RADIO TEST REPORT

For

KHADAS TECHNOLOGY CO., LTD

VIM4

Test Model: VIM4

Prepared for	:	KHADAS TECHNOLOGY CO., LTD
Address	:	2709 QIANCHENG CENTER, HAICHENG ROAD, XIXIANG STREET, BAO'AN DISTRICT, SHENZHEN, CHINA. 518101
Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel	:	(+86)755-82591330
Fax	:	(+86)755-82591332
Web	:	www.LCS-cert.com
Mail	:	webmaster@LCS-cert.com

Date of receipt of test sample	:	March 09, 2022
Number of tested samples	:	2
Sample number	:	Prototype
Date of Test	:	March 09, 2022 ~ May 13, 2022
Date of Report	:	May 16, 2022

RADIO TEST REPORT
MIC Notice No.88 appendix No.45 Article 2, paragraph 1, item 19-3
Low Power Data Communication System in the 5 GHz band

Report Reference No. .... :	**LCS220304065AED**
Date of Issue .... :	May 16, 2022
Testing Laboratory Name ..... :	**Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address .... :	Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure.... :	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name .... :	**KHADAS TECHNOLOGY CO., LTD**
Address .... :	2709 QIANCHENG CENTER, HAICHENG ROAD, XIXIANG STREET, BAO'AN DISTRICT, SHENZHEN, CHINA. 518101

Test Specification

Standard.................................. :	MIC Notice No.88 appendix No.45 Article 2, paragraph 1, item 19-3
Test Report Form No............. :	LCSEMC-1.0
TRF Originator......................... :	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF.............................. :	Dated 2011-03

Test Item Description. .... :	**VIM4**
Trade Mark .... :	Khadas
Test Model............................... :	VIM4
Ratings .... :	Input: 5V⎓3A, 9V⎓2.67A, 12V⎓2A USB1 Output: 5V⎓1300mA USB2 Output: 5V⎓1500mA
Result .... :	**Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Cherry Chen	*Jin Wang*	*Gavin Liang*
Cherry Chen/ Administrator	Jin Wang/ Technique principal	Gavin Liang/ Manager

RADIO -- TEST REPORT

Test Report No. : **LCS220304065AED**	May 16, 2022 Date of issue

Test Model..............................	: VIM4
EUT.. .	: VIM4
Applicant..............................	**: KHADAS TECHNOLOGY CO., LTD**
Address...................................	: 2709 QIANCHENG CENTER, HAICHENG ROAD, XIXIANG STREET, BAO'AN DISTRICT, SHENZHEN, CHINA. 518101
Telephone............................. .	: /
Fax.. .	: /
Manufacturer........................	**: KHADAS TECHNOLOGY CO., LTD**
Address................................ .	: 2709 QIANCHENG CENTER, HAICHENG ROAD, XIXIANG STREET, BAO'AN DISTRICT, SHENZHEN, CHINA. 518101
Telephone............................. .	: /
Fax.. .	: /
Factory................................. .	**: KHADAS TECHNOLOGY CO., LTD**
Address................................... .	: 2709 QIANCHENG CENTER, HAICHENG ROAD, XIXIANG STREET, BAO'AN DISTRICT, SHENZHEN, CHINA. 518101
Telephone............................. .	: /
Fax.. .	: /

Test Result	**Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

Revision History

Report Version	Issue Date	Revision Content	Revised By
000	May 16, 2022	Initial Issue	---

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	: VIM4
Test Model	: VIM4
Power Supply	: Input: 5V⎓3A, 9V⎓2.67A, 12V⎓2A USB1 Output: 5V⎓1300mA USB2 Output: 5V⎓1500mA
Hardware Version	: V12
Software Version	: OOWOW

Bluetooth

Frequency Range	: 2402-2480MHz for Bluetooth (79 channels for Bluetooth V5.1(BDR/EDR) Channel Frequency=2402+(K-1), K=1, 2, 3 ……79 40 channels for Bluetooth V5.1(BT LE/BT 2LE) Channel Frequency=2402+2(K-1), K=1, 2, 3 ……40
Declared Antenna Power	: Bluetooth V5.1(BDR/EDR): 0.02mW/MHz Bluetooth V5.1(BT LE/BT 2LE): 1.5mW
Modulation Technology	: Bluetooth V5.1(BDR/EDR): GFSK, π/4-DQPSK, 8-DPSK Bluetooth V5.1(BT LE/BT 2LE): GFSK
Data Rate	: Bluetooth V5.1(BDR/EDR): 1/2/3Mbps Bluetooth V5.1(BT LE/BT 2LE): 1/2Mbps
Antenna Description	: ANT A: FPC Antenna, 3.45dBi(Max.)

WIFI (2.4G Band)

Frequency Range	: 2412-2472MHz for 802.11b/g/n(HT20)
Channel Spacing	: 5MHz
Channel Number	: 13 Channel for 802.11b/g/n/ax(HT20)(2412~2472MHz)
Modulation Type	: IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK); IEEE 802.11g/n/ax(HT20): OFDM(64QAM, 16QAM, QPSK, BPSK)
Declared Antenna Power	: 802.11b: 4.0mW/MHz 802.11g: 2.5mW/MHz 802.11n(HT20): 2.0mW/MHz 802.11ax(HT20): 2.0mW/MHz MIMO: 802.11n(HT20): 4.0mW/MHz 802.11ax(HT20): 3.0mW/MHz
Antenna Description	: ANT A: FPC Antenna, 3.45dBi (max.) ANT B: FPC Antenna, 3.45dBi (max.)

WIFI (5.2G Band)

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

Frequency Range   : 5180-5240MHz

Channel Number   : 4 Channel for 20MHz bandwidth(5180-5240MHz)
                           2 Channel for 40MHz bandwidth(5190-5230MHz)

Modulation Type   : 802.11a/n/ac/ax: OFDM (256QAM, 64QAM, 16QAM, QPSK,
                           BPSK)

Declared Antenna Power   : 802.11a: 2.0mW/MHz
                           802.11n(HT20): 2.0mW/MHz
                           802.11n(HT40): 1.0mW/MHz
                           802.11ac(VHT20):2.0mW/MHz
                           802.11ac(VHT40): 1.0mW/MHz
                           802.11ax(VHT20): 1.0mW/MHz
                           802.11ax(VHT40): 1.0mW/MHz
                           MIMO:
                           802.11n(HT20): 4.0mW/MHz
                           802.11n(HT40): 2.5mW/MHz
                           802.11ac(VHT20): 4.0mW/MHz
                           802.11ac(VHT40): 2.5mW/MHz
                           802.11ax(VHT20): 2.0mW/MHz
                           802.11ax(VHT40): 2.0mW/MHz

Antenna Description   : ANT A: FPC Antenna, 1.87dBi(Max.)
                           ANT B: FPC Antenna, 1.87dBi(Max.)

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street,
Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

1.2. Support Equipment List

Manufacturer	Description	Model	Serial Number	Certificate
SHENZHEN K-TECH TECHNOLOGY CO.,LTD	ADAPTER	GW30W-120200VH	---	PSE

1.3. External I/O

I/O Port Description	Quantity	Cable
USB Port	3	N/A
Type-C USB Port	1	N/A

1.4. Description of Test Facility

FCC Registration Number is 254912.

NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifer is CN0071.

CNAS Registration Number is L4595.

Industry Canada Registration Number is 9642A.

1.5. Test Conditions

Temperature Range	:	21-25℃
Humidity Range	:	45-85%
Pressure Range	:	86-106kPa

1.6. Frequency of Channels

Channel & Frequency:

Frequency Band	Channel No.	Frequency(MHz)	Channel No.	Frequency(MHz)
5180~5240MHz	36	5180	44	5220
	38	5190	46	5230
	40	5200	48	5240
For 802.11a/n(HT20)/ac(VHT20)/ax(VHT20), Channel 36, 40 and 48 were tested. For 802.11n(HT40)/ac(VHT40)/ax(VHT40), Channel 38 and 46 were tested.				

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

2. TEST METHODOLOGY

2.1. EUT Exercise

The EUT was operated in the engineering mode to fix the TX/RX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of MIC Notice No.88 Article 2, paragraph 1, item 19-3.

2.2. Measurement Uncertainty

Test Item		MU	Remark
Bandwidth	:	$+/-2*10^{-7}$MHz	/
Antenna Power	:	$+/-0.33$dB	/
Frequency Tolerance	:	$+/-3*10^{-7}$MHz	/
Conducted spurious emission	:	$+/-0.13$dB	/
DC Power	:	$+/-1\%$	/

(1). This uncertainty represents an expanded uncertainty expressed at approximately
the 95% confidence level using a coverage factor of k=2.

2.3. Description Of Test Modes

Channel & Frequency:

Frequency Band	Channel No.	Frequency(MHz)	Channel No.	Frequency(MHz)
5180~5240MHz	36	5180	44	5220
	38	5190	46	5230
	40	5200	48	5240
For 802.11a/n(HT20)/ac(VHT20), Channel 36, 40 and 48 were tested.				
For 802.11n(HT40)/ac(VHT40), Channel 38 and 46 were tested.				

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

2.4. Test Voltage

POWER SUPPLY VOLTAGE FLUCTUATION TEST

Voltage Fluctuation Test	Normal Voltage	High Voltage +10% of Normal Voltage	Low Voltage -10% of Normal Voltage
Input To EUT	DC 12V	DC 13.2V	DC 10.8V
Output To RF Module	DC 3.3V	DC 3.3V	DC 3.3V
Voltage Variation (%)	--	--	--

Note:

As declared by the manufacturer, the NB680GD (PCB Bit Number: U1) regulates the DC power to be DC 3.3V and supply to the RF module.

Voltage Variation (%)

= (Output high or Low Voltage - Output Normal Voltage)/ Output Normal Voltage* 100

During the input supply voltage to the EUT from the external power source is varied by +/- 10%, if output voltage had been confirmed that the fluctuation of power supply to the RF circuit of EUT (excluding power source) is equal to or less than +/-1%. Exempt extremely high and low supply voltage condition test, EUT only operated in normal voltage to test all regulations.

3. SYSTEM TEST CONFIGURATION

3.1. Justification

The system was configured for testing in engineering mode.

3.2. EUT Exercise Software

N/A.

3.3. Special Accessories

N/A.

3.4. Block Diagram/Schematics

Please refer to the related document.

3.5. Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

4. SUMMARY OF TEST RESULTS

MIC Notice No.88 Appendix No.45		
rule	Description of Test	Result
Article 2, paragraph 1, item 19-3	Tolerance Of Frequency	PASS
	Tolerances Of Antenna Power & E.I.R.P	PASS
	Tolerance of Occupied Bandwidth	PASS
	Spread Bandwidth	PASS
	Tolerance Of Unwanted Emission Intensity & Tolerance Of Out-Of-Band Leakage Power	PASS
	Secondary Radiated Emissions	PASS
	Transmission Burst Length	PASS
	Tolerance Of Adjacent Channel Leakage Power	PASS
	Interference prevention function	PASS
	Carrier Sensing function	PASS
	Dynamic Frequency Selection	N/A
N/A is an abbreviation for Not Applicable.		

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

5. TEST RESULT

5.1. Tolerance of Frequency

5.1.1. Standard Applicable

Tolerance of frequency shall be ±20ppm.

5.1.2. Test Procedures

a. Set EUT work in non-modulation condition.

b. Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.
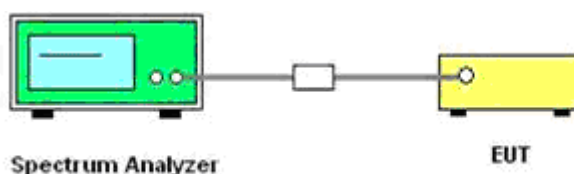
Resolution BW: 10KHz.

Video BW: 10KHz.

Span: 1MHz.

Detector: Peak.

Trace Mode: Max Hold.

c. When the trace is complete, find the peak value of the power envelope and record.

5.1.3. Test Setup Layout

5.1.4. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.1.5. Test Result

Please refer to the Appendix D.1 for 5.2G WIFI RF Test Data.

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

5.2. Tolerances of Antenna Power & E.I.R.P

5.2.1. Standard Applicable

Operation Band	item		20MHz system		40MHz system	80MHz system	160MHz system
W52	Antenna Power		DSSS,etc	OFDM	OFDM	OFDM	OFDM
			10mW/MHz	10mW/MHz	5mW/MHz	2.5mW/MHz	1.25mW/MHz
	Antenna power Tolerance		+20%, -80%				
	EIRP	W52	10mW/MHz		5mW/MHz	2.5mW/MHz	1.25mW/MHz

5.2.2. Test Procedures

a. Set EUT work in test mode as described in clause 2.3.

b. Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.

Resolution BW: 1MHz.

Video BW: 1MHz.

Span: Wide enough to cover the complete power envelope of the signal of the EUT.

Trigger condition: Free run.

Sweep mode: Continuous sweeping.

Detector: Peak.

Trace Mode: Max Hold.

c. When the trace is complete, find the peak value of the power envelope and record.

d. Make the following changes to the setting of the Spectrum Analyzer:

Centre Frequency: Equal to the frequency recorded in step c

Resolution BW: 1MHz.

Video BW: 1MHz.

Span: 3MHz

Trigger condition: Free run.

Sweep mode: Continuous sweeping.

Detector: Average

Trace Mode: Max Hold.

When the trace is complete, find the peak value (value "A" in dBm) of the power envelope and record.

• Add the (stated) antenna assembly gain "G" in dBi of the individual antenna.

• If applicable, add the additional beamforming gain "Y" in dB.

The equivalent isotropically radiated power (P) shall be calculated using the formula below:

$P = A + G + Y$

5.2.3. Test Setup

Spectrum Analyzer   EUT
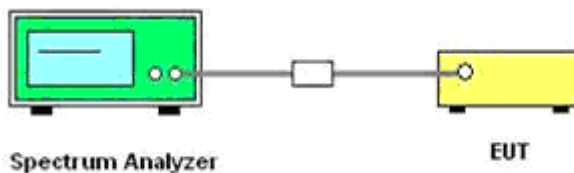
5.2.4. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.2.5. Test Result

Please refer to the Appendix D.2 for 5.2G WIFI RF Test Data.

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

5.3. Tolerance of Occupied Bandwidth

5.3.1. Standard Applicable

Operation Band	20MHz system		40MHz system	80MHz system	160MHz system
W52	DSSS,etc	OFDM	OFDM	OFDM	OFDM
	18MHz	20MHz	40MHz	80MHz	80MHz

5.3.2. Test Procedures

a. Set EUT work in test mode as described in clause 2.3.

b. Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.

RBW/VBW: 300KHz/300KHz

Span: Wide enough to cover the complete power envelope of the signal of the EUT.
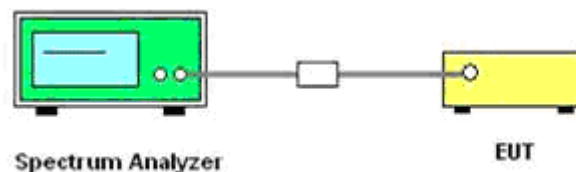
Sweep mode: Continuous sweeping.

Detector: Peak.

Trace Mode: Max Hold.

c. When the trace is complete, measure the occupied bandwidth (99% bandwidth) with spectrum analyzer's bandwidth measure function.

5.3.3. Test Setup Layout

Spectrum Analyzer   EUT

5.3.4. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.3.5. Test Result of 99% Spectrum Bandwidth

Please refer to the Appendix D.3 for 5.2G WIFI RF Test Data.

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

5.4. Spread Bandwidth

5.4.1. Standard Applicable

Spread Bandwidth shall be 500 kHz or more.

5.4.2. Test Procedures

a. Set EUT work in test mode as described in clause 2.3.

b. Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.
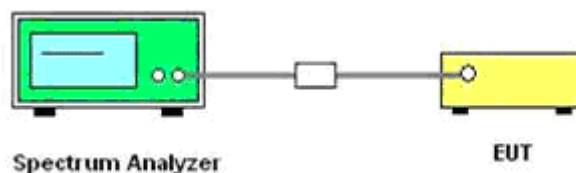
RBW/VBW: 300KHz/300KHz

Span: Wide enough to cover the complete power envelope of the signal of the EUT.

Detector: Peak.

Trace Mode: Max Hold.

c. When the trace is complete, measure the occupied bandwidth (90% bandwidth) with spectrum analyzer's bandwidth measure function.

5.4.3. Test Setup Layout

Spectrum Analyzer   EUT

5.4.4. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.4.5. Test Result of Spread Bandwidth

Please refer to the Appendix D.4 for 5.2G WIFI RF Test Data.

5.5. Tolerance of Unwanted Emission Intensity & Tolerance of Out-of-Band Leakage Power

5.5.1. Standard Applicable

For W52:

20MHz system	
OBW : 18MHz or less	OBW : 18 - 20 MHz
5,142 MHz or less : 2.5 µW/MHz	5,142 MHz or less : 2.5 µW/MHz
5,142 - 5,150 MHz : 15 µW/MHz	5,142 - 5,150 MHz : 15 µW/MHz
	5,250 - 5,250.2 MHz : $10^{1-(8/3)(f-9.75)}$ mW/MHz
5,250 - 5,251 MHz : $10^{1-(f-9)}$ mW/MHz	5,250.2 - 5,251 MHz : $10^{1-(f-9)}$ mW/MHz
5,251 - 5,260 MHz : $10^{-1-(8/90)(f-11)}$ mW/MHz	5,251 - 5,260 MHz : $10^{-1-(8/90)(f-11)}$ mW/MHz
5,260 - 5,266.7 MHz : $10^{-1.8-(6/50)(f-20)}$ mW/MHz	5,260 - 5,266.7 MHz : $10^{-1.8-(6/50)(f-20)}$ mW/MHz
5,266.7 MHz or more : 2.5 µW/MHz	5,266.7 MHz or more : 2.5 µW/MHz
f = MHz, Difference from 5240 (MHz)	f = MHz, Difference from 5240 (MHz)

40MHz system	80MHz system
5,141.6 MHz or less : 2.5 µW/MHz	5,123.2 MHz or less : 2.5 µW/MHz
5,141.6 - 5,150 MHz : 15 µW/MHz	5,123.2 - 5,150 MHz : 15 µW/MHz
5,250 - 5,251 MHz : $10^{-(f-20)+log(1/2)}$ mW/MHz	5,250 - 5,251 MHz : $10^{-(f-40)+log(1/4)}$ mW/MHz
5,251 - 5,270 MHz : $10^{-(8/190)(f-21)-1+log(1/2)}$ mW/MHz	5,251 - 5,290 MHz : $10^{-(8/390)(f-41)-1+log(1/4)}$ mW/MHz
5,270 - 5,278.4 MHz : $10^{-(3/50)(f-40)-1.8+log(1/2)}$ mW/MHz	5,290 - 5,296.7 MHz : $10^{-(3/100)(f-80)-1.8+log(1/4)}$ mW/MHz
5,278.4 MHz or more : 2.5 µW/MHz	5,296.7 MHz or more : 2.5 µW/MHz
f = MHz, Difference from 5230 (MHz)	f = MHz, Difference from 5210 (MHz)

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

5.5.2. Test Procedures

a. Set EUT work in test mode as described in clause 2.3.

b. Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:
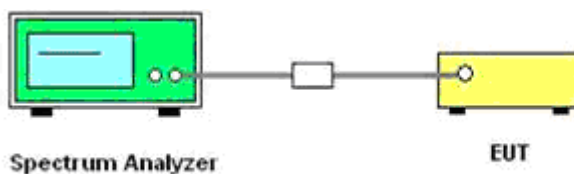
Below 1GHz: RBW/VBW= 1MHz / 1MHz

Above 1GHz: RBW/VBW= 1MHz / 1MHz.

Detector: Peak.

Trace Mode: Max Hold.

5.5.3. Test Setup Layout

Spectrum Analyzer   EUT

5.5.4. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.4.5. Test Results

Please refer to the Appendix D.5 for 5.2G WIFI RF Test Data.

-Note:

1.SA set to from 5.2667GHz to 26GHz, plot shows from 5.27GHz to 26GHz as of SA's default format.

2.SA set to from 30MHz to 5141.6MHz, plot shows from 30MHz to 5142MHz as of SA's default format.

3.SA set to from 5.2784GHz to 26GHz, plot shows from 5.28GHz to 26GHz as of SA's default format.

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

5.6. Secondary Radiated Emissions

5.6.1. Standard Applicable
4nW or less at a frequency below 1 GHz and 20 nW or less at a frequency of 1 GHz.

5.6.2. Test Procedures

a. Set EUT work in test mode as described in clause 2.3.

b. Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Resolution BW: 100 KHz for frequency below 1GHz and

1MHz for frequency above 1GHz
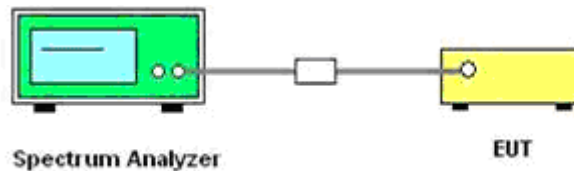
Video BW: 100 KHz for frequency below 1GHz and

1MHz for frequency above 1GHz

Detector: Peak.

Trace Mode: Max Hold.

c. All the emissions from 30MHz to 26.5GHz were measured and record.

5.6.3. Test Setup

Spectrum Analyzer   EUT

5.6.4. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.6.5. Test Results

Please refer to the Appendix D.6 for 5.2G WIFI RF Test Data.

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

5.7. Transmission Burst Length

5.7.1. Standard Applicable

Transmission Burst Length shall be 8ms or less.

5.7.2. Test Procedures

a. Set EUT work in test mode as described in clause 2.3.

b. Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

Centre Frequency: The centre frequency of the channel under test.
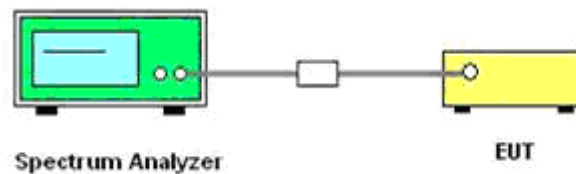
Resolution BW: 1MHz.

Video BW: 1MHz.

Span: 0Hz

Sweep mode: Auto

Detector: Peak.

Trace Mode: View.

5.7.3. Test Setup Layout

5.7.4. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.7.5. Test Result

Please refer to the Appendix D.7 for 5.2G WIFI RF Test Data.

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

5.8. Tolerance of Adjacent Channel Leakage Power

5.8.1. Standard Applicable

| 20MHz system		40MHz system	80MHz system	160MHz system
DSSS, etc	OFDM	OFDM	OFDM	OFDM
Fc±20MHz ±9MHz BW: -25dBc	Fc±20MHz ±10MHz BW: -25dBc	Fc±40MHz ±20MHz BW: -25dBc	Fc±80MHz ±40MHz BW: -25dBc	Fc±80MHz ±40MHz BW: -25dBc
Fc±40MHz ±9MHz BW: -40dBc	Fc±40MHz ±10MHz BW: -40dBc	Fc±80MHz ±20MHz BW: -40dBc		

5.8.2. Test Procedures

a. Set EUT work in test mode as described in clause 2.3.

b. Connected the EUT's antenna port to the Spectrum Analyzer by suitable attenuator, set the Spectrum Analyzer as below:

   RBW/VBW= 300KHz / 300KHz.

   Detector: Peak.

   Trace Mode: Max Hold.

5.8.3. Test Setup Layout

Spectrum Analyzer   EUT
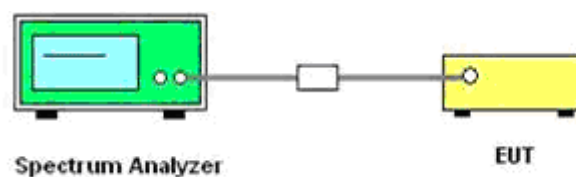
5.8.4. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.8.5. Test Results

Please refer to the Appendix D. 8 for 5.2G WIFI RF Test Data.

5.9. Carrier sensing function

5.9.1. Standard Applicable

Item	Limits
Carrier Sense	Good – EUT stop RF transmission signal after carrier inject to EUT. (On 22.79+Gr-20*log (f)[dBm] (Gr: dBi; f: MHz) or 100mV/m)

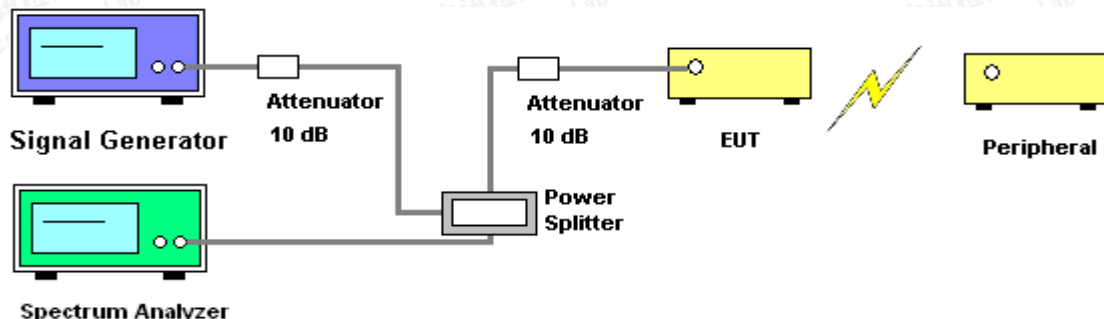### 5.9.2. Measuring Instruments and Setting

Please refer to section 6 of equipments list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
RB / VB	1 MHz
Span	0 MHz
Sweep	Continuous
Detector	Peak
Trigger mode	Video

5.9.3. Test Procedures

1. SSG adjusted the frequency as same as the EUT transmitted signal and emitted the absence of modulation from SSG and power level is (On 22.79+Gr-20*log(f)[dBm] (Gr: dBi; f: MHz). Then turn off the RF signal of SSG.

2. EUT have transmitted the maximum modulation signal and fixed channelize.

3. Setting of SA is following as: RB:1MHz / VB:1MHz / SPAN: 50MHz / AT: 10dB /Ref: 0dBm / Sweep time: Auto / Sweep Mode: Continuous sweep / Detect mode: Positive peak.

4. SSG RF Signal On.

5. EUT shall be stop the transmitted any signal and SSG RF Signal Off. Then EUT will be continuous transmitted signal.

5.9.4. Test Setup Layout

5.9.5. EUT Operation during Test

The EUT was programmed to be in normal transmitting mode.

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

5.9.6. Test Result

Test Mode	Test Result
802.11n(HT40)	Pass
802.11ac(VHT40)	Pass
802.11ax(VHT40)	Pass

Note: 1.this test item only applies to those modes with bandwidth greater than 20MHz;

after a carrier signal 22.79+Gr-20*log(f)[dBm] was injected into EUT, it stopped transmission.

2. The EUT has three carriers in the test

5.10. Interference prevention function

5.10.1. Standard Applicable

| Item	Limits
Identification code	$\geqq$ 48 bits

5.10.2. Measuring ID Code Software

PC with NetTool	Setting
MAC IP List	MAC Scan

5.10.3. Test Procedures

1. In the case that the EUT has the function of automatically transmitting the identification code: a. Transmit the predetermined identification codes from EUT. b. Check the transmitted identification codes with the demodulator.

2. In the case of receiving the identification code: a. Transmit the predetermined identification codes from the counterpart. b . Check if communication is normal. c. Transmit the other signals than predetermined ID codes from the counterpart. d. check if the EUT stops the transmission, or if it displays that identification codes are different from the predetermined ones.

5.10.4. Test Setup Layout
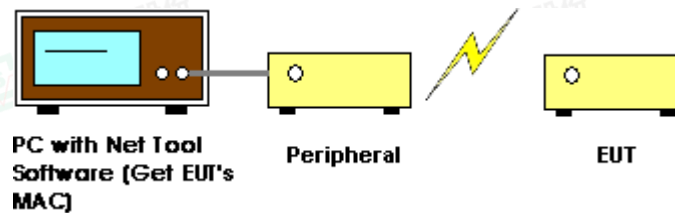
5.10.5. EUT Operation during Test

The EUT was programmed to be in normal transmitting mode.

5.10.6. Test Result

MAC Address: f0:23:b9:57:c8:9e

Complies.

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity

6. PHOTOGRAPHS OF TEST SETUP

Please refer to separated files Appendix E for Test Setup Photographs

7. EXTERNAL PHOTOGRAPHS OF THE EUT

Please refer to separated files Appendix F for External Photos of EUT

8. INTERNAL PHOTOGRAPHS OF THE EUT

Please refer to separated files Appendix G for Internal Photos of EUT

9. LIST OF MEASURING EQUIPMENTS

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Power Meter	Rohde & Schwarz China	NRVS	100444	2021-06-21	2022-06-20
2	Power Sensor	Rohde & Schwarz China	NRV-Z81	100458	2021-06-21	2022-06-20
3	Power Sensor	Rohde & Schwarz China	NRV-Z32	10057	2021-06-21	2022-06-20
4	MXA Signal Analyzer	Agilent Technologies Inc.	N9020A	MY49100060	2021-11-16	2022-11-15
5	DC Power Supply	Agilent Technologies Inc.	E3642A	N/A	2021-11-25	2022-11-24
6	Oscilloscope	Tektronix	46084A/4609A	140920	2021-08-17	2022-08-16
7	Signal Generator	Agilent	N5182A	MY47071151	2021.06.22	2022.06.21

----------------THE END OF REPORT---------------

Shenzhen LCS Compliance Testing Laboratory Ltd.
Add: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com
Scan code to check authenticity