

Page 1 of 26

FCC TEST REPORT

Test report On Behalf of SHENZHEN SUNVEYTECH CO.,LTD

For

Wireless Backup camera System Model No.: SWD-MY101V607, SWD-MY101V615, SWD-MY101V606, SWD-MY101V605, SWD-MY101V6020, SWD-MY101V208, SWD-MY101V1, SWD-MY101V2, SWD-MY101V3, SWD-MY101V5, SWD-MY101V6

FCC ID: 2AQNR-SWD-MY101V607

Prepared For :

SHENZHEN SUNVEYTECH CO., LTD

502, Building A, Penglongpan High-Tech Park, No.11, Dafu Industrial Zone, Guanlan Street, Longhua District, Shenzhen, 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:
 Mar. 21, 2022~ Apr. 13, 2022

 Date of Report:
 Apr. 13, 2022

 Report Number:
 HK2203211064-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



Page 2 of 26

Report No.: HK2203211064-E

FIF

TEST RESULT CERTIFICATION

Applicant's name:	SHENZHEN SUNVEYTECH CO.,LTD
Address	502,Building A,Penglongpan High-Tech Park, No.11, Dafu Industrial Zone,Guanlan Street, Longhua District, Shenzhen, China
Manufacture's Name:	SHENZHEN SUNVEYTECH CO.,LTD
Address:	502, Building A, Penglongpan High-Tech Park, No.11, Dafu Industrial Zone, Guanlan Street, Longhua District, Shenzhen, China
Product description	
Trade Mark:	CARMOUR
Product name:	Wireless Backup camera System
Model and/or type reference :	SWD-MY101V607, SWD-MY101V615, SWD-MY101V606, SWD-MY101V605, SWD-MY101V6020, SWD-MY101V208, SWD-MY101V1, SWD-MY101V2, SWD-MY101V3, SWD-MY101V5, SWD-MY101V6
Standarde	FCC Rules and Regulations Part 15 Subpart C Section 15.249

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	Mar. 21, 2022~ Apr. 13, 2022
Date of Issue	Apr. 13, 2022
Test Result	Pass

Testing Engineer 🔬

rang Dia

(Gary Qian)

Technical Manager

Zden

(Eden Hu)

Authorized Signatory :

asin thou

(Jason Zhou)

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.

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

HUAK TESTING

Page 3 of 26

NG

IK Pr

	Table of Co	ontents	Page
1. TEST SUMMARY			5
1.1 . Test Procedure	s and Results		5
1.2 . Information of t	he Test Laboratory		5500
1.3 . Measurement U	Incertainty		5
2 . GENERAL INFORI	MATION		6
2.1 . General Descri	ption of EUT		6
2.2 . Operation of El	JT During Testing		7
2.3 .Description of Te	est Setup		8
2.4 .Measurement Ir	struments List		9
3. CONDUCTED EN	MISSIONS TEST		10
3.1. Conducted Pow	er Line Emission L	imit	10
3.2. Test Setup			10
3.3. Test Procedure			10
3.4. Test Result			🤍 11
4. RADIATED EMISSI	ON TEST		12
4.1. Radiation Limit			12 August 15
4.2. Test Setup			12
4.3. Test Procedure			13
4.4. Test Result			13
5. BAND EDGE			19
5.1. Limits			19
5.2. Test Procedure			19
5.3. Test Result			20
6. OCCUPIED BAND	WIDTH MEASUR	EMENT	22
6.1. Test Setup			22
6.2. Test Procedure			22
6.3. Measurement E	quipment Used		22
6.4. Test Result			22
7. ANTENNA REQUIF	REMENT		24
8. PHOTOGRAPH OF	TEST		25
9. PHOTOS OF THE I	EUT		26

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.

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



T 591

** Modified History **

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Apr. 13, 2022	Jason Zhou
-mG	all	TOLG	NG TOLG

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.



Page 5 of 26

1. TEST SUMMARY

1.1. Test Procedures and Results

DESCRIPTION OF TEST	SECTION NUMBER	RESULT
CONDUCTED EMISSIONS TEST	15.207	N/A
RADIATED EMISSION TEST	15.249(a)/15.209	COMPLIANT
BAND EDGE	15.249(d)/15.205	COMPLIANT
OCCUPIED BANDWIDTH MEASUREMENT	15.215 (c)	COMPLIANT
ANTENNA REQUIREMENT	15.203	COMPLIANT

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.

1.3. Measurement Uncertainty

Measurement L	Jncertainty
---------------	-------------

Conducted Emission Expanded Uncertainty
Radiated emission expanded uncertainty(9kHz-30MHz)
Radiated emission expanded uncertainty(30MHz-1000MHz)
Radiated emission expanded uncertainty(Above 1GHz)

- = 2.71dB, k=2
- = 3.90dB, k=2
 - = 3.90dB, k=2
 - = 4.28dB, k=2

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



CATIO

2. GENERAL INFORMATION

2.1.General Description of EUT

Equipment:	Wireless Backup camera System					
Model Name:	SWD-MY101V607					
Series Model:	SWD-MY101V615, SWD-MY101V606, SWD-MY101V605, SWD-MY101V6020, SWD-MY101V208, SWD-MY101V1, SWD-MY101V2, SWD-MY101V3, SWD-MY101V5, SWD-MY101V6					
Model Difference:	All model's the function, software and electric circuit are the same, only with a product model named different. Test sample model: SWD-MY101V607.					
FCC ID:	2AQNR-SWD-MY101V607					
Antenna Type:	External Antenna					
Antenna Gain:	1dBi					
Operation frequency:	2406-2478MHz					
Number of Channels:	19CH					
Modulation Type:	GFSK					
Power Source:	DC 12V					
Power Rating:	DC 12V					

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.



2.1.1.Carrier Frequency of Channels

1 pr	AN AN	1 pr	and the	MIPT-
Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
2406	STANG 8	2432	15	2465
2409	9	2442	16	2468
2415	10	2445	17	2472
2418	11	2448	18	2475
2422	12	2452	19	2478
2425	13	2455		
2428	14	2458		
	(MHz) 2406 2409 2415 2418 2422 2425	(MHz) Channel 2406 8 2409 9 2415 10 2418 11 2422 12 2425 13	(MHz)Channel(MHz)2406824322409924422415102445241811244824221224522425132455	Channel (MHz) Channel 2406 8 2432 15 2409 9 2442 16 2415 10 2445 17 2418 11 2448 18 2422 12 2452 19 2425 13 2455 1

2.2. Operation of EUT During Testing

Operating Mode

The mode is used: **Transmitting mode** Low Channel: 2406MHz Middle Channel: 2442MHz High Channel: 2478MHz

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.

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



Page 8 of 26

2.3.Description of Test Setup

Operation of EUT during testing:

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. The worst case is X position.

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



NG

IK PB

2.4.Measurement Instruments List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
KTESIN	L.I.S.N.	HUAKTESIN	HUAKTESIN	HUAKT	SIN	KTEST
1.	Artificial Mains	R&S	ENV216	HKE-002	Feb. 18, 2022	1 Year
ING	Network	TESTING		TESTIN		~
2.	Receiver	R&S	ESCI 7	HKE-010	Feb. 18, 2022	1 Year
3.	RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 18, 2022	1 Year
4.05	Spectrum analyzer	R&S	FSP40	HKE-025	Feb. 18, 2022	1 Year
5.	Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 18, 2022	1 Year
6.	Preamplifier	Schwarzbeck	BBV 9743	HKE-006	Feb. 18, 2022	1 Year
7.000	EMI Test Receiver	Rohde & Schwarz	ESCI 7	HKE-010	Feb. 18, 2022	1 Year
8.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	HKE-012	Feb. 18, 2022	1 Year
9.	Loop Antenna	Schwarzbeck	FMZB 1519 B	HKE-014	Feb. 18, 2022	[©] 1 Year
10.	Horn Antenna	Schewarzbeck	9120D	HKE-013	Feb. 18, 2022	1 Year
11.	Pre-amplifier	EMCI	EMC051845S E	HKE-015	Feb. 18, 2022	1 Year
12.	Pre-amplifier	Agilent	83051A	HKE-016	Feb. 18, 2022	1 Year
13.	EMI Test Software EZ-EMC	Tonscend	JY3120-B Version	HKE-083	N/A	N/A
14.	Power Sensor	Agilent	E9300A	HKE-086	Feb. 18, 2022	1 Year
15.	Spectrum analyzer	Agilent	N9020A	HKE-048	Feb. 18, 2022	1 Year
16.	Signal generator	Agilent	N5182A	HKE-029	Feb. 18, 2022	1 Year
17.	Signal Generator	Agilent	83630A	HKE-028	Feb. 18, 2022	1 Year
18.	Shielded room	Shiel Hong	4*3*3	HKE-039	Feb. 18, 2022	3 Year
19.		Schwarzbeck	LB-180400KF	AKTES .	Feb. 18, 2022	1 Year

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.



3. CONDUCTED EMISSIONS TEST

3.1. Conducted Power Line Emission Limit

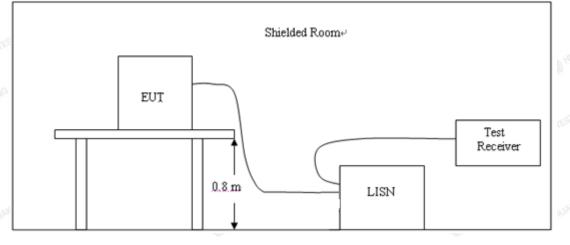
For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following.

Freedoment	M	Maximum RF Line Voltage (dBµV)			
Frequency (MHz)	CLAS	CLASS A		CLASS B	
(11112)	Q.P.	Ave.	Q.P.	Ave.	
0.15 - 0.50	79	66	<mark>66-56*</mark>	56-46*	
0.50 - 5.00	73	60	56	46	
5.00 - 30.0	73	60	60	50	

* Decreasing linearly with the logarithm of the frequency.

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

3.2. Test Setup



- 3.3.Test Procedure
- 1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
- 2. Support equipment, if needed, was placed as per ANSI C63.10.
- 3.All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4.If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hzpower through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5.All support equipments received AC power from a second LISN, if any.
- 6. The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7. Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

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

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



Page 11 of 26

Report No.: HK2203211064-E

3.4.Test Result

Not applicable. Note: EUT power supply by DC Power, so this test item not applicable.

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.

FICATION



4. RADIATED EMISSION TEST

4.1. Radiation Limit

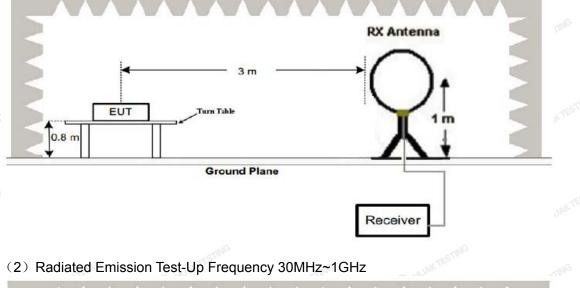
For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

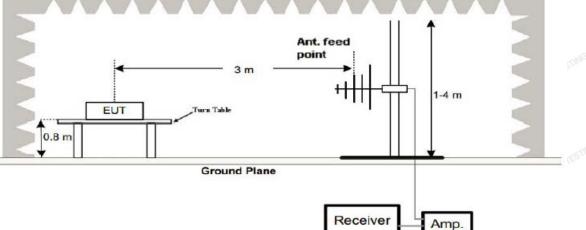
Frequency	Distance	Radiated	Radiated
(MHz)	(Meters)	(dBµV/m)	(µV/m)
0.009-0.490	300	20log 2400/F (kHz)	2400/F (kHz)
0.490-1.705	30	20log 24000/F (kHz)	24000/F (kHz)
1.705-30	30	20log 30	30
30-88	3	40	100
88-216	3	43.5	150
216-960	TESTING 3	46	200
Above 960	3	54	500
1000	100	CAN VIGHT	100

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

4.2. Test Setup

(1) Radiated Emission Test-Up Frequency Below 30MHz



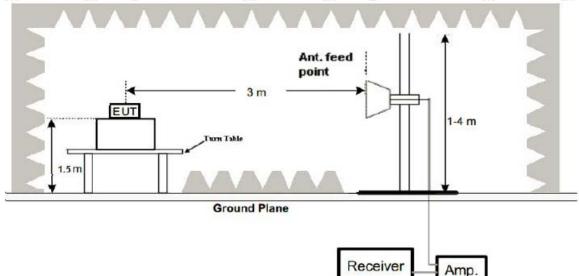


The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity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

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



(3) Radiated Emission Test-Up Frequency Above 1GHz



- 4.3.Test Procedure
 - 1. Below 1GHz measurement the EUT is placed on turntable which is 0.8m above ground plane. And above 1GHz measurement EUT was placed on low permittivity and low tangent turn table which is 1.5m above ground plane.
 - 2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
 - 3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highestemissions.
 - 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
 - 5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
 - 6. Repeat above procedures until the measurements for all frequencies are complete.
 - 7. The test frequency range from 9KHz to25GHz per FCC PART 15.33(a).

Note:

For battery operated equipment, the equipment tests shall be performed using a new battery.

4.4. Test Result

PASS

All the test modes completed for test. The worst case of Radiated Emission is CH 01; the test data of this mode was reported.

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

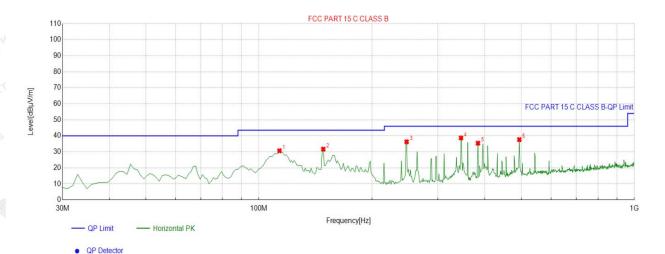


Page 14 of 26

АР ПР

Below 1GHz Test Results:

Antenna polarity: H



		<u>251</u> 251 251 251							
Suspe	cted List								
NO	Freq.	Factor	Reading	Level	Limit	Margin	Height	Angle	Delevite
NO.	[MHz]	[dB]	[dBµV/m]	[dBµV/m]	[dBµV/m]	[dB]	[cm]	[°]	Polarity
1	113.5035	-16.02	46.68	30.66	43.50	12.84	100	134	Horizontal
2	148.4585	-20.12	51.82	31.70	43.50	11.80	100	2	Horizontal
3	247.4975	-13.51	49.78	36.27	46.00	9.73	100	359	Horizontal
4	345.5656	-11.67	50.37	38.70	46.00	7.30	100	260	Horizontal
5	383.4334	-10.76	46.19	35.43	46.00	10.57	100	263	Horizontal
6	494.1241	-8.45	46.08	37.63	46.00	8.37	100	55	Horizontal

Remark: Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

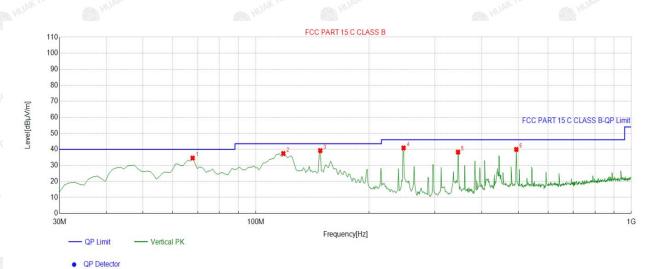
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity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



NG

IK Pr

Antenna polarity: V



Suspe	cted List								
NO.	Freq.	Factor	Reading	Level	Limit	Margin	Height	Angle	Delerity
NO.	[MHz]	[dB]	[dBµV/m]	[dBµV/m]	[dBµV/m]	[dB]	[cm]	[°]	Polarity
1	67.8679	-17.13	51.68	34.55	40.00	5.45	100	25	Vertical
2	118.3584	-16.83	54.24	37.41	43.50	6.09	100	1	Vertical
3	148.4585	-20.12	59.33	39.21	43.50	4.29	100	337	Vertical
4	247.4975	-13.51	54.38	40.87	46.00	5.13	100	341	Vertical
5	345.5656	-11.67	49.95	38.28	46.00	7.72	100	76	Vertical
6	494.1241	-8.45	48.39	39.94	46.00	6.06	100	88	Vertical
			GTIM			STI	P.77		

Remark: Factor = Cable loss + Antenna factor – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

Harmonics and Spurious Emissions

Frequency Range (9 kHz-30MHz)

	Frequency (MHz)		Level@3m (dBµ∖	//m)	Limit@3m (dB		βμV/m)
Un.	- Alto	NUPKT	-TNG		UNIAK TESTIN		TING
	HUAK TES	0	HILAX TES		0	HUP	KTED
		STRG			TSTING		
	- me M	Alt	Die	G HU	le .		TING

Note: 1. Emission Level=Reading+ Cable loss+ Antenna factor-Amp factor.

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement.

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.

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





Above 1 GHz Test Results: CH Low (2406MHz)

Horizontal:

	Notes a	AKTE	1 Maria		att	Hay
Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2406	104.14	-5.84	98.3	114 HUAK	-15.7	peak
2406	85.36	-5.84	79.52	94	-14.48	AVG
4812	55.13	-3.64	51.49	74	-22.51	peak
4812	43.90	-3.64	40.26	54	-13.74	AVG
7218	51.24	-0.95	50.29	74	-23.71	peak
7218	42.08	-0.95	41.13	54	-12.87	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
2406	107.52	-5.84	101.68	114	-12.32	peak
2406	82.79	-5.84	76.95	94	-17.05	AVG
4812	54.19	-3.64	50.55	74	-23.45	peak
4812	42.66	-3.64	39.02	54	-14.98	AVG
7218	52.90	-0.95	51.95	. 74	-22.05	peak
7218	40.02	-0.95	39.07	54	-14.93	AVG

Remark: Factor = Antenna Factor + Cable Loss - Pre-amplifier.

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.



- L

CH Middle (2442MHz)

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detecto
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2442	109.28	-5.71	103.57	114	-10.43	peak
2442	78.12	-5.71	72.41	94	-21.59	AVG
4884	55.12	-3.51	51.61	74	-22.39	peak
4884	42.48	-3.51	38.97	54	-15.03	AVG
7326	53.14	-0.82	52.32	74	-21.68	peak
7326	40.07	-0.82	39.25	54	-14.75	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Datasta
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
2442	105.09	-5.71	99.38	114	-14.62	peak
2442	81.88	-5.71	76.17	94	-17.83	AVG
4884	56.46	-3.51	52.95	74	-21.05	peak
4884	44.91	-3.51	41.4	54	-12.6	AVG
7326	55.54	-0.82	54.72	74	-19.28	peak
o ⁶ 7326	43.12	-0.82	42.3	a ⁶⁶ 54	-11.7	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

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.

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



CH High (2478MHz)

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
2478	102.35	-5.65	96.7	114	-17.3	peak
2478	82.28	-5.65	76.63	94	-17.37	AVG
4956	56.13	-3.43	52.7	74	-21.3	peak
4956	47.88	-3.43	44.45	54	-9.55	AVG
7434	54.69	-0.75	53.94	74	-20.06	peak
7434	42.47	-0.75	41.72	54	-12.28	AVG

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB) since	(dBµV/m)	(dBµV/m)	(dB)	Detector Type
2478	104.72	-5.65	99.07	114	-14.93	peak
2478	81.53	-5.65	75.88	94	-18.12	AVG
4956	57.21	-3.43	53.78	74	-20.22	peak
4956	42.35	-3.43	38.92	54	-15.08	AVG
7434	53.49	-0.75	52.74	74	-21.26	peak
7434	40.60	-0.75	39.85	54	-14.15	AVG

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Remark :

(1) Measuring frequencies from 1 GHz to the 25 GHz.

(2) "F" denotes fundamental frequency; "H" denotes spurious frequency; "E" denotes band edge frequency.

(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.

(4)The emissions are attenuated more than 20dB below the permissible limits are not record in the report.
(5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHzand video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHzand video bandwidth of test receiver/spectrum analyzer is 10Hz. The resolution bandwidth of test receiver/spectrum analyzer is 10Hz.

(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

(7)All modes of operation were investigated and the worst-case emissions are reported.

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

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



Page 19 of 26

5. BAND EDGE

5.1. Limits

FCC PART 15.249(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

5.2.Test Procedure

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSIC63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW to 1MHz and VBM to 3MHz to measure the peak field strength and set RBW to 1MHz and VBW to 10Hz to measure the average radiated field strength.

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



PASS

Radiated Band Edge Test: Operation Mode: TX CH Low (2406MHz) Horizontal (Worst case)

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m) (dB)		Туре
2310	55.89	-5.81	50.08	74 smis	-23.92	peak
2310	de Ot	-5.81		54	1	AVG
2390	54.56	-5.84	48.72	74	-25.28	peak
2390	/	-5.84	1	54	/	AVG
2400	52.87	-5.84	47.03	74	-26.97	peak
2400	HAK TESTIN	-5.84	/ JAK TEAN	54	K TESTIN	AVG

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2310	57.26	-5.81	51.45	74	-22.55	peak
2310	1	-5.81	1	54	1	AVG
2390	56.89	-5.84	51.05	74	-22.95	peak
2390	1	-5.84	1	54	/	AVG
2400	53.14	-5.84	47.3	74	-26.7	peak
2400	TEST	-5.84	IN A TES	54	1	AVG

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.

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



Operation Mode: TX CH High (2478MHz) Horizontal (Worst case)

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	– Detector Type peak	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
2483.50	56.28	-5.65	50.63	74	-23.37		
2483.50	1	-5.65		54	G I	AVG	
2500.00	53.79	-5.65	48.14	74	-25.86	peak	
2500.00	LIAK TEST	-5.65	STIMS / WANTES	54	TESTIN	AVG	

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type peak	
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)		
2483.50	56.71	-5.65	51.06	74	-22.94		
2483.50	sile on	-5.65	TING /	54	I	AVG	
2500.00	52.69	-5.65	47.04	74	-26.96	peak	
2500.00	1	-5.65	/	54	1	AVG	

Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.

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.



6. OCCUPIED BANDWIDTH MEASUREMENT

6.1. Test Setup

Same as Radiated Emission Measurement

- 6.2.Test Procedure
 - 1. The EUT was placed on a turn table which is 0.8m above ground plane.
 - 2. Set EUT as normal operation.
 - 3. Based on ANSI C63.10 section 6.9.2: RBW=51KHz. VBW= 150 KHz, Span=8MHz.
 - 4. The useful radiated emission from the EUT was detected by the spectrum analyzer with peak detector.

6.3. Measurement Equipment Used

Same as Radiated Emission Measurement

6.4. Test Result

PASS

20dB Bandwidth (MHz)	Result	
4.358	PASS	
4.354	PASS	
4.373	PASS	
	(MHz) 4.358 4.354	

CH: 2406MHz



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.

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



٥V

CH: 2442MHz



CH: 2478MHz

RL RF 50 Ω AC enter Freq 2.47800000	0 GHz #IFGain:Low	SENSE: Center Freq: Trig: Free Ru #Atten: 10 dE	2.478000000 Gi in Avg	ALIGN AUTO Hz Hold:>10/10	Radio Std		Freq	uency
dB/div Ref 20.00 dB	m			Mk		756 GHz 87 dBm		
99 		1						n ter Fre 10000 GH
	win with the second sec	American	and when the way	her when a				
					h			
					IU a se se c	Martin V		
enter 2.478 GHz Res BW 51 kHz		#VBW	150 kHz			an 8 MHz 3.867 ms	80	CF Ste
Occupied Bandwid	th	Т	otal Power	1.6	3 dBm		<u>Auto</u>	Ma
3	.9585 MI	z					Fre	eq Offs
Transmit Freq Error	-2.344 H	(Hz O	BW Power	9	9.00 %			0
x dB Bandwidth	4.373 N	IHz x	dB	-20	.00 dB			

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.

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



HUAK TESTING

7. ANTENNA REQUIREMENT

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna Connected Construction

The antenna used in this product is a External Antenna, which have non-standard antenna jack. It conforms to the standard requirements. The directional gains of antenna used for transmitting is1dBi.

<u>ANTENNA</u>



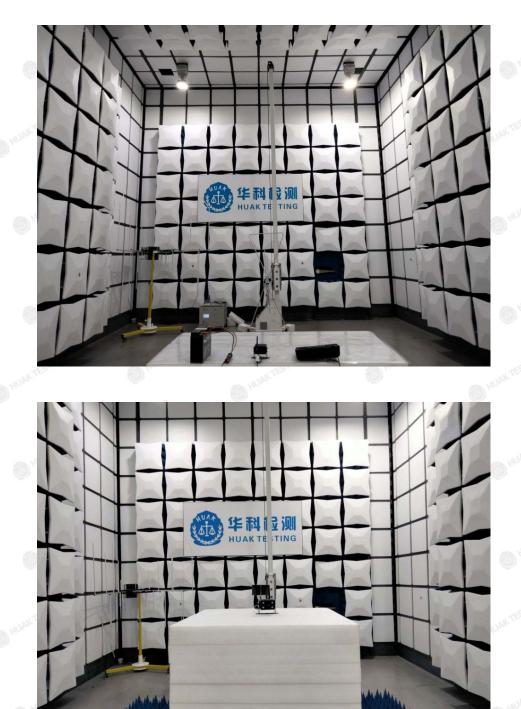
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 30 days only. The document is issued by HUAK, this document cannont be reproduced except in full with our prior written permission. The more details and the authenticity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



Page 25 of 26

8.PHOTOGRAPH OF TEST

Radiated Emission



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.



ACATIA

9. PHOTOS OF THE EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos.

-----End of test report-----

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.