21.93	QP	
4	0.4900	10.08	10.50	20.58	46.17	-25.59	AVG	
5	2.0980	20.71	10.68	31.39	56.00	-24.61	QP	
6	2.0980	7.83	10.68	18.51	46.00	-27.49	AVG	
7	5.2700	23.49	10.44	33.93	60.00	-26.07	QP	
8	5.2700	11.35	10.44	21.79	50.00	-28.21	AVG	
9 *	10.3940	29.07	10.41	39.48	60.00	-20.52	QP	
10	10.3940	17.83	10.41	28.24	50.00	-21.76	AVG	
11	14.0860	29.09	10.39	39.48	60.00	-20.52	QP	
12	14.0860	16.77	10.39	27.16	50.00	-22.84	AVG	

<sup>\*:</sup>Maximum data x:Over limit !:over margin Engineer Signature: Lirou



### Model: LiteRadio 4



Note: 802.11n20 2442

Air Pressure: 1010 hpa

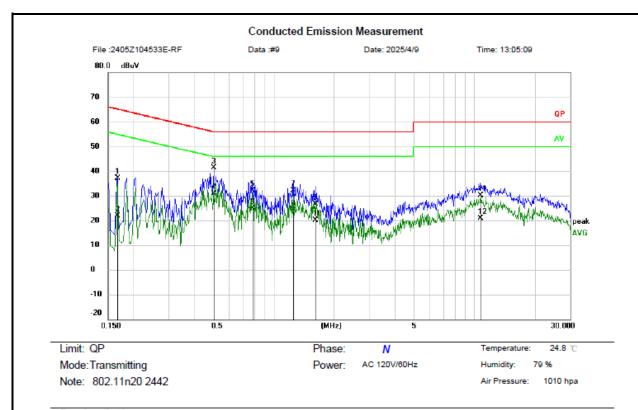
Receiver Setting:

9~150kHz(if apply): Pre-scan: RBW: 200Hz, DET: PK/AV; Final measure: RBW: 200Hz, DET: QP/AV 0.15~30MHz: Pre-scan: RBW: 9kHz, DET: PK/AV; Final measure: RBW: 9kHz, DET: QP/AV

No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over Limit		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1900	23.08	10.64	33.72	64.04	-30.32	QP	
2	0.1900	10.91	10.64	21.55	54.04	-32.49	AVG	
3	0.4940	27.13	10.69	37.82	56.10	-18.28	QP	
4 *	0.4940	18.26	10.69	28.95	46.10	-17.15	AVG	
5	0.7940	20.02	10.81	30.83	56.00	-25.17	QP	
6	0.7940	13.61	10.81	24.42	46.00	-21.58	AVG	
7	0.9020	17.22	11.04	28.26	56.00	-27.74	QP	
8	0.9020	11.56	11.04	22.60	46.00	-23.40	AVG	
9	1.4060	20.27	10.82	31.09	56.00	-24.91	QP	
10	1.4060	13.94	10.82	24.76	46.00	-21.24	AVG	
11	10.9260	14.60	10.57	25.17	60.00	-34.83	QP	
12	10.9260	8.79	10.57	19.36	50.00	-30.64	AVG	

\*:Maximum data x:Over limit !:over margin Engineer Signature: Ryan





#### Receiver Setting:

9~150kHz(if apply): Pre-scan: RBW: 200Hz, DET: PK/AV; Final measure: RBW: 200Hz, DET: QP/AV 0.15~30MHz: Pre-scan: RBW: 9kHz, DET: PK/AV; Final measure: RBW: 9kHz, DET: QP/AV

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over Limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1660	26.69	10.45	37.14	65.16	-28.02	QP	
2		0.1660	11.42	10.45	21.87	55.16	-33.29	AVG	
3	*	0.5020	30.62	10.79	41.41	56.00	-14.59	QP	
4		0.5020	20.02	10.79	30.81	46.00	-15.19	AVG	
5		0.7820	21.63	10.58	32.21	56.00	-23.79	QP	
6		0.7820	14.22	10.58	24.80	46.00	-21.20	AVG	
7		1.2500	21.96	10.28	32.24	56.00	-23.76	QP	
8		1.2500	14.04	10.28	24.32	46.00	-21.68	AVG	
9		1.6180	16.41	10.33	26.74	56.00	-29.26	QP	
10		1.6180	9.89	10.33	20.22	46.00	-25.78	AVG	
11		10.6940	19.53	10.66	30.19	60.00	-29.81	QP	
12		10.6940	10.12	10.66	20.78	50.00	-29.22	AVG	

\*:Maximum data x:Over limit !:over margin Engineer Signature: Ryan

#### Remark:

Measurement (dBuV)= Reading Level (dBuV) + Correct Factor(dB)

Correct Factor (dB)= LISN Voltage Division Factor (dB)+ Cable loss(dB)

Over Limit = Measurement - Limit

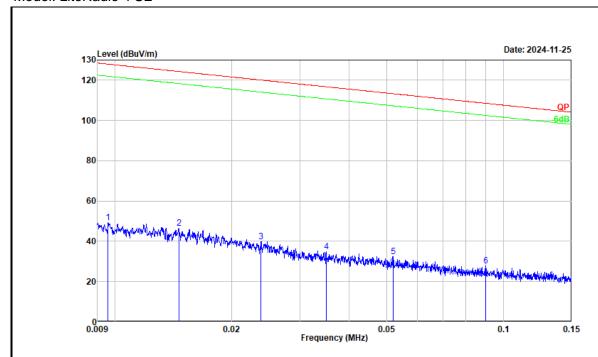


### 3.4 Radiated emission Test Data

#### 9 kHz-30MHz:

Test Date:	2024-11-25~2025-04-08	Test By:	Bard Huang; Luke Li
Environment condition:	Temperature: 23.4~24.0°C; Re	lative Humidity:57~60%;	ATM Pressure: 101.1kPa

Model: LiteRadio 4 SE



Project No. : 2405Z104533E-RF
Test Mode : Transmitting
Test Voltage : Power by battery
Environment : 23.4℃/60%R.H./101.1kPa

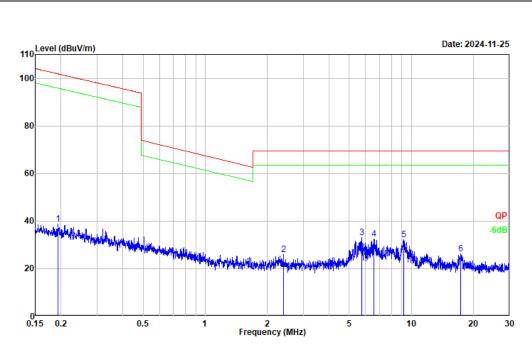
Tested by : Bard Huang Polarization : PARALLEL Remark : 802.11n20 2442

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	0.010	11.71	37.54	49.25	127.96	-78.71	Peak
2	0.015	12.32	34.28	46.60	124.30	-77.70	Peak
3	0.024	11.49	28.50	39.99	120.10	-80.11	Peak
4	0.035	11.51	23.50	35.01	116.74	-81.73	Peak
5	0.052	12.31	20.14	32.45	113.29	-80.84	Peak
6	0.090	12.15	15.62	27.77	108.51	-80.74	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain Result = Reading + Factor

Over Limit = Result - Limit
SA setting: RBW/VBW: 200Hz/1kHz, DET: PK





Project No. : 2405Z104533E-RF Test Mode : Transmitting Test Voltage : Power by battery Environment : 23.4°C/60%R.H./101.1kPa Tested by : Bard Huang

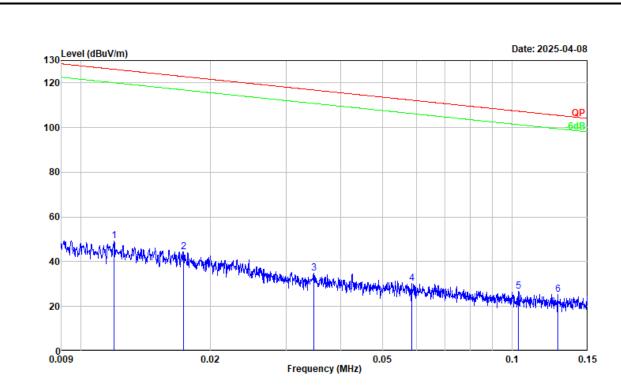
Polarization : PARALLEL Remark : 802.11n20 2442

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector	
1	0.194	26.32	12.33	38.65	101.86	-63.21	Peak	
2	2.403	28.65	-2.79	25.86	69.54	-43.68	Peak	
3	5.741	37.02	-4.05	32.97	69.54	-36.57	Peak	
4	6.600	36.64	-4.03	32.61	69.54	-36.93	Peak	
5	9.168	35.92	-3.64	32.28	69.54	-37.26	Peak	
6	17.410	29.56	-3.25	26.31	69.54	-43.23	Peak	

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
 Result = Reading + Factor
 Over Limit = Result - Limit
SA setting: RBW/VBW: 9kHz/30kHz, DET: PK



#### Model: LiteRadio 4



Project No. : 2405Z104533E-RF Test Mode : Transmitting Test Voltage : AC 120V/60Hz

Environment : 24.0℃/57%R.H./101.1kPa

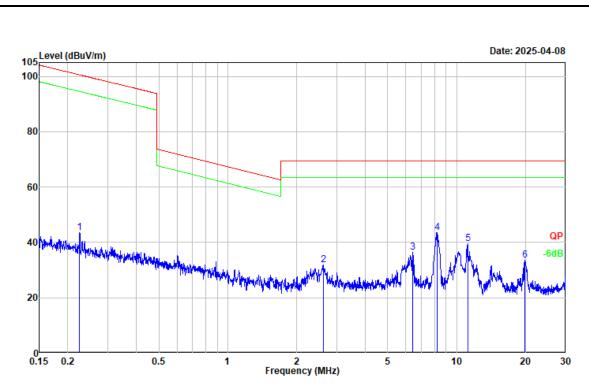
Tested by : Luke Li Polarization : PARALLEL Remark : 802.11n20 2442

-No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector	
1	0.012	13.11	36.06	49.17	126.06	-76.89	Peak	
2	0.017	11.76	32.66	44.42	122.85	-78.43	Peak	
3	0.035	11.34	23.64	34.98	116.80	-81.82	Peak	
4	0.059	11.03	19.33	30.36	112.25	-81.89	Peak	
5	0.104	11.87	15.01	26.88	107.30	-80.42	Peak	
6	0.128	10.99	14.32	25.31	105.49	-80.18	Peak	

Remarks: Factor = Antenna factor + Cable loss - Preamp gain Result = Reading + Factor

Result = Reading + Factor Over Limit = Result - Limit SA setting: RBW/VBW: 200Hz/1kHz, DET: PK





Project No. : 2405Z104533E-RF Test Mode : Transmitting Test Voltage : AC 120V/60Hz

Environment : 24.0℃/57%R.H./101.1kPa

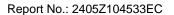
Tested by : Luke Li Polarization : PARALLEL Remark : 802.11n20 2442

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector	
1	0.226	31.89	11.53	43.42	100.54	-57.12	Peak	
2	2.615	34.71	-2.86	31.85	69.54	-37.69	Peak	
3	6.420	40.48	-4.02	36.46	69.54	-33.08	Peak	
4	8.192	47.33	-3.80	43.53	69.54	-26.01	Peak	
5	11.198	42.91	-3.33	39.58	69.54	-29.96	Peak	
6	19.897	36.60	-3.08	33.52	69.54	-36.02	Peak	

Remarks: Factor = Antenna factor + Cable loss - Preamp gain Result = Reading + Factor

Over Limit = Result - Limit

SA setting: RBW/VBW: 9kHz/30kHz, DET: PK

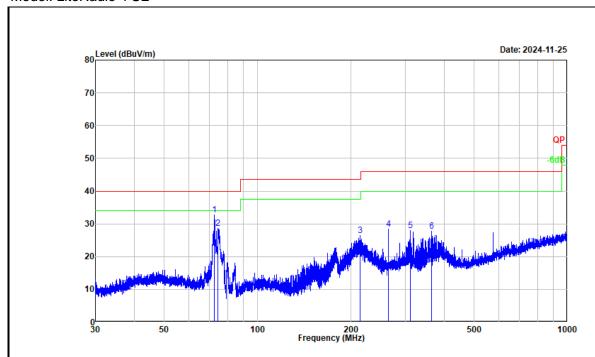




#### 30MHz-1GHz:

Test Date:	2024-11-25~2025-04-08	Test By:	Bard Huang; Luke Li			
Environment condition:	Temperature: 23.4~24.0°C; Relative Humidity:57~60%; ATM Pressure: 1					

#### Model: LiteRadio 4 SE

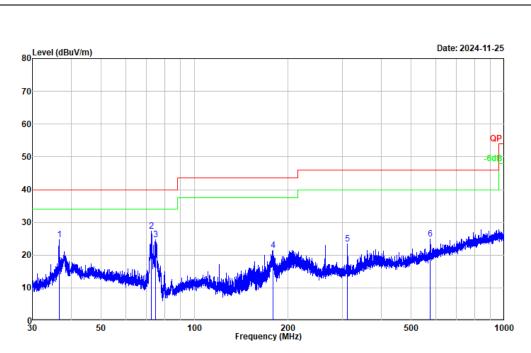


Project No. : 2405Z104533E-RF Test Mode : Transmitting Test Voltage : Power by battery Environment : 23.4°C/60%R.H./101.1kPa

Tested by : Bard Huang Polarization : horizontal : 802.11n20 2442 Remark

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	72.719	50.11	-17.35	32.76	40.00	-7.24	Peak
2	74.657	46.39	-17.85	28.54	40.00	-11.46	Peak
3	213.951	40.41	-13.86	26.55	43.50	-16.95	Peak
4	264.050	40.49	-12.18	28.31	46.00	-17.69	Peak
5	310.678	39.08	-11.16	27.92	46.00	-18.08	Peak
6	364.100	37.36	-9.56	27.80	46.00	-18.20	Peak





Project No. : 2405Z104533E-RF Test Mode : Transmitting Test Voltage : Power by battery
Environment : 23.4℃/60%R.H./101.1kPa

Tested by : Bard Huang Polarization : vertical : 802.11n20 2442

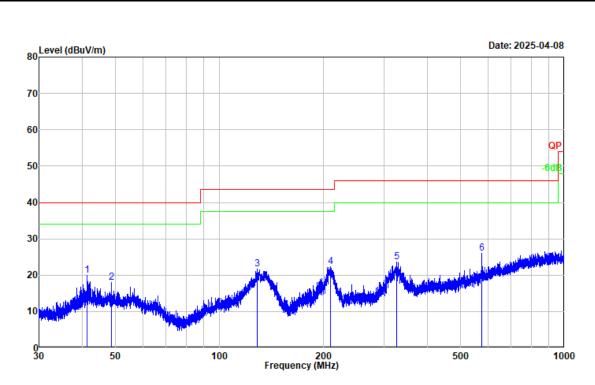
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	36.573	38.85	-14.20	24.65	40.00	-15.35	Peak
2	72.592	44.68	-17.31	27.37	40.00	-12.63	Peak
3	74.722	42.62	-17.86	24.76	40.00	-15.24	Peak
4	179.386	37.21	-15.71	21.50	43.50	-22.00	Peak
5	312.043	34.46	-11.13	23.33	46.00	-22.67	Peak
6	576.139	31.04	-6.02	25.02	46.00	-20.98	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain Result = Reading + Factor Over Limit = Result - Limit

SA setting: Pre-scan: RBW/VBW: 100kHz/300kHz, DET: PK Final measure: RBW: 120kHz, DET: QP



#### Model: LiteRadio 4



Project No. : 2405Z104533E-RF : Transmitting Test Mode Test Voltage : AC 120V/60Hz

Environment : 24.0℃/57%R.H./101.1kPa

Tested by : Luke Li Polarization : horizontal : 802.11n20 2442 Remark

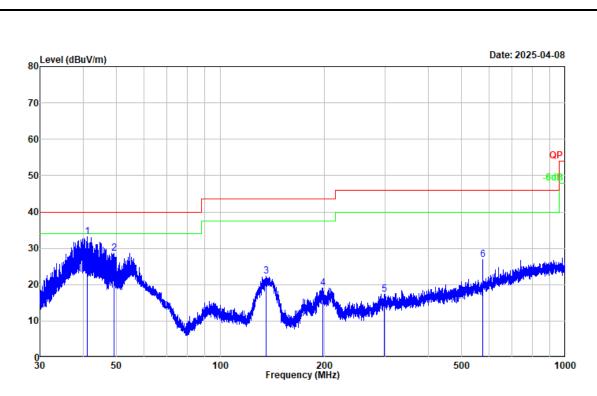
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector	
1	41.440	32.58	-12.57	20.01	40.00	-19.99	Peak	
2	48.757	30.10	-12.08	18.02	40.00	-21.98	Peak	
3	128.563	38.67	-17.04	21.63	43.50	-21.87	Peak	
4	210.048	36.18	-13.82	22.36	43.50	-21.14	Peak	
5	325.881	34.29	-10.56	23.73	46.00	-22.27	Peak	
6	576.139	31.96	-5.84	26.12	46.00	-19.88	Peak	

Remarks: Factor = Antenna factor + Cable loss - Preamp gain Result = Reading + Factor

Over Limit = Result - Limit
SA setting: Pre-scan: RBW/VBW: 100kHz/300kHz, DET: PK

Final measure: RBW: 120kHz, DET: QP





Project No. : 2405Z104533E-RF Test Mode : Transmitting Test Voltage : AC 120V/60Hz

Environment :  $24.0\,^{\circ}$ /57%R.H./101.1kPa Tested by : Luke Li

Polarization : vertical Remark : 802.11n20 2442

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector	
1	41.114	45.82	-12.67	33.15	40.00	-6.85	Peak	
2	49.122	40.78	-12.07	28.71	40.00	-11.29	Peak	
3	135.685	39.70	-17.40	22.30	43.50	-21.20	Peak	
4	197.719	32.96	-13.83	19.13	43.50	-24.37	Peak	
5	298.399	28.75	-11.31	17.44	46.00	-28.56	Peak	
6	576.139	32.71	-5.84	26.87	46.00	-19.13	Peak	

Remarks: Factor = Antenna factor + Cable loss - Preamp gain Result = Reading + Factor

Over Limit = Result - Limit

SA setting: Pre-scan: RBW/VBW: 100kHz/300kHz, DET: PK Final measure: RBW: 120kHz, DET: QP





### Above 1GHz:

Test Date:	2024-12-18~2025-03-17	Test By:	Luke Li
Environment condition:	Temperature: 20.0~23.8°C; Re 101.3~101.6kPa	lative Humidity:31~66%;	ATM Pressure:

Frequency (MHz)	Reading level (dBµV)	Polar	Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark			
			802.1	1b						
			Low Cha	annel						
3216.000	54.63	horizontal	-3.11	51.52	54.00	-2.48	Average			
3216.000	57.39	horizontal	-3.11	54.28	74.00	-19.72	Peak			
4824.000	55.57	horizontal	-2.75	52.82	74.00	-21.18	Peak			
3216.000	55.04	vertical	-3.11	51.93	74.00	-22.07	Peak			
4824.000	55.88	vertical	-2.75	53.13	74.00	-20.87	Peak			
Middle Channel										
3256.000	54.76	horizontal	-3.00	51.76	54.00	-2.24	Average			
3256.000	57.80	horizontal	-3.00	54.80	74.00	-19.20	Peak			
4884.000	52.67	horizontal	-2.30	50.37	54.00	-3.63	Average			
4884.000	58.00	horizontal	-2.30	55.70	74.00	-18.30	Peak			
3256.000	54.72	vertical	-3.00	51.72	74.00	-22.28	Peak			
4884.000	56.11	vertical	-2.30	53.81	74.00	-20.19	Peak			
High Channel										
2471.986	90.33	horizontal	-3.01	87.32	/	/	Peak			
2472.086	82.55	vertical	-3.01	79.54	/	/	Peak			
3296.000	59.80	horizontal	-2.97	56.83	67.32	-10.49	Peak			
4944.000	54.41	horizontal	-2.18	52.23	54.00	-1.77	Average			
4944.000	60.03	horizontal	-2.18	57.85	74.00	-16.15	Peak			
3296.000	55.62	vertical	-2.97	52.65	74.00	-21.35	Peak			
4944.000	50.62	vertical	-2.18	48.44	54.00	-5.56	Average			
4944.000	56.96	vertical	-2.18	54.78	74.00	-19.22	Peak			
			802.1	1g						
			Low Cha	annel						
3216.000	56.21	horizontal	-3.11	53.10	54.00	-0.90	Average			
3216.000	57.95	horizontal	-3.11	54.84	74.00	-19.16	Peak			
4824.000	48.08	horizontal	-2.75	45.33	54.00	-8.67	Average			
4824.000	59.77	horizontal	-2.75	57.02	74.00	-16.98	Peak			
3216.000	55.97	vertical	-3.11	52.86	74.00	-21.14	Peak			
4824.000	46.74	vertical	-2.75	43.99	54.00	-10.01	Average			

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4824.000	57.88	vertical	-2.75	55.13	74.00	-18.87	Peak
102 11000	07.100		Middle C				. con
3256.000	55.71	horizontal	-3.00	52.71	54.00	-1.29	Average
3256.000	57.42	horizontal	-3.00	54.42	74.00	-19.58	Peak
4884.000	50.15	horizontal	-2.30	47.85	54.00	-6.15	Average
4884.000	61.57	horizontal	-2.30	59.27	74.00	-14.73	Peak
3256.000	55.22	vertical	-3.00	52.22	74.00	-21.78	Peak
4884.000	46.77	vertical	-2.30	44.47	54.00	-9.53	Average
4884.000	59.33	vertical	-2.30	57.03	74.00	-16.97	Peak
			High Ch	annel			
2465.763	91.36	horizontal	-3.03	88.33	/	/	Peak
2476.428	83.76	vertical	-3.01	80.75	/	/	Peak
3296.000	59.84	horizontal	-2.97	56.87	68.33	-11.46	Peak
4944.000	51.59	horizontal	-2.18	49.41	54.00	-4.59	Average
4944.000	63.26	horizontal	-2.18	61.08	74.00	-12.92	Peak
3296.000	55.47	vertical	-2.97	52.50	74.00	-21.50	Peak
4944.000	46.89	vertical	-2.18	44.71	54.00	-9.29	Average
4944.000	60.05	vertical	-2.18	57.87	74.00	-16.13	Peak
			802.11	n20			
			Low Ch	annel	<del>,</del>	<del>,</del>	
3216.000	56.23	horizontal	-3.11	53.12	54.00	-0.88	Average
3216.000	57.97	horizontal	-3.11	54.86	74.00	-19.14	Peak
4824.000	48.24	horizontal	-2.75	45.49	54.00	-8.51	Average
4824.000	60.65	horizontal	-2.75	57.90	74.00	-16.10	Peak
3216.000	56.13	vertical	-3.11	53.02	74.00	-20.98	Peak
4824.000	45.81	vertical	-2.75	43.06	54.00	-10.94	Average
4824.000	59.77	vertical	-2.75	57.02	74.00	-16.98	Peak
		_	Middle C	hannel			T
3256.000	56.61	horizontal	-3.00	53.61	54.00	-0.39	Average
3256.000	58.16	horizontal	-3.00	55.16	74.00	-18.84	Peak
4884.000	50.01	horizontal	-2.30	47.71	54.00	-6.29	Average
4884.000	62.42	horizontal	-2.30	60.12	74.00	-13.88	Peak
3256.000	55.21	vertical	-3.00	52.21	74.00	-21.79	Peak
4884.000	47.41	vertical	-2.30	45.11	54.00	-8.89	Average
4884.000	57.93	vertical	-2.30	55.63	74.00	-18.37	Peak
			High Ch	annel	<u> </u>	I	T
2475.788	91.54	horizontal	-3.01	88.53	/	/	Peak
2475.428	84.01	vertical	-3.01	81.00	/	/	Peak



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3296.000	60.08	horizontal	-2.97	57.11	68.53	-11.42	Peak
4944.000	51.50	horizontal	-2.18	49.32	54.00	-4.68	Average
4944.000	64.48	horizontal	-2.18	62.30	74.00	-11.70	Peak
3296.000	54.94	vertical	-2.97	51.97	74.00	-22.03	Peak
4944.000	46.86	vertical	-2.18	44.68	54.00	-9.32	Average
4944.000	59.65	vertical	-2.18	57.47	74.00	-16.53	Peak

#### Remark:

Corrected Amplitude= Reading level + corrected Factor

Corrected Factor = Antenna factor + Cable loss - Amplifier gain

Margin = Corrected Amplitude - Limit

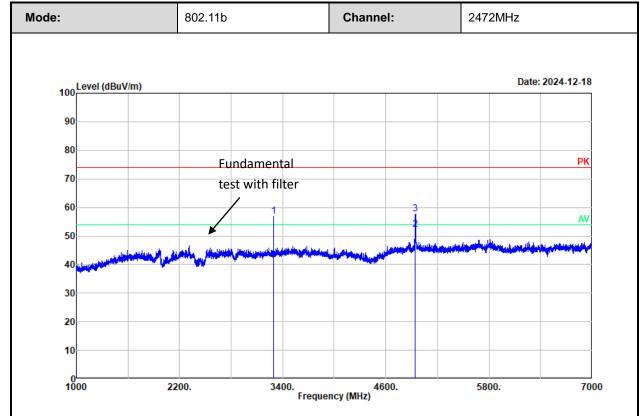
For the test result of Peak below the Peak limit more than 20dB, which can compliance with the average limit, just the Peak level was recorded.

The emission levels of other frequencies that were lower than the limit 20dB not show in test report.

For emissions in 18GHz-25GHz range, all emissions were investigated and in the noise floor level.



#### Test plot for worst case as below:



Project No. : 2405Z104533E
Test Mode : Transmitting
Test Voltage : Power by battery

Environment : 23.8℃/31%R.H./101.3kPa

Tested by : Luke Li Polarization : horizontal Remark : 802.11b 2472

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1 2	3296.000 4944.000	59.80 54.41	-2.97 -2.18	56.83 52.23	67.32 54.00	-10.49 -1.77	Peak Average
3	4944.000	60.03	-2.18	57.85	74.00	-16.15	Peak

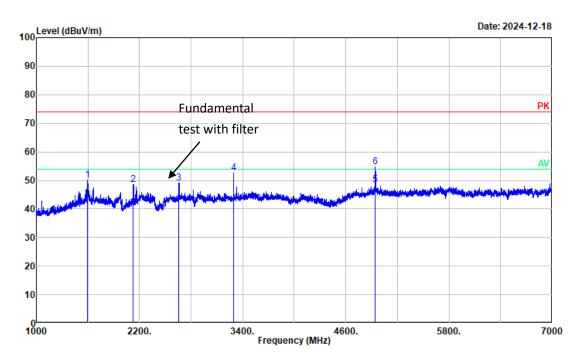
Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor Over Limit = Result - Limit

SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK
Average: RBW/VBW: 1MHz/1kHz, DET: PK







Environment : 23.8  $^{\circ}\mathrm{C}/31\%R.H./101.3kPa$ 

Tested by : Luke Li Polarization : vertical Remark : 802.11b 2472

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	1591.000	54.67	-4.53	50.14	74.00	-23.86	Peak
2	2126.000	52.88	-4.25	48.63	74.00	-25.37	Peak
3	2659.000	51.85	-2.70	49.15	74.00	-24.85	Peak
4	3296.000	55.62	-2.97	52.65	74.00	-21.35	Peak
5	4944.000	50.62	-2.18	48.44	54.00	-5.56	Average
6	4944.000	56.96	-2.18	54.78	74.00	-19.22	Peak

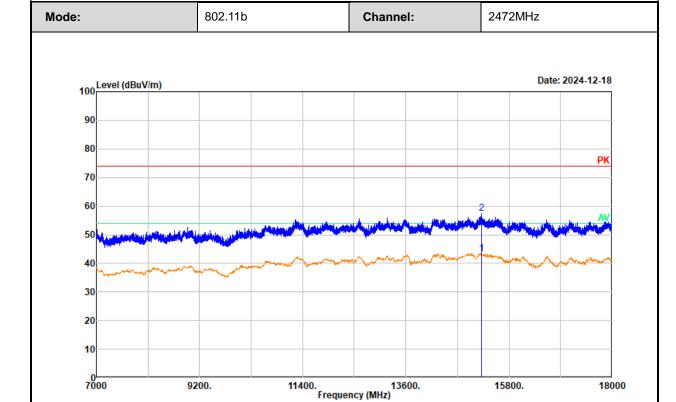
Remarks: Factor = Antenna factor + Cable loss - Preamp gain Result = Reading + Factor

Over Limit = Result - Limit

SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK Average: RBW/VBW: 1MHz/1kHz, DET: PK

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Environment :  $23.8\,^{\circ}\text{C}/31\%\text{R.H.}/101.3\text{kPa}$ 

Tested by : Luke Li Polarization : horizontal Remark : 802.11b 2472

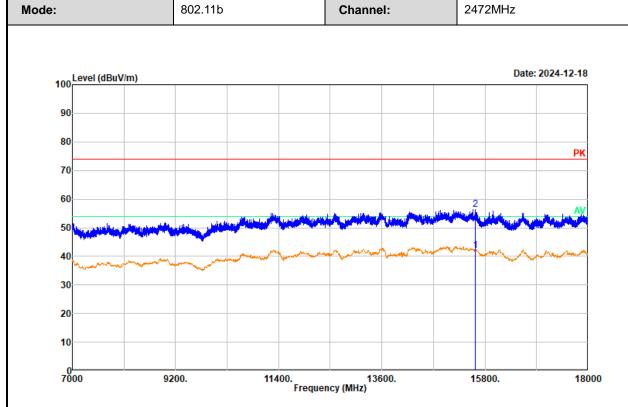
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	15215.000	38.05	5.26	43.31	54.00	-10.69	Average
2	15215.000	52.09	5.26	57.35	74.00	-16.65	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor Over Limit = Result - Limit

SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK
Average: RBW/VBW: 1MHz/1kHz, DET: PK





Environment : 23.8℃/31%R.H./101.3kPa

Tested by : Luke Li Polarization : vertical Remark : 802.11b 2472

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	15589.000	36.86	5.04	41.90	54.00	-12.10	Average
2	15589.000	51.30	5.04	56.34	74.00	-17.66	Peak

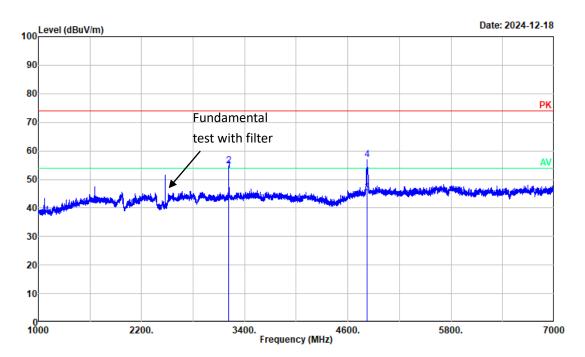
Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor Over Limit = Result - Limit

SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK
Average: RBW/VBW: 1MHz/1kHz, DET: PK







Environment : 23.8℃/31%R.H./101.3kPa

Tested by : Luke Li Polarization : horizontal Remark : 802.11g 2412

No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	3216.000	56.21	-3.11	53.10	54.00	-0.90	Average
2	3216.000	57.95	-3.11	54.84	74.00	-19.16	Peak
3	4824.000	48.08	-2.75	45.33	54.00	-8.67	Average
4	4824.000	59.77	-2.75	57.02	74.00	-16.98	Peak

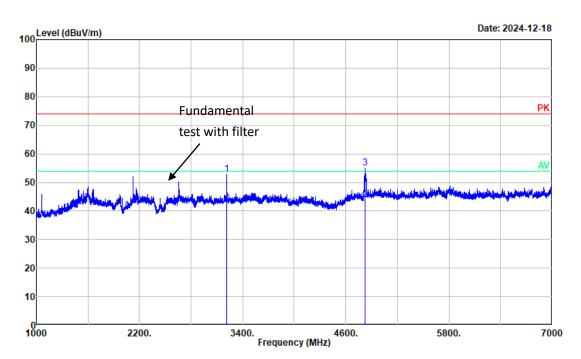
Remarks: Factor = Antenna factor + Cable loss - Preamp gain Result = Reading + Factor Over Limit = Result - Limit

SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK Average: RBW/VBW: 1MHz/1kHz, DET: PK

Report Template: TR-4-E-009/V1.2







Environment : 23.8  $^{\circ}\mathrm{C}/31\%R.H./101.3kPa$ 

Tested by : Luke Li Polarization : vertical Remark : 802.11g 2412

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	3216.000	55.97	-3.11	52.86	74.00	-21.14	Peak
2	4824.000	46.74	-2.75	43.99	54.00	-10.01	Average
3	4824.000	57.88	-2.75	55.13	74.00	-18.87	Peak

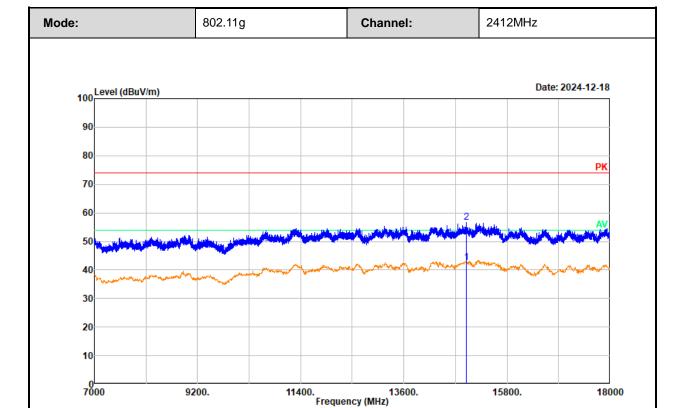
Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor Over Limit = Result - Limit

SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK Average: RBW/VBW: 1MHz/1kHz, DET: PK

Report Template: TR-4-E-009/V1.2





Environment : 23.8  $^{\circ}\mathrm{C}/31\%R.H./101.3kPa$ 

Tested by : Luke Li Polarization : horizontal Remark : 802.11g 2412

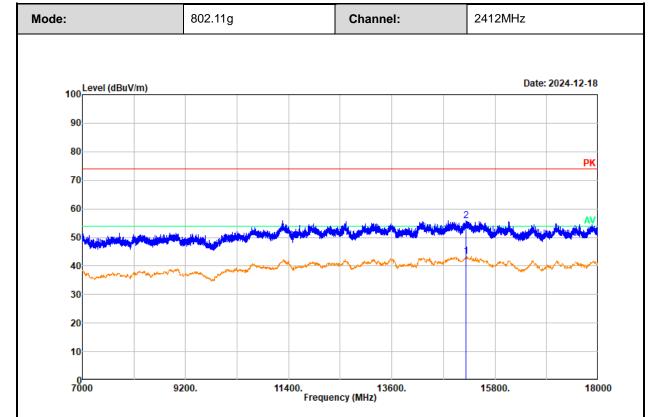
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	14934.000	37.03	5.57	42.60	54.00	-11.40	Average
2	14934.000	51.18	5.57	56.75	74.00	-17.25	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor Over Limit = Result - Limit

SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK
Average: RBW/VBW: 1MHz/1kHz, DET: PK





Environment : 23.8  $^{\circ}\mathrm{C}/31\%R.H./101.3kPa$ 

Tested by : Luke Li Polarization : vertical Remark : 802.11g 2412

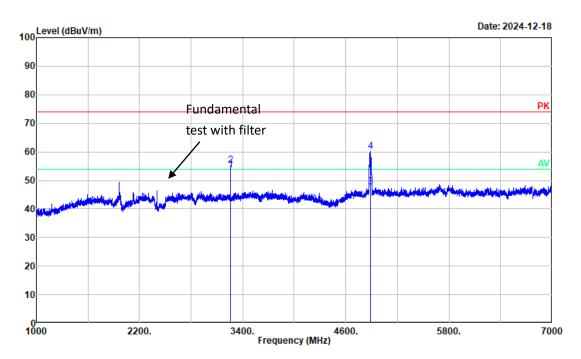
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector	
1	15178.000	38.03	5.24	43.27	54.00	-10.73	Average	
2	15178.000	50.58	5.24	55.82	74.00	-18.18	Peak	

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor Over Limit = Result - Limit







Environment : 23.8  $^{\circ}\mathrm{C}/31\%R.H./101.3kPa$ 

Tested by : Luke Li Polarization : horizontal Remark : 802.11n20 2442

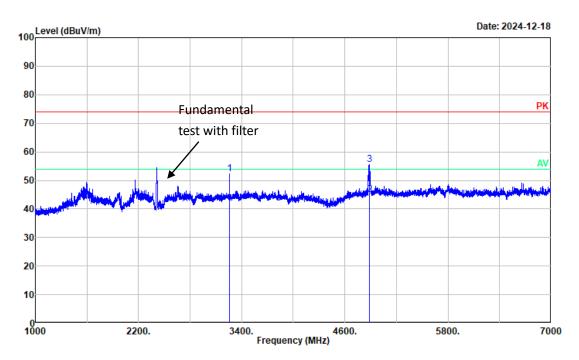
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector	
1	3256.000	56.61	-3.00	53.61	54.00	-0.39	Average	
2	3256.000	58.16	-3.00	55.16	74.00	-18.84	Peak	
3	4884.000	50.01	-2.30	47.71	54.00	-6.29	Average	
4	4884.000	62.42	-2.30	60.12	74.00	-13.88	Peak	

Remarks: Factor = Antenna factor + Cable loss - Preamp gain Result = Reading + Factor Over Limit = Result - Limit

SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK Average: RBW/VBW: 1MHz/1kHz, DET: PK







Environment : 23.8  $^{\circ}\mathrm{C}/31\%R.H./101.3kPa$ 

Tested by : Luke Li Polarization : vertical Remark : 802.11n20 2442

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	3256.000	55.21	-3.00	52.21	74.00	-21.79	Peak
2	4884.000	47.41	-2.30	45.11	54.00	-8.89	Average
3	4884.000	57.93	-2.30	55.63	74.00	-18.37	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

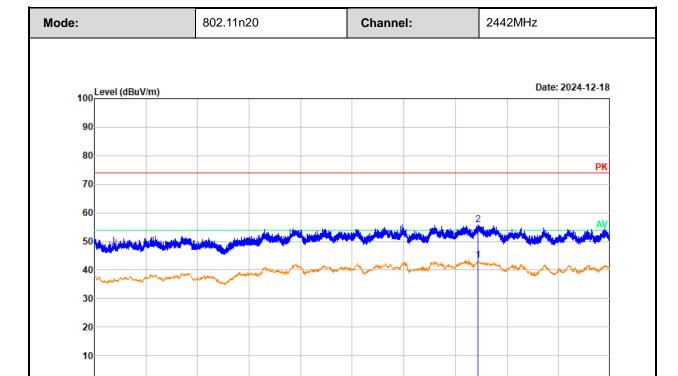
Result = Reading + Factor Over Limit = Result - Limit

SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK Average: RBW/VBW: 1MHz/1kHz, DET: PK

15800.

18000





Project No. : 2405Z104533E Test Mode : Transmitting Test Voltage : Power by battery

7000

Environment : 23.8  $^{\circ}\mathrm{C}/31\%R.H./101.3kPa$ 

9200.

Tested by : Luke Li Polarization : horizontal Remark : 802.11n20 2442

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	15188.000	38.00	5.25	43.25	54.00	-10.75	Average
2	15188.000	50.65	5.25	55.90	74.00	-18.10	Peak

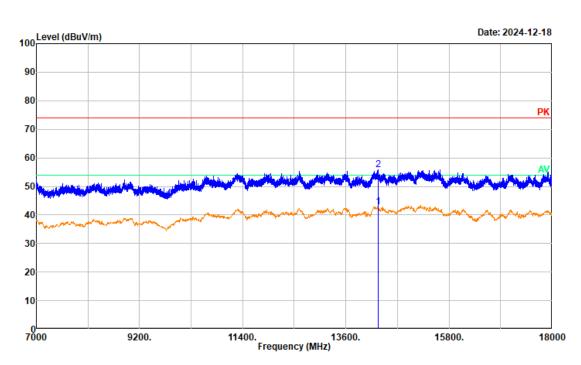
11400. 13600. Frequency (MHz)

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor Over Limit = Result - Limit







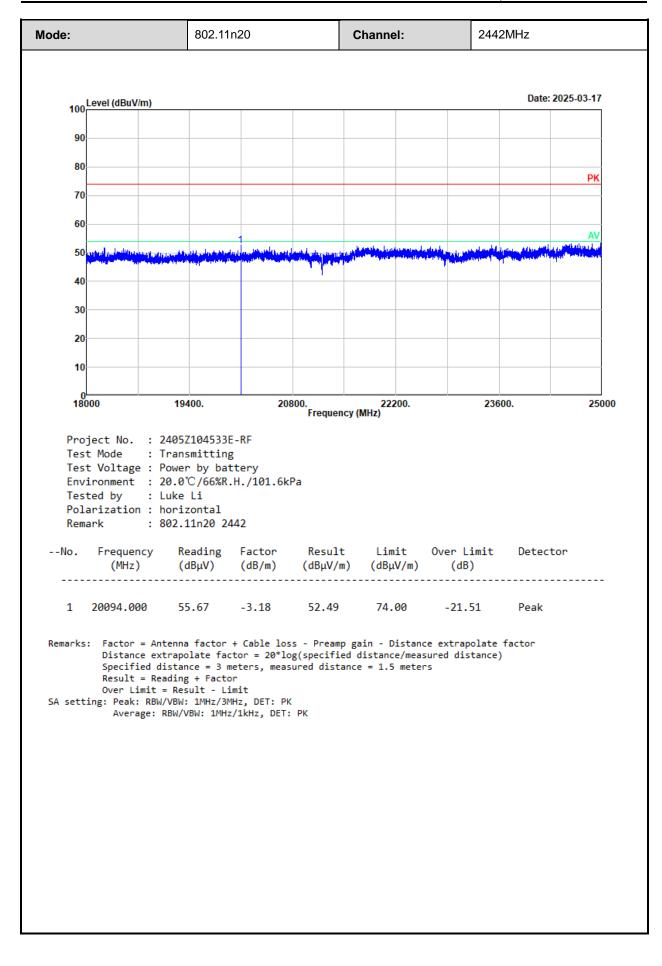
Environment :  $23.8\,^{\circ}\text{C}/31\%\text{R.H.}/101.3\text{kPa}$ 

Tested by : Luke Li Polarization : vertical Remark : 802.11n20 2442

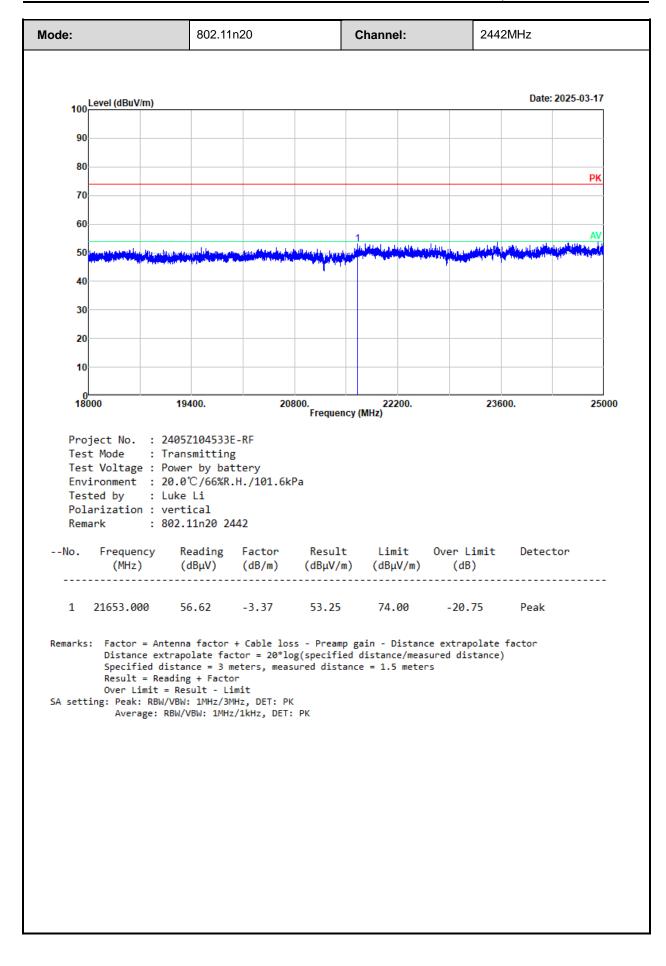
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	14284.000	36.89	5.90	42.79	54.00	-11.21	Average
2	14284.000	49.87	5.90	55.77	74.00	-18.23	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK
Average: RBW/VBW: 1MHz/1kHz, DET: PK



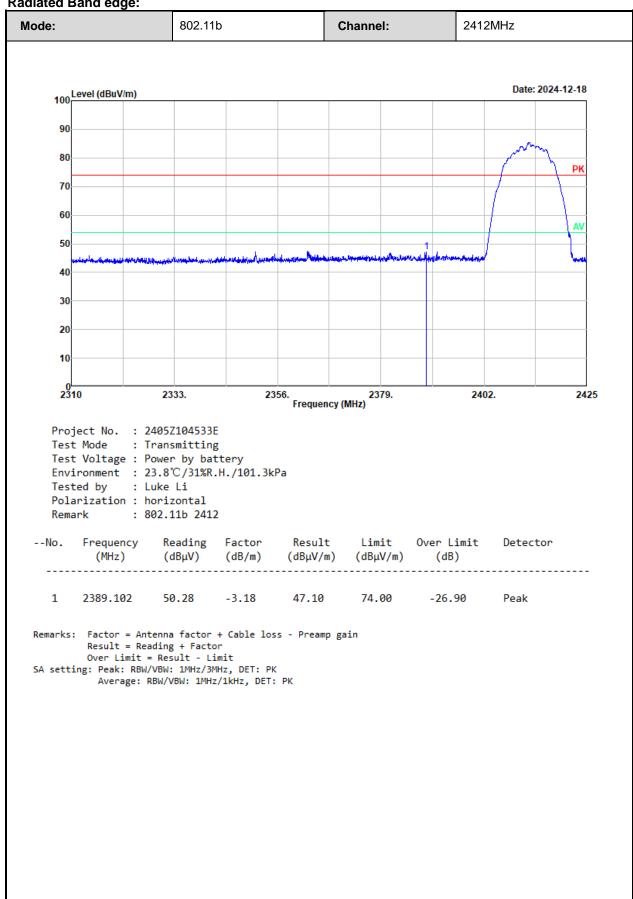






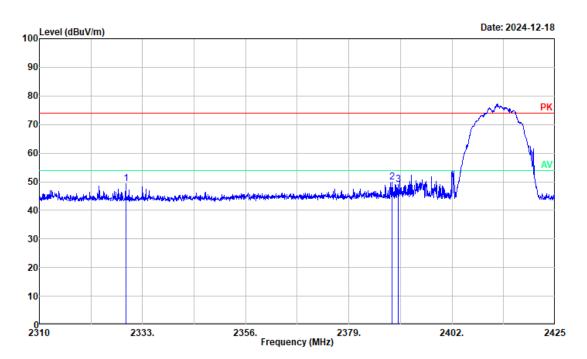


Radiated Band edge:









Environment :  $23.8\,^{\circ}\text{C}/31\%\text{R.H.}/101.3\text{kPa}$ 

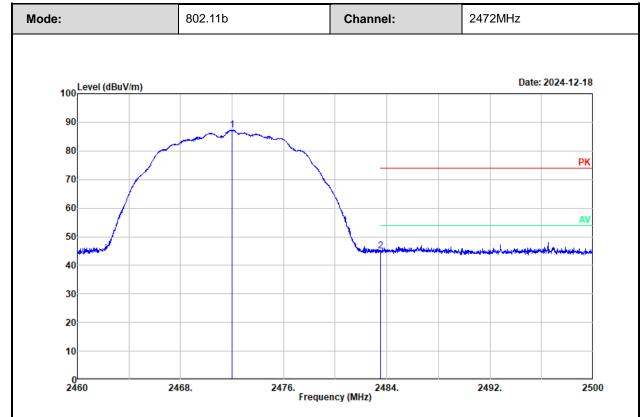
Tested by : Luke Li Polarization : vertical Remark : 802.11b 2412

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	2329.272	52.73	-3.28	49.45	74.00	-24.55	Peak
2	2388.584	53.06	-3.18	49.88	74.00	-24.12	Peak
3	2390.000	52.16	-3.18	48.98	74.00	-25.02	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor Over Limit = Result - Limit





Environment :  $23.8\,^{\circ}\text{C}/31\%\text{R.H.}/101.3\text{kPa}$ 

Tested by : Luke Li Polarization : horizontal Remark : 802.11b 2472

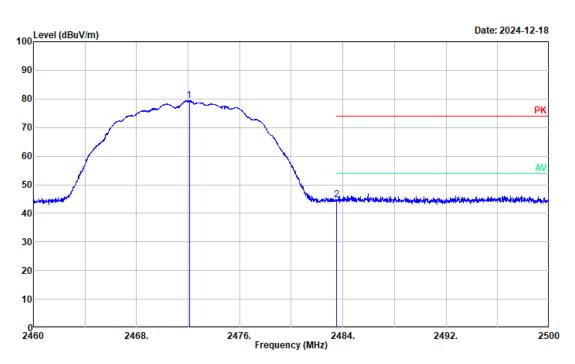
No.	Frequency (MHz)	Reading (dBμV)		Result (dBμV/m)		Over Limit (dB)	Detector
1	2471.986	90.33	-3.01	87.32			Peak
2	2483.500	48.06	-2.98	45.08	74.00	-28.92	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor Over Limit = Result - Limit







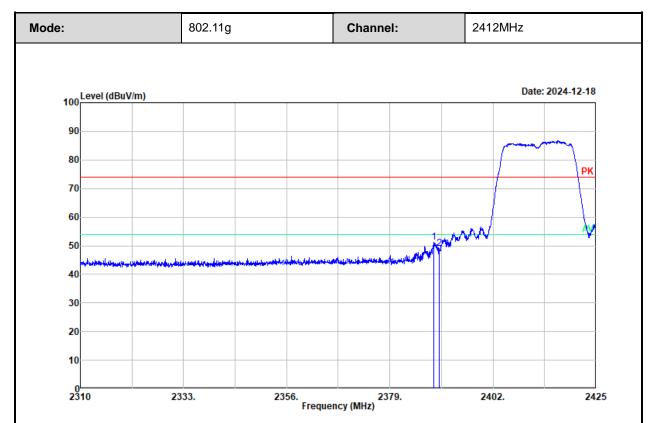
Environment :  $23.8\,^{\circ}\text{C}/31\%\text{R.H.}/101.3\text{kPa}$ 

Tested by : Luke Li Polarization : vertical Remark : 802.11b 2472

No.	Frequency (MHz)	Reading (dBμV)		Result (dBμV/m)		Over Limit (dB)	Detector
1	2472.086	82.55	-3.01	79.54			Peak
2	2483.500	47.67	-2.98	44.69	74.00	-29.31	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain
Result = Reading + Factor
Over Limit = Result - Limit
SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK
Average: RBW/VBW: 1MHz/1kHz, DET: PK





Environment :  $23.8\,^{\circ}\text{C}/31\%\text{R.H.}/101.3\text{kPa}$ 

Tested by : Luke Li Polarization : horizontal Remark : 802.11g 2412

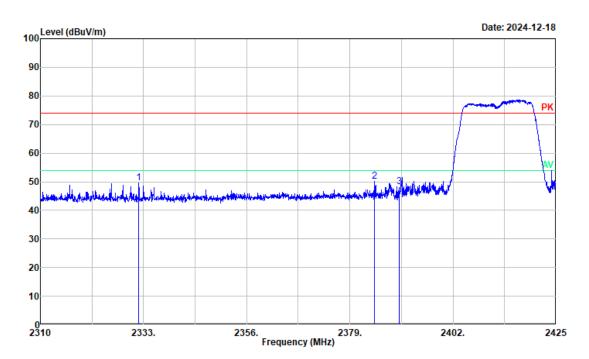
No.	Frequency (MHz)			Result (dBμV/m)		Over Limit (dB)	Detector	
1	2388.814	54.31	-3.18	51.13	74.00	-22.87	Peak	
2	2390.000	52.17	-3.18	48.99	74.00	-25.01	Peak	

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor Over Limit = Result - Limit







Environment :  $23.8\,^{\circ}\text{C}/31\%\text{R.H.}/101.3\text{kPa}$ 

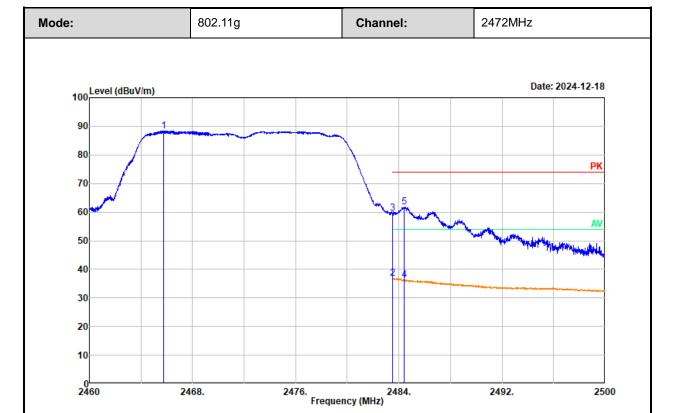
Tested by : Luke Li Polarization : vertical Remark : 802.11g 2412

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1 2	2331.976 2384.557	52.79 53.18	-3.28 -3.18	49.51 50.00	74.00 74.00	-24.49 -24.00	Peak Peak
3	2390.000	51.55	-3.18	48.37	74.00	-25.63	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor
Over Limit = Result - Limit





Environment :  $23.8\,^{\circ}\text{C}/31\%\text{R.H.}/101.3\text{kPa}$ 

Tested by : Luke Li Polarization : horizontal Remark : 802.11g 2472

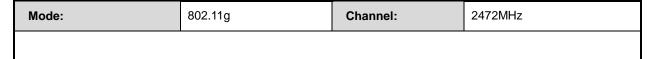
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	2465.763	91.36	-3.03	88.33			Peak
2	2483.500	39.85	-2.98	36.87	54.00	-17.13	Average
3	2483.500	62.72	-2.98	59.74	74.00	-14.26	Peak
4	2484.392	39.15	-2.97	36.18	54.00	-17.82	Average
5	2484.392	64.78	-2.97	61.81	74.00	-12.19	Peak

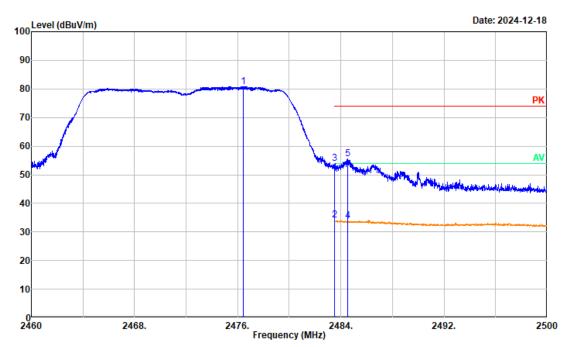
Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor Over Limit = Result - Limit

SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK
Average: RBW/VBW: 1MHz/1kHz, DET: PK







Environment :  $23.8\,^{\circ}\text{C}/31\%\text{R.H.}/101.3\text{kPa}$ 

Tested by : Luke Li Polarization : vertical Remark : 802.11g 2472

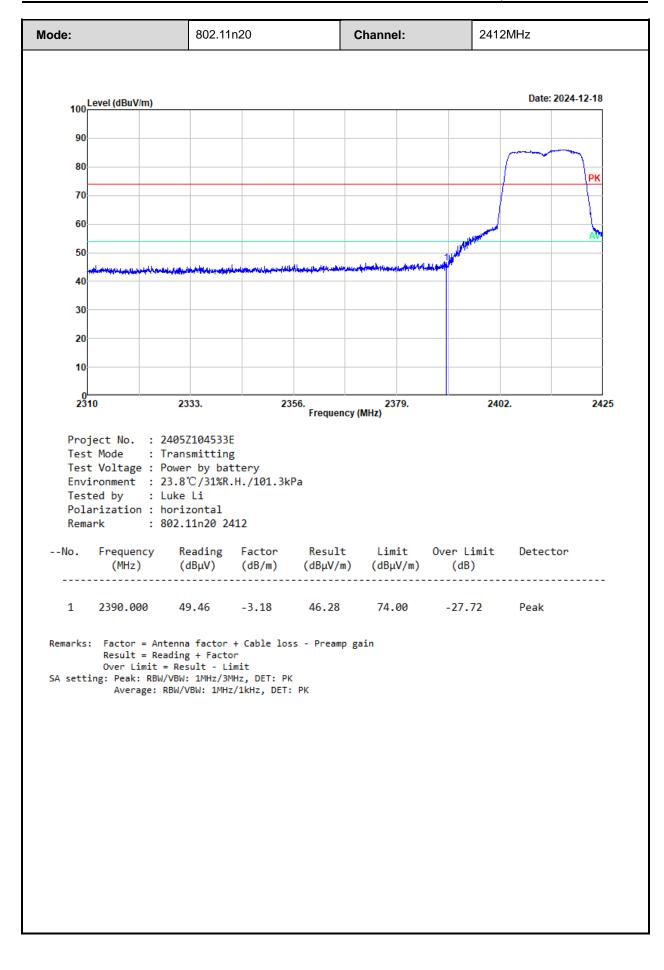
No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Detector
1	2476.428	83.76	-3.01	80.75			Peak
2	2483.500	37.01	-2.98	34.03	54.00	-19.97	Average
3	2483.500	56.83	-2.98	53.85	74.00	-20.15	Peak
4	2484.552	36.95	-2.97	33.98	54.00	-20.02	Average
5	2484.552	58.60	-2.97	55.63	74.00	-18.37	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor Over Limit = Result - Limit

SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK
Average: RBW/VBW: 1MHz/1kHz, DET: PK

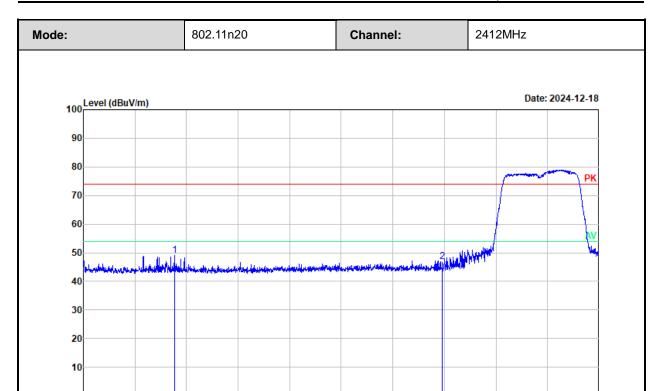




2402.

2425





Project No. : 2405Z104533E Test Mode : Transmitting Test Voltage : Power by battery

2310

Environment :  $23.8\,^{\circ}\text{C}/31\%\text{R.H.}/101.3\text{kPa}$ 

2333.

Tested by : Luke Li Polarization : vertical Remark : 802.11n20 2412

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)		Over Limit (dB)	Detector
1	2330.308	52.28	-3.28	49.00	74.00	-25.00	Peak
2	2390.000	50.01	-3.18	46.83	74.00	-27.17	Peak

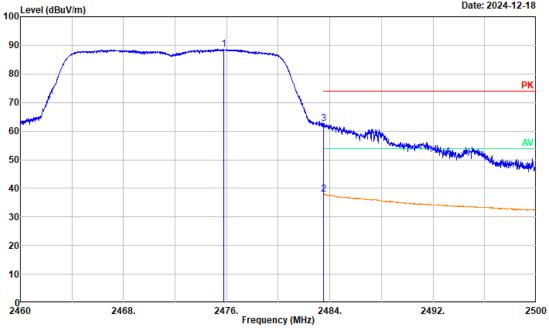
2356. Frequency (MHz) 2379.

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor Over Limit = Result - Limit







Environment :  $23.8\,^{\circ}\text{C}/31\%\text{R.H.}/101.3\text{kPa}$ 

Tested by : Luke Li Polarization : horizontal Remark : 802.11n20 2472

No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	2475.788	91.54	-3.01	88.53			Peak
2	2483.500	40.90	-2.98	37.92	54.00	-16.08	Average
3	2483.500	65.52	-2.98	62.54	74.00	-11.46	Peak

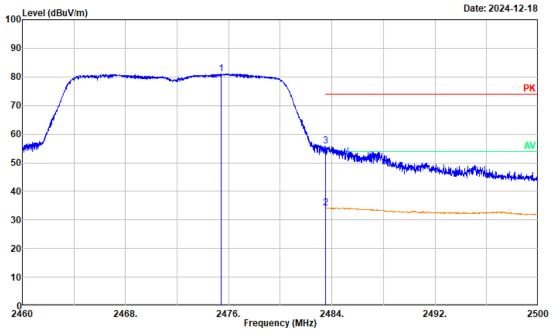
Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor
Over Limit = Result - Limit

SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK Average: RBW/VBW: 1MHz/1kHz, DET: PK







Environment :  $23.8\,^{\circ}\text{C}/31\%\text{R.H.}/101.3\text{kPa}$ 

Tested by : Luke Li Polarization : vertical Remark : 802.11n20 2472

No.	Frequency (MHz)	Reading (dBμV)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Over Limit (dB)	Detector
1	2475.428	84.01	-3.01	81.00			Peak
2	2483.500	37.20	-2.98	34.22	54.00	-19.78	Average
3	2483.500	58.74	-2.98	55.76	74.00	-18.24	Peak

Remarks: Factor = Antenna factor + Cable loss - Preamp gain

Result = Reading + Factor Over Limit = Result - Limit

SA setting: Peak: RBW/VBW: 1MHz/3MHz, DET: PK Average: RBW/VBW: 1MHz/1kHz, DET: PK



## 3.5 RF Conducted Test Data

Test Date:	2024-12-20	Test By:	Ryan Zhang		
Environment condition:	Temperature: 23.3°C; RelativeHumidity:56%; ATM Pressure: 101.1kPa				

### 3.5.1 6dB Emission Bandwidth

Mode	Antenna	Test Frequency (MHz)	Result (MHz)	Limit (MHz)	Verdict
		2412	9.129	≥0.5	Pass
802.11b	Chain 0	2442	9.169	≥0.5	Pass
		2472	9.209	≥0.5	Pass
802.11g		2412	16.496	≥0.5	Pass
	Chain 0	2442	16.496	≥0.5	Pass
		2472	16.496	≥0.5	Pass
802.11n20	Chain 0	2412	17.457	≥0.5	Pass
		2442	17.457	≥0.5	Pass
		2472	17.457	≥0.5	Pass

## 3.5.2 99% Occupied Bandwidth

Mode	Antenna	Test Frequency (MHz)	99% OBW (MHz)
		2412	13.000
802.11b	Chain 0	2442	13.040
		2472	13.000
		2412	16.400
802.11g	Chain 0	2442	16.400
		2472	16.400
		2412	17.320
802.11n20	Chain 0	2442	17.320
		2472	17.320

Report Template: TR-4-E-009/V1.2 Page 56 of 68



## 3.5.3 Maximum Conducted Output Power

Mode	Antenna	Test Frequency (MHz)	Peak Output Power(dBm)	Average Output Power(dBm)	Limit (dBm)	Verdict
		2412	6.15	2.82	30	Pass
802.11b	Chain 0	2442	6.74	3.42	30	Pass
		2472	6.37	3.00	30	Pass
	Chain 0	2412	17.44	7.19	30	Pass
802.11g		2442	16.34	7.63	30	Pass
		2472	16.16	7.16	30	Pass
	Chain 0	2412	17.72	7.66	30	Pass
802.11n20		2442	18.32	8.12	30	Pass
		2472	16.12	7.66	30	Pass

## 3.5.4 Power Spectral Density

Mode	Antenna	Test Frequency (MHz)	Result (dBm/3kHz)	Limit (dBm/3kHz)	Verdict
		2412	-19.49	8	Pass
802.11b	Chain 0	2442	-18.91	8	Pass
		2472	-19.19	8	Pass
	Chain 0	2412	-21.12	8	Pass
802.11g		2442	-20.61	8	Pass
		2472	-21.07	8	Pass
	Chain 0	2412	-19.78	8	Pass
802.11n20		2442	-19.22	8	Pass
		2472	-19.58	8	Pass

## 3.5.5 100 kHz Bandwidth of Frequency Band Edge

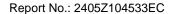
Mode	Antenna	Test Frequency (MHz)	Result (dB)	Limit (dB)	Verdict
802.11b	Chain 0	2412	46.10	20	Pass
	Chain 0	2472	45.85	20	Pass
802.11g	Chain 0	2412	41.86	20	Pass
		2472	33.61	20	Pass
802.11n20	Chain 0	2412	40.36	20	Pass
		2472	34.71	20	Pass



## 3.5.6 Duty Cycle

Mode	Antenna	Test Frequency (MHz)	Ton (ms)	Ton+Toff (ms)	Duty Cycle (%)	Duty Cycle Factor(dB)	1/Ton (Hz)	VBW Setting (kHz)
802.11b	Chain 0	2442	100	100	100	0	NA	0.010
802.11g	Chain 0	2442	100	100	100	0	NA	0.010
802.11n20	Chain 0	2442	100	100	100	0	NA	0.010

**Duty Cycle = Ton/(Ton+Toff)\*100%** 



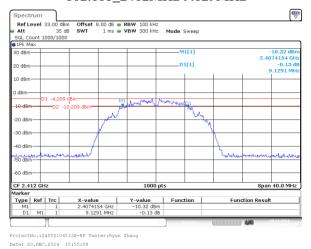


#### **Test Plots:**

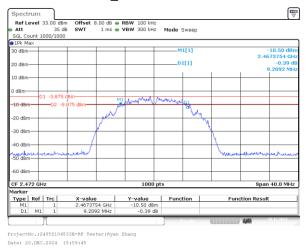
#### 6 dB Emission Bandwidth:

#### 2412~2472

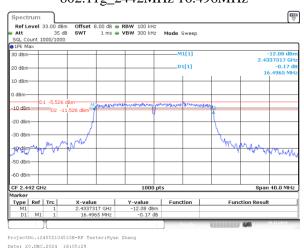
#### 802.11b\_2412MHz 9.129MHz



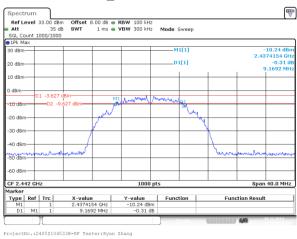
#### 802.11b 2472MHz 9.209MHz



#### 802.11g\_2442MHz 16.496MHz

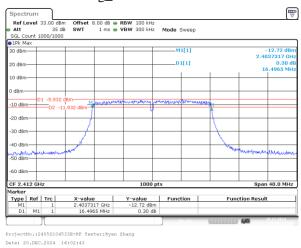


#### 802.11b\_2442MHz 9.169MHz

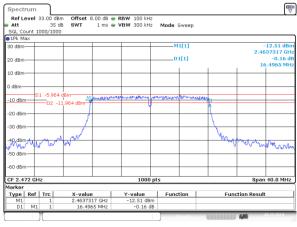


Date: 20.DEC.2024 15:57:36

#### 802.11g\_2412MHz 16.496MHz



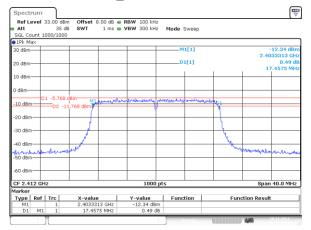
802.11g\_2472MHz 16.496MHz



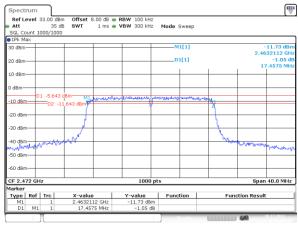
Date: 20.DEC.2024 16:07:57



#### 802.11n20\_2412MHz 17.457MHz

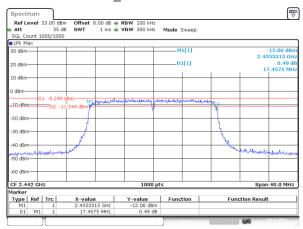


802.11n20\_2472MHz 17.457MHz



ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang Date: 20.DEC.2024 16:17:44

#### 802.11n20\_2442MHz 17.457MHz



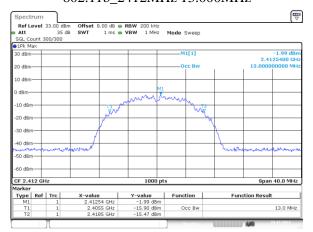
Date: 20.DEC.2024 16:14:38



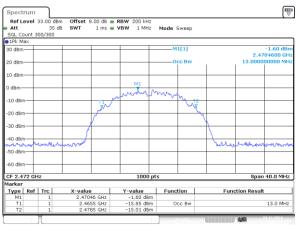
#### 99% Occupied Bandwidth:

#### 2412~2472

#### 802.11b\_2412MHz 13.000MHz



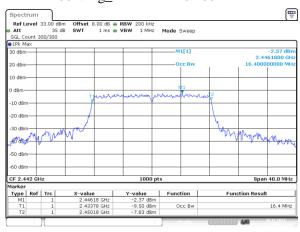
ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang Date: 20.DEC.2024 15:55:36



802.11b\_2472MHz 13.000MHz

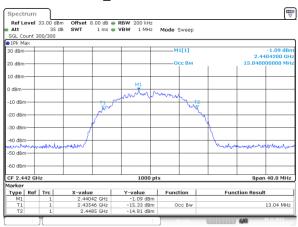
ProjectNo.:2405Z104533E-RF Tester:Rvan Zhang

#### 802.11g\_2442MHz 16.400MHz



ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang Date: 20.DEC.2024 16:05:53

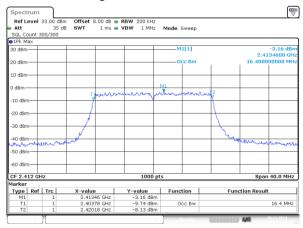
#### 802.11b\_2442MHz 13.040MHz



ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang

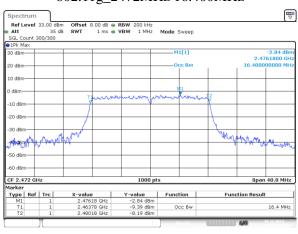
Date: 20.DEC.2024 15:58:00

#### 802.11g\_2412MHz 16.400MHz



ProjectNo.:2405Z104533E-RF Tester:Rvan Zhang

#### 802.11g\_2472MHz 16.400MHz

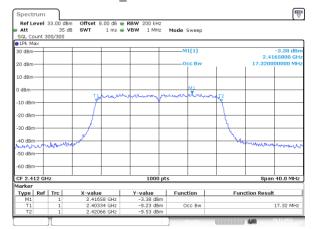


ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang

Date: 20.DEC.2024 16:08:23

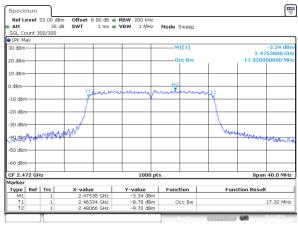


#### 802.11n20\_2412MHz 17.320MHz



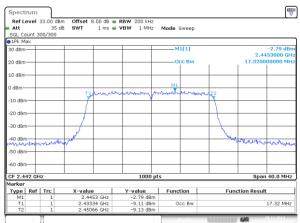
ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang

#### 802.11n20\_2472MHz 17.320MHz



ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang Date: 20.DEC.2024 16:18:09

#### 802.11n20\_2442MHz 17.320MHz



ProjectNo.:2405Z104533E-RF Tester:Rvan Zhang



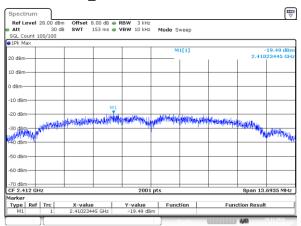
#### **Power Spectral Density:**

ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang

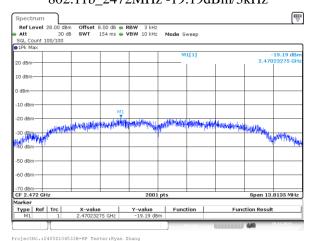
Date: 20.DEC.2024 15:56:40

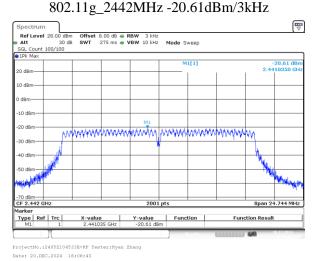
#### 2412~2472

#### 802.11b\_2412MHz -19.49dBm/3kHz

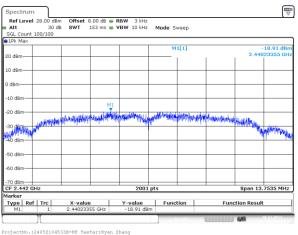


#### 802.11b\_2472MHz -19.19dBm/3kHz

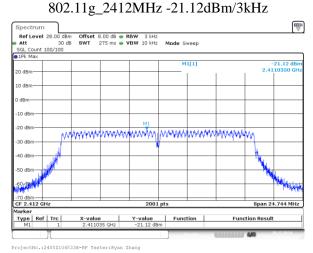




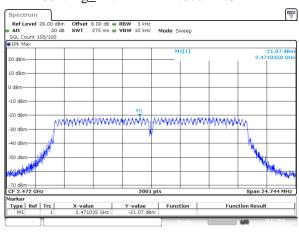
802.11b\_2442MHz -18.91dBm/3kHz



Date: 20.DEC.2024 15:58:33



#### 802.11g\_2472MHz -21.07dBm/3kHz

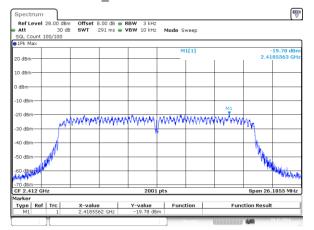


ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang

Date: 20.DEC.2024 16:09:38

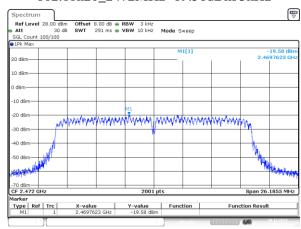


#### 802.11n20\_2412MHz -19.78dBm/3kHz



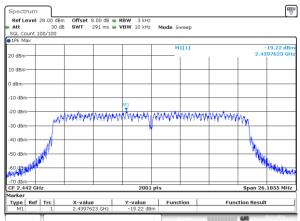
ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang

#### $802.11n20\_2472MHz - 19.58dBm/3kHz$



ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang Date: 20.DEC.2024 16:19:29

#### 802.11n20\_2442MHz -19.22dBm/3kHz

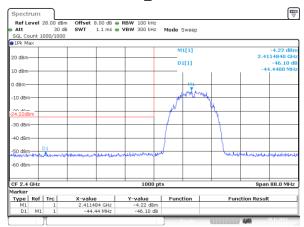


ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang



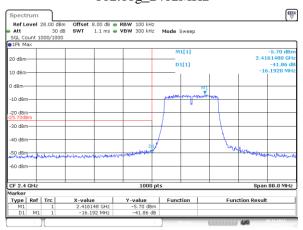
# 100kHz Bandwidth of Frequency Band Edge: 2412~2472

#### 802.11b\_2412MHz



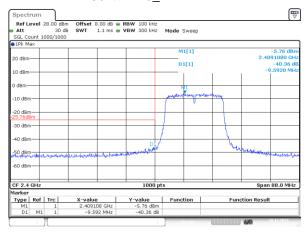
ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang Date: 20.DEC.2024 15:56:07

#### 802.11g\_2412MHz



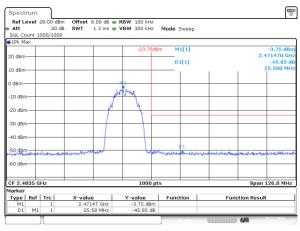
ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang

#### 802.11n20 2412MHz



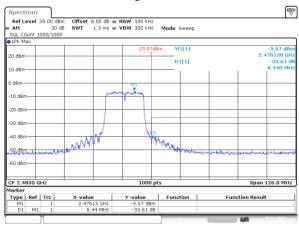
ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang Date: 20.DEC.2024 16:12:23

#### 802.11b\_2472MHz



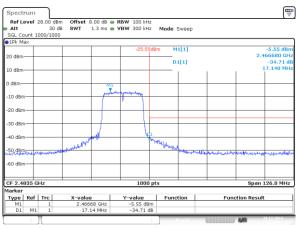
ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang Date: 20.DEC.2024 16:00:34

#### 802.11g\_2472MHz



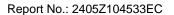
ProjectNo.:24052104533B-RF Tester:Ryan Zhang

#### 802.11n20 2472MHz



ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang

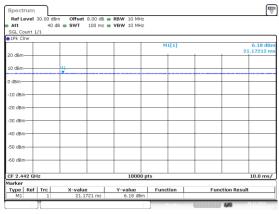
Date: 20.DEC.2024 16:18:35





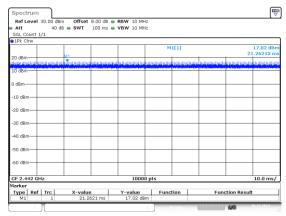
#### **Duty Cycle:** 2412~2472

#### 802.11b\_2442MHz 100ms,100ms



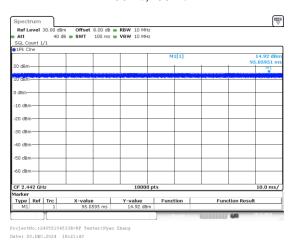
ProjectNo.:24052104533E-RF Tester:Ryan Zhang Date: 20.DEC.2024 16:21:07

#### 802.11n20\_2442MHz 100ms,100ms



ProjectNo.:2405Z104533E-RF Tester:Ryan Zhang Date: 20.DEC.2024 16:22:07

#### 802.11g\_2442MHz 100ms,100ms





## 4 Test Setup Photo

Please refer to the attachment 2405Z104533E Test Setup photo.



## 5 E.U.T Photo

Please refer to the attachment 2405Z104533E External photo and 2405Z104533E Internal photo.

---End of Report---