



FCC TEST REPORT

Test report
On Behalf of
ShenZhen C-Fly Intelligent Technology Co.,Ltd
For

Remote Control

Model No.: E01006, E01006J, E01006K, E01006L, E01006M, E01006N

FCC ID: 2AR7Q-E01006J

Prepared for: ShenZhen C-Fly Intelligent Technology Co.,Ltd

6th Floor, A1 building, New Modern Gong Rong, Shen Zhen, China

Prepared By: Shenzhen HUAK Testing Technology Co., Ltd.

1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping,

Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Date of Test: Jun. 15, 2022 ~ Jun. 22, 2022

Date of Report: Jun. 22, 2022

Report Number: HK2205232147-E

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



TEST RESULT CERTIFICATION

Address 6th Floor,A1 building,New Modern GongRong,ShenZhen,China

Manufacture's Name...... ShenZhen C-Fly Intelligent Technology Co.,Ltd

Address 6th Floor,A1 building,New Modern GongRong,ShenZhen,China

Product description

Trade Mark: CFLYAI

Product name.....: Remote Control

Model and/or type reference :: E01006, E01006J, E01006K, E01006L, E01006M, E01006N

FCC Rules and Regulations Part 15 Subpart C Section 15.247

..... ANSI C63.10: 2013

This publication may be reproduced in whole or in part for non-commercial purposes as long as the Shenzhen HUAK Testing Technology Co., Ltd. is acknowledged as copyright owner and source of the material. Shenzhen HUAK Testing Technology Co., Ltd. takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Date of Test

Date (s) of performance of tests Jun. 15, 2022 ~ Jun. 22, 2022

Test Result..... Pass

Testing Engineer

(Gary Qian)

Technical Manager

(Eden Hu)

Authorized Signatory:

(Jason Zhou



TABLE OF CONTENTS

Report No.: HK2205232147-E

1.	Test Result Summary	5
	1.1. TEST PROCEDURES AND RESULTS	
	1.2. INFORMATION OF THE TEST LABORATORY	5
	1.3. MEASUREMENT UNCERTAINTY	
2.		7
	2.1. GENERAL DESCRIPTION OF EUT	
	2.2. CARRIER FREQUENCY OF CHANNELS	8
	2.3. OPERATION OF EUT DURING TESTING	8
	2.4. DESCRIPTION OF TEST SETUP	
3.	Genera Information	10
	3.1. TEST ENVIRONMENT AND MODE	
	3.2. DESCRIPTION OF SUPPORT UNITS	11
4.	Test Results and Measurement Data	12
	4.1. CONDUCTED EMISSION	12
	4.2. MAXIMUM CONDUCTED OUTPUT POWER	16
	4.3. EMISSION BANDWIDTH	18
	4.4. Power Spectral Density	27
	4.5. CONDUCTED BAND EDGE AND SPURIOUS EMISSION MEASUREMENT	37
	4.6. RADIATED SPURIOUS EMISSION MEASUREMENT	51
	4.7. ANTENNA REQUIREMENT	72
	4.8 PHOTOS OF THE FUT	75





** Modified History **

Revision	Description		Issued Data	Remark
Revision 1.0	Initial Test Report Release		Jun. 22, 2022	Jason Zhou
JAKTES. JAKTE	"IAK TES	MAK TES	MAKTES	MAKTES
(0)	(6)			(8)

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com

Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China



1. Test Result Summary

1.1. TEST PROCEDURES AND RESULTS

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203/§15.247 (c)	PASS
AC Power Line Conducted Emission	§15.207	PASS
Conducted Peak Output Power	§15.247 (b)(3)	PASS
6dB Emission Bandwidth	§15.247 (a)(2)	PASS
Power Spectral Density	§15.247 (e)	PASS
Band Edge	1§5.247(d)	PASS
Spurious Emission	§15.205/§15.209	PASS

Note:

- 1. PASS: Test item meets the requirement.
- 2. Fail: Test item does not meet the requirement.
- 3. N/A: Test case does not apply to the test object.
- 4. The test result judgment is decided by the limit of test standard.

1.2. INFORMATION OF THE TEST LABORATORY

Shenzhen HUAK Testing Technology Co., Ltd.

Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Testing Laboratory Authorization:

A2LA Accreditation Code is 4781.01.

FCC Designation Number is CN1229.

Canada IC CAB identifier is CN0045.

CNAS Registration Number is L9589.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com

1.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	±0.37dB
2	RF power, conducted	±3.35dB
3	Spurious emissions, conducted	±2.20dB
4 TESTIN	All emissions, radiated(<1G)	±3.90dB
5	All emissions, radiated(>1G)	±4.28dB
6	Temperature	±0.1°C
ZING	Humidity	±1.0%

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK,

CATION

2. EUT Description

2.1. GENERAL DESCRIPTION OF EUT

Equipment	Remote Control
Model Name	E01006
Serial Model	E01006J, E01006K, E01006L, E01006M, E01006N
Model Difference	All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: E01006
Trade Mark	CFLYAI
FCC ID	2AR7Q-E01006J
Antenna Type	Internal Antenna
Antenna Gain	Antenna 1:2.5dBi Antenna 2:2.5dBi MIMO: 5.510dBi
Operation frequency	802.11b/g/n 20:2412~2462 MHz
Number of Channels	802.11b/g/n20: 11CH
Modulation Type	CCK/OFDM/DBPSK/DAPSK
Power Source	DC 3.7V from battery or DC 5V from micro USB
Power Rating	DC 3.7V from battery or DC 5V from micro USB
Hardware Version:	V1.0
Software Version:	V1.0

Note:

Note: The EUT incorporates a MIMO function. Physically, it provides two completed tran smitters and receivers(2T2R), two transmit signals are completely correlated, then, Dire ction gain=GANT + Array Gain(Array Gain=10 log(2) dB for power spectral density; Array Gain=0 for power measurement)

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



2.2. Carrier Frequency of Channels

Channel List for 802.11b/802.11g/802.11n (HT20)								
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	
01	2412	04	2427	07	2442	10	2457	
02	2417	05	2432	08	2447	11	2462	
03	2422	06	2437	09	2452	ESTING		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

2.3. Operation of EUT during testing

Operating Mode

The mode is used: Transmitting mode for 802.11b/802.11g/802.11n (HT20)

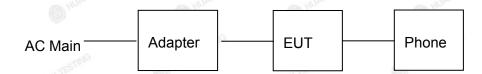
Low Channel: 2412MHz Middle Channel: 2437MHz High Channel: 2462MHz

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com



2.4. DESCRIPTION OF TEST SETUP

Operation of EUT during conducted and under 1GHz radiation testing:



Operation of EUT Above1GHz Radiation testing:

EUT

Adapter information Model: HW-059200CHQ

Input: AC100-240V, 50/60Hz, 0.5A

Output: DC5V, 2A

Phone information Model: OPPO A32 Input: DC 5V

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



3. Genera Information

3.1. Test environment and mode

25.0 °C	HUAKTEST
56 % RH	
1010 mbar	STING
Keep the EUT in continuous transmit by select channel and modulations (7 value of duty cycle is 98.46%)	
	56 % RH 1010 mbar Keep the EUT in continuous transmit by select channel and modulations (T

The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. For the full battery state and The output power to the maximum state.

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	Data rate
802.11b	1Mbps
802.11g	6Mbps
802.11n(H20)	6.5Mbps
Final Test Mode:	
Operation mode:	Keen the FUT in continuous transmitting

UAKTESTI	HUAK TESS III	with modulation	WAK TEST
4 5 14/15		<u> </u>	 (Ca)

- 1. For WIFI function, the engineering test program was provided and enabled to make EUT continuous transmit/receive.
- 2.According to ANSI C63.10 standards, the test results are both the "worst case" and "worst setup" 1Mbps for 802.11b, 6Mbps for 802.11g, 6.5Mbps for 802.11n(H20) of Ant. 1, Ant. 2 and MIMO mode. Duty cycle setting during the transmission is 98.5% with maximum power setting for all modulations.





3.2. Description of Support Units
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
NG /	IG / HANTESTIN	G I	/ HAKTESTIN	1 mg

Note:

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
- 3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.co

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



4. Test Results and Measurement Data

4.1. Conducted Emission

4.1.1. Test Specification

TING	TIME	dillo	10/15			
Test Requirement:	FCC Part15 C Section	15.207	HUAKTE			
Test Method:	ANSI C63.10:2013	ANSI C63.10:2013				
Frequency Range:	150 kHz to 30 MHz	MAKE	NK TESTING			
Receiver setup:	RBW=9 kHz, VBW=30	RBW=9 kHz, VBW=30 kHz, Sweep time=auto				
	Frequency range	Limit (dBuV)			
	(MHz)	Quasi-peak	Average			
Limits:	0.15-0.5	66 to 56*	56 to 46*			
	0.5-5	56	46			
	5-30	60	50			
	Đư _a	~IG	anG Sta			
	Reference	e Plane				
Test Setup:	Test table/Insulation plane Remark E.U.T. Equipment Under Test LISN: Line Impedence Stabilization Notes table height=0.8m	Test table/Insulation plane Remark: E.U.T. Equipment Under Test LISN: Line Impedence Stabilization Network				
Test Mode:	Charging + transmitting	g with modulation	ING TESTIN			
Test Procedure:	line impedance star provides a 50ohm/measuring equipme 2. The peripheral device power through a Loupling impedance refer to the block photographs). 3. Both sides of A.Conducted interfere emission, the relative the interface cable	 The E.U.T is connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and 				
Test Result:	PASS	e)G				
	as STILL	TIME				

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

Report No.: HK2205232147-E





4.1.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)					
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Receiver	R&S	ESR-7	HKE-010	Feb. 18, 2022	Feb. 17, 2023
LISN	R&S	ENV216	HKE-002	Feb. 18, 2022	Feb. 17, 2023
Conducted test software	Tonscend	TS+ Rev 2.5.0.0	HKE-081	N/A	KTESTING N/A

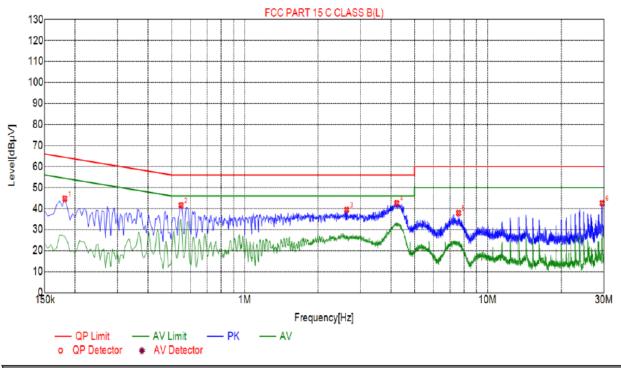
Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com

4.1.3 Test data

Test Specification: Line

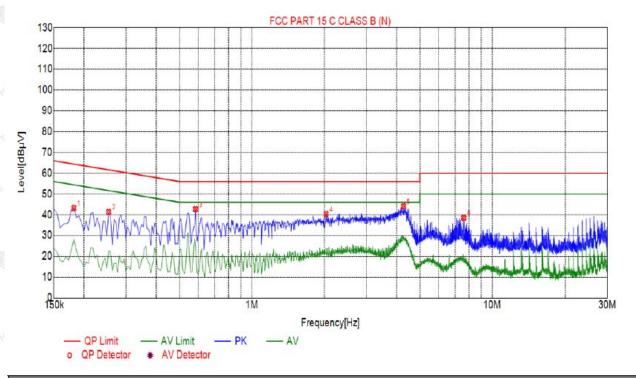


	Suspected List								
	NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Туре
	1	0.1815	44.71	20.06	64.42	19.71	24.65	PK	L
ě	2	0.5460	41.53	20.06	56.00	14.47	21.47	PK	L
<	3	2.6295	39.37	20.21	56.00	16.63	19.16	PK	L
	4	4.2270	42.51	20.25	56.00	13.49	22.26	PK	L
):	5	7.6065	37.85	20.17	60.00	22.15	17.68	PK	L
	6	29.4720	42.53	20.26	60.00	17.47	22.27	PK	L

Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss Level=Test receiver reading + correction factor

Test Specification: Neutral



Sus	Suspected List								
NO.	Freq. [MHz]	Level [dBµV]	Factor [dB]	Limit [dBµV]	Margin [dB]	Reading [dBµV]	Detector	Туре	
1	0.1815	43.26	20.06	64.42	21.16	23.20	PK	N	
2	0.2535	41.36	20.04	61.64	20.28	21.32	PK	N	
3	0.5820	42.69	20.05	56.00	13.31	22.64	PK	N	
4	2.0355	40.41	20.15	56.00	15.59	20.26	PK	N	
5	4.2720	44.07	20.25	56.00	11.93	23.82	PK	N	
6	7.6155	38.48	20.17	60.00	21.52	18.31	PK	N	

Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss Level=Test receiver reading + correction factor.



4.2. Maximum Conducted Output Power

4.2.1. Test Specification

Test Requirement:	FCC Part15 C Section 19	5.247 (b)(3)
Test Method:	KDB 558074	O HUNCO
Limit:	30dBm	NY TESTING
Test Setup:	Power meter	EUT ALAN TESTING
Test Mode:	Transmitting mode with r	modulation
Test Procedure:	FCC KDB 558074 D0 v05r02. 2. The RF output of EUT meter by RF cable an compensated to the r 3. Set to the maximum por EUT transmit continuous.	e Measurement Procedure of 01 15.247 Meas Guidance was connected to the power of attenuator. The path loss was results for each measurement, ower setting and enable the ously, put power and record the results
Test Result:	PASS	WAKTESTING

4.2.2. Test Instruments

RF Test Room						
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due	
Power meter	Agilent	E4419B	HKE-085	Feb. 18, 2022	Feb. 17, 2023	
Power Sensor	Agilent	E9300A	HKE-086	Feb. 18, 2022	Feb. 17, 2023	
RF cable	Times	1-40G	HKE-034	Feb. 18, 2022	Feb. 17, 2023	
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 18, 2022	Feb. 17, 2023	

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



4.2.3. Test Data

Test	Frequency	Maximum C	onducted Output Po	wer (dBm)	LIMIT
Channel	(MHz)	Antenna port 1	Antenna port 2	MIMO	dBm
	O HO.	O HO	TX 802.11b Mode	O HO	(1) HO
CH01	2412	16.34	17.47	/ TESTIN	30
CH06	2437	17.07	17.46	CHUAR.	30
CH11	2462	16.82	17.40	1	30
	.G. 1	HUAKTES	TX 802.11g Mode	HUAK TES	10
CH01	2412	16.57	17.66	1	30
CH06	2437	16.58	17.69	1 0 1	30
CH11	2462	17.23	17.63	1	30
TESTING	V TESTING	V TEST	X 802.11n20 Mode	. T	ESTING . K. TESTING
CH01	2412	17.24	17.77	20.52	30
CH06	2437	17.34	17.59	20.48	30
CH11	2462	17.23	17.53	20.39	30

Note: This product supports antenna 1 and antenna 2 launch, but only support 802.11 n for MIMO mode, not support 802.11 b and 802.11 g for MIMO mode.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



4.3. Emission Bandwidth

4.3.1. Test Specification

Test Requirement:	FCC Part15 C Section 15	5.247 (a)(2)	TESTIN				
Test Method:	KDB 558074	O HINE	MINNE.				
Limit:	>500kHz	N. T.STING	o)G				
Test Setup:	Spectrum Analyzer	EUT NE	AKTES III				
Test Mode:	NAM.	Transmitting mode with modulation					
Test Procedure:	D01 15.247 Meas Gu 2. Set to the maximum por EUT transmit continue 3. Make the measurement resolution bandwidth Video bandwidth (VB) an accurate measure be greater than 500 k	 The testing follows FCC KDB Publication No. 558074 D01 15.247 Meas Guidance v05r02. Set to the maximum power setting and enable the EUT transmit continuously. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement. The 6dB bandwidth must be greater than 500 kHz. Measure and record the results in the test report. 					
Test Result:	PASS	WAY TO THE	"TESTING				

4.3.2. Test Instruments

	RF Test Room						
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due		
Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 18, 2022	Feb. 17, 2023		
RF Cable (9KHz-26.5GHz)	Tonscend	170660	N/A	Feb. 18, 2022	Feb. 17, 2023		
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 18, 2022	Feb. 17, 2023		

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

9

ATION



4.3.3. Test data

For antenna port 1

	i oi antenna p	0.0.	(220)
Test channel	6dB Em	ission Bandwid	th (MHz)
rest channel	802.11b	802.11g	802.11n(H20)
Lowest	10.080	16.440	16.400
Middle	10.000	16.280	17.240
Highest	9.560	16.360	17.160
Limit:	STING	>500k	STING
Test Result:	O HUAN TE O HUAN	PASS	O HUAN'TE O HUAN'

Test plots as follows:

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannon be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

802.11b Modulation

Lowest channel



Middle channel



Highest channel



802.11g Modulation

Lowest channel



Middle channel



Highest channel



802.11n (HT20) Modulation

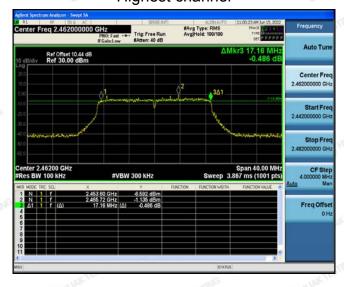
Lowest channel



Middle channel



Highest channel





For antenna port 2

Took also and a	6dB Emission Bandwidth (MHz)				
Test channel	802.11b	802.11g	802.11n(H20)		
Lowest	9.560	16.320	17.320		
Middle	9.560	16.280	16.920		
Highest	9.600	16.160	17.520		
Limit:		≥500 (kHz)	III/G		
Test Result:	AN TESTINGAN	PASS	AN TESTING		

Test plots as follows:

802.11b Modulation

Lowest channel



Middle channel



Highest channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com

Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China





802.11g Modulation

Lowest channel



Middle channel



Highest channel





802.11n (HT20) Modulation

Lowest channel



Middle channel



Highest channel





4.4. Power Spectral Density

4.4.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	KDB 558074
Limit:	The average power spectral density shall not be greater than 8dBm in any 3kHz band at any time interval of continuous transmission.
Test Setup:	Spectrum Analyzer EUT
Test Mode:	Transmitting mode with modulation
Test Procedure:	 The testing follows Measurement procedure 10.2 method PKPSD of FCC KDB Publication No. 558074 D01 15.247 Meas Guidance v05r02. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. Set to the maximum power setting and enable the EUT transmit continuously. Make the measurement with the spectrum analyzer's resolution bandwidth (RBW): 3 kHz ≤ RBW ≤ 100 kHz. Video bandwidth VBW ≥ 3 x RBW. Set the span to at least 1.5 times the OBW. Detector = Peak, Sweep time = auto couple. Employ trace averaging (Peak) mode over a minimum of 100 traces. Use the peak marker function to determine the maximum power level. Measure and record the results in the test report.
Test Result:	PASS

4.4.2. Test Instruments

	RF Test Room						
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due		
Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 18, 2022	Feb. 17, 2023		
RF Cable (9KHz-26.5GHz)	Tonscend	170660	N/A	Feb. 18, 2022	Feb. 17, 2023		
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 18, 2022	Feb. 17, 2023		

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



4.4.3. Test data

For antenna port 1

EUT Set Mode	Channel	Result (dBm/30kHz)	Result (dBm/3kHz)
	Lowest	0.23	-9.77
802.11b	Middle	0.36	-9.64
	Highest	0.6	-9.4
	Lowest	-6.32	-16.32
802.11g	Middle	-6.46	-16.46
	Highest	-6.39	-16.39
	Lowest	-5.68	-15.68
802.11n(H20)	Middle	-6.2	-16.2
	Highest	-6.4	-16.4
PSD test result (dBm/	3kHz)= PSD tes	t result (dBm/30kHz)-10	
Limit: 8dBm/3kHz			
Test Result:	A TESTING	PASS	W TESTING
~7///	- UU1		7/10

Test plots as follows:

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

802.11b Modulation

Lowest channel



Middle channel



Highest channel

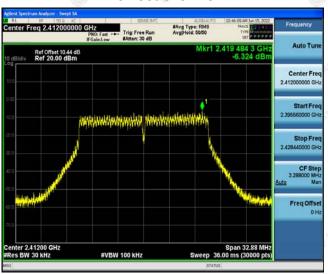


The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

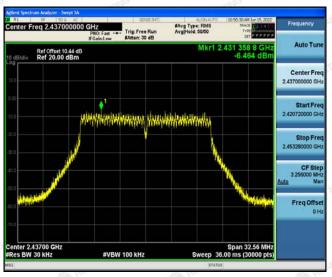
TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com

802.11g Modulation

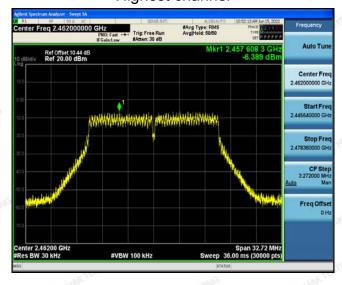
Lowest channel



Middle channel



Highest channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

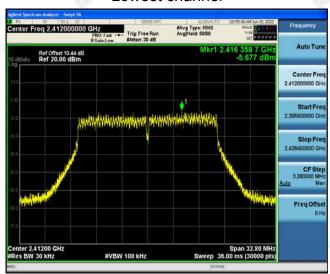
TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com

Add: 1-2F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China



802.11n (HT20) Modulation

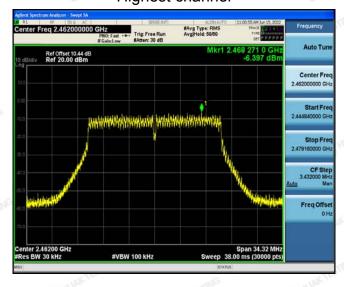
Lowest channel



Middle channel



Highest channel





For antenna port 2

10/2 - 11/1/2	10%	- 1/1/h	all
EUT Set Mode	Channel	Result (dBm/30kHz)	Result (dBm/3kHz)
802.11b	Lowest	1.4	-8.6
	Middle	1.53	-8.47
	Highest	1.78	-8.22
802.11g	Lowest	-5.83	-15.83
	Middle	-5.33	-15.33
	Highest	-5.22	-15.22
802.11n(H20)	Lowest	-5.52	-15.52
	Middle	-4.92	-14.92
	Highest	-5.93	-15.93
PSD test result (dBm/3	kHz)= PSD test	result (dBm/30kHz)-10	
Limit: 8dBm/3kHz			
Test Result:	O HUA	PASS	MINN.

Test plots as follows:

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannon be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com

802.11b Modulation

Lowest channel



Middle channel

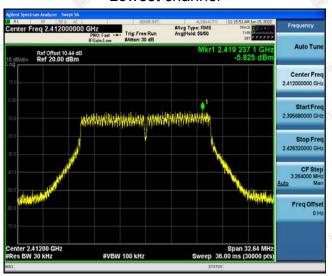


Highest channel

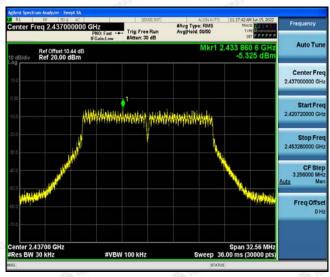


802.11g Modulation

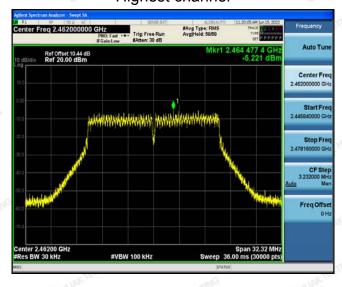
Lowest channel



Middle channel



Highest channel





802.11n (HT20) Modulation

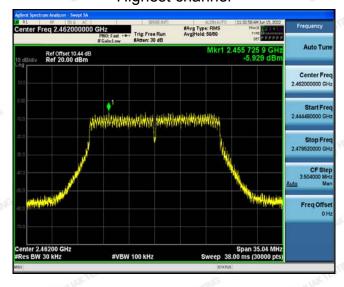
Lowest channel



Middle channel



Highest channel



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannon be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



For MIMO antenna port 1+antenna port 2

TX 802.11b Mode		
Power Density (dBm)	Limit (dBm)	Result
0 1	8	
LAKTESTING I	8 TESTING	I mig
WINTED TO	8	HUKTES
TX 802.11g Mode	AK TESTING	
HO TESTING VESTING	8	ESTING I VESTIN
Mary 1 May	8 (M) HUAN	O House
1	8	1
TX 802.11n/HT20 Mode	WEST	THE STREET
-2.59	8	PASS
-2.50	8 TESTING	PASS
-3.15	8	PASS
	Power Density (dBm) / / / TX 802.11g Mode / / TX 802.11n/HT20 Mode -2.59 -2.50	Power Density (dBm) / 8 / 8 / 8 TX 802.11g Mode / 8 / 8 TX 802.11n/HT20 Mode -2.59 8 -2.50 8

Note: This product supports antenna 1 and antenna 2 launch, but only support 802.11 n for MIMO mode, not support 802.11 b and 802.11 g for MIMO mode.





4.5. Conducted Band Edge and Spurious Emission Measurement

4.5.1. Test Specification

Test Requirement:	FCC Part15 C Section	15.247 (d)		
Test Method:	KDB558074			
Limit:	In any 100 kHz bandwidth outside of the authorized frequency band, the emissions which fall in the non-restricted bands shall be attenuated at least 20 dB / 30dB relative to the maximum PSD level in 100 kHz by RF conducted measurement and radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).			
Test Setup:	Spectrum Analyzer	EUT	ESTIN	
Test Mode:	9	modulation		
Test Procedure:	 Transmitting mode with modulation The testing follows FCC KDB Publication No. 558074 D01 15.247 Meas Guidance v05r02. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement. Set to the maximum power setting and enable the EUT transmit continuously. Set RBW = 100 kHz, VBW=300 kHz, Peak Detector. Unwanted Emissions measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz when maximum peak conducted output power procedure is used. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, the attenuation required under this paragraph shall be 30 dB instead of 20 dB per 15.247(d). Measure and record the results in the test report. The RF fundamental frequency should be excluded 			
Test Result:	PASS		TIN	





4.5.2. Test Instruments

RF Test Room							
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due		
Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 18, 2022	Feb. 17, 2023		
Signal generator	Agilent	N5183A	HKE-071	Feb. 18, 2022	Feb. 17, 2023		
RF Cable (9KHz-26.5GHz)	Tonscend	170660	N/A	Feb. 18, 2022	Feb. 17, 2023		
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 18, 2022	Feb. 17, 2023		

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannon be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

TEL: +86-755 2302 9901 FAX: +86-755 2302 9901 E-mail: service@cer-mark.com



4.5.3. Test Data Chain 1

802.11b Modulation **Highest Channel Lowest Channel** Band Edge Band Edge #Avg Type: RMS Avg|Held: 300/30 #Avg Type: RMS Avg|Held: 300/300 Trig: Free Run Ref Offset 10.44 dB Ref 20.00 dBm Stop Fre Stop Fre CF Ste 13.000000 MH Freq Offse Spurious emission(2412MHz) Spurious emission(2462MHz) PNO: Fast ++- #Atten: 30 dB #Avg Type: RMS Avg|Held: 10/10 PNO: Fast + Trig: Free Run #Avg Type: RM: Avg|Hold: 10/10 Ref Offset 10.44 dB Ref 30.00 dBm Ref Offset 10.44 dB Ref 30.00 dBm .461 46 G 3.756 dE enter Freq 515.000000 MHz PRO: Fast *** Trig: Free Run If Called ow #Atten: 20 dB ter Freq 515.000000 MHz #Avg Type: RMS Avg|Hold: 10/10 #Avg Type: RM: Avg|Hold: 10/10 Fast +== Trig: Free Run Ref Offset 10.44 dB Ref 20.00 dBm Ref Offset 10.44 dB Ref 20.00 dBm Freq Offse

this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity of the report will be confirmed at http://www.cer-mark.com.

ter Freq 13.750000000 GHz

Ref Offset 10.44 dB Ref 20.00 dBm

Ref Offset 10.44 dB Ref 30.00 dBm

#Avg Type: RMS Avg|Held: 10/10

#Avg Type: RMS Avg|Held: 10/10

438 98 G 4.158 dE

Trig: Free Run

2.413 65 GHz 3.433 dBr 25.273 45 GHz 46.481 dBr

PNO: Fast + - Trig: Free Run

Report No.: HK2205232147-E nter Freq 13.750000000 GHz #Avg Type: RMS Avg|Hold: 10/10 Stop Fre Stop Fre CF Ster Freq Offse Freq Offse Spurious emission(2437MHz) #Avg Type: RMS Avg|Hold: 10/10 Trig: Free Run Ref Offset 10.44 dB Ref 20.00 dBm Center Fre #VBW 300 kHz

