



FCC Test Report

Test report

On Behalf of

ZHENGZHOU DEWENWILS NETWORK TECHNOLOGY CO., LTD.

For

Matter Module

Model No.: UAM053

FCC ID: 2A4G9-UAM053

Prepared For : **ZHENGZHOU DEWENWILS NETWORK TECHNOLOGY CO., LTD.**
No.2602,26th Floor,Block B,Dongfang Building, No.198-19, Songshan South Road,
Erqi District, Zhengzhou, 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: **TESTING Jul. 08, 2025 ~ Jul. 17, 2025**

Date of Report: **Jul. 17, 2025**

Report Number: **HK2507083706-2E**

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

Shenzhen HUAK Testing Technology Co., Ltd. Tel.: +86-0755-2302 9901 E-mail: info@huak.com Web.: www.huak.com

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

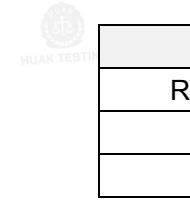
Contents

1	Test Summary	5
1.1	Test Description.....	5
1.2	Measurement Uncertainty	6
1.3	Information of the Test Laboratory	6
2	General Information.....	7
2.1	General Description of EUT	7
2.2	Description of Test Conditions	9
2.3	Description of Test Setup	10
2.4	Description of Support Units.....	11
3	Equipments List for All Test Items.....	12
4	Test Result.....	13
4.1	Antenna Requirement.....	13
4.2	AC Power Line Conducted Emission	14
4.3	Radiated Emissions Measurement.....	18
4.4	Maximum Peak Output Power Measurement	27
4.5	Power Spectral Density	28
4.6	6db Bandwidth.....	31
4.7	Occupied Bandwidth.....	33
4.8	Band Edge.....	34
4.9	Conducted Spurious Emissions	36
5	Test Setup Photo	40
6	Photos of the EUT	42



HUAK TESTING

HUAK TESTING



HUAK TESTING



HUAK TESTING



HUAK TESTING



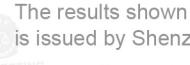
HUAK TESTING



HUAK TESTING



HUAK TESTING



HUAK TESTING



HUAK TESTING

HUAK TESTING

** Modified History **

Revision	Description	Issued Data	Remark
Revision 1.0	Initial Test Report Release	Jul. 17, 2025	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 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

Shenzhen HUAK Testing Technology Co., Ltd. Tel.: +86-0755-2302 9901 E-mail: info@huak.com Web.: www.huak.com

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



HUAK TESTING

1.2 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	Uncertainty
1	Conducted Emission Test	±2.71dB
2	All emissions, radiated(<1G)	±3.90dB
3	All emissions, radiated(>1G)	±4.28dB

1.3 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.

ECC Designation Number is CN1229

Canada IC CAB identifier is CN0045

CNAS Registration Number is 19589



HUAK TESTING

2 General Information

2.1 General Description of EUT

EUT Name:	Matter Module
Model No:	UAM053
Series Models:	N/A
Model Difference:	N/A
Trade Mark:	N/A
Operation Frequency:	2402 MHz to 2480 MHz
Channel Separation:	2MHz
Number of Channel:	40
Modulation Technology:	GFSK
Hardware Version:	V1.0
Software Version:	V1.0
Antenna Type:	PCB Antenna
Antenna Gain:	-1.2dBi
Power Supply:	DC3.0-3.6V
Note:	
1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.	
2. Antenna gain Refer to the antenna specifications.	
3. The cable loss data is obtained from the supplier.	
4. The test results in the report only apply to the tested sample.	

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

Shenzhen HUAK Testing Technology Co., Ltd. Tel : +86-0755-2302 9901 E-mail: info@huak.com Web : www.huak.com

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

Address: F2N1, Building B2, Jiancheng Zhongcheng Zimiao Innovation Park, Tieping, Futian Street, Bao'an District, Shenzhen, Guangdong, China



HUAK TESTING

Description of Channel:					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	14	2430	28	2458
1	2404	15	2432	29	2460
2	2406	16	2434	30	2462
3	2408	17	2436	31	2464
4	2410	18	2438	32	2466
5	2412	19	2440	33	2468
6	2414	20	2442	34	2470
7	2416	21	2444	35	2472
8	2418	22	2446	36	2474
9	2420	23	2448	37	2476
10	2422	24	2450	38	2478
11	2424	25	2452	39	2480
12	2426	26	2454		
13	2428	27	2456		

The EUT has been operated in modulations: GFSK independently.

NO.	Test Mode Description
1	Low channel TX
2	Middle channel TX
3	High channel TX

Note:

1. All the test modes can be supply by Built-in Li-ion battery, only the result of the worst case was recorded in the report if no any records.
2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.



HUAK TESTING

HUAK TESTING

2.2 Description of Test Conditions

(1) E.U.T. test conditions:

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

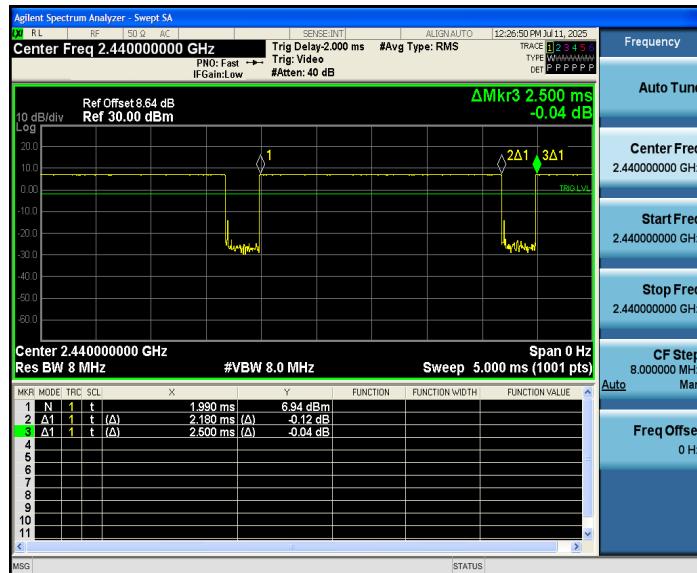
(2) Frequency range of radiated measurements:

The test range will be up to the tenth harmonic of the highest fundamental frequency.

(3) Pre-test the EUT in all transmitting mode at the lowest (2402 MHz), middle (2440 MHz) and highest (2480 MHz) channel with different data packet and conducted to determine the worst-case mode, only the worst-case results are recorded in this report.

(4) Mode Test Duty Cycle

Mode	Duty Cycle
BT-LE(1Mbps)	0.872



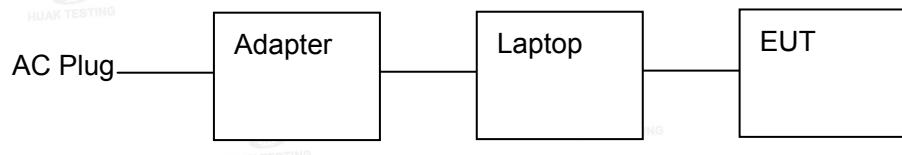
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

Shenzhen HUAK Testing Technology Co., Ltd. Tel.: +86-0755-2302 9901 E-mail: info@huak.com Web.: www.huak.com

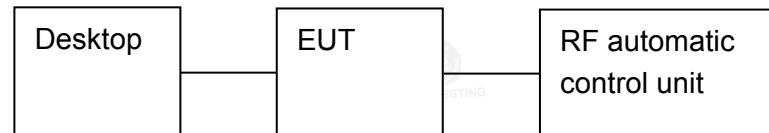
Add.: 1-2/F., Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

2.3 Description of Test Setup

Operation of EUT during AC Conducted testing and Radiation testing



Operation of EUT during RF conducted 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

**HUAK TESTING**

HUAK TESTING

2.4 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.

Item	Equipment	Trade Mark	Model/Type No.	Specification	Remark
1	Matter Module	N/A	UAM053	N/A	EUT
2	Laptop	Lenovo	TP00096A	Input: DC20V, 2.25~3.25A Output: DC5V, 0.5A	Peripheral
3	Adapter	Lenovo	ADLX65YCC3A	Input: AC100-240V, 1.8A, 50-60Hz Output: DC20V/3.25A, DC15V/3A, DC12V/3A, DC9V/2A, DC5V/2A	Peripheral

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. 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 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

Shenzhen HUAK Testing Technology Co., Ltd. Tel.: +86-0755-2302 9901 E-mail: info@huak.com Web.: www.huak.com

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



3 Equipments List for All Test Items

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	L.I.S.N.	R&S	ENV216	HKE-002	2025/02/19	1 Year
2	L.I.S.N.	R&S	ENV216	HKE-059	2025/02/19	1 Year
3	EMI Test Receiver	R&S	ESR	HKE-005	2025/02/19	1 Year
4	Spectrum analyzer	Agilent	N9020A	HKE-025	2025/02/19	1 Year
5	Spectrum analyzer	Agilent	N9020A	HKE-117	2025/02/19	1 Year
6	Spectrum analyzer	R&S	FSV3044	HKE-126	2025/02/19	1 Year
7	Preamplifier	EMCI	EMC051845S	HKE-006	2025/02/19	1 Year
8	Preamplifier	Schwarzbeck	BBV 9743	HKE-016	2025/02/19	1 Year
9	Preamplifier	A.H. Systems	SAS-574	HKE-182	2025/02/19	1 Year
10	6d Attenuator	Pasternack	6db	HKE-184	2025/02/19	1 Year
11	EMI Test Receiver	Rohde & Schwarz	ESR-7	HKE-010	2025/02/19	1 Year
12	Broadband Antenna	Schwarzbeck	VULB9168	HKE-167	2024/02/21	2 Year
13	Loop Antenna	COM-POWER	AL-130R	HKE-014	2024/02/21	2 Year
14	Horn Antenna	Schwarzbeck	9120D	HKE-013	2024/02/21	2 Year
15	EMI Test Software	Tonscend	JS32-CE 2.5.0.6	HKE-081	/	/
16	EMI Test Software	Tonscend	JS32-RE 5.0.0	HKE-082	/	/
17	RF Automatic control unit	Tonscend	JS0806-1	HKE-096	2025/02/19	1 Year
18	High pass filter unit	Tonscend	JS0806-F	HKE-055	2025/02/19	1 Year
19	Wireless Communication Test Set	R&S	CMU200	HKE-026	2025/02/19	1 Year
20	Wireless Communication Test Set	R&S	CMW500	HKE-027	2025/02/19	1 Year
21	High-low temperature chamber	Guangke	HT-80L	HKE-118	2025/06/09	1 Year
22	Temperature and humidity meter	Boyang	HTC-1	HKE-075	2025/06/09	1 Year
23	RF Test Software	Tonscend	JS1120-3 Version 3.5.39	HKE-083	/	/
24	10dB Attenuator	Schwarzbeck	VTSD9561F	HKE-153	2025/02/19	1 Year
25	RSE Test Software	Tonscend	JS36-RSE 5.0.0	HKE-184	/	/

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

4 Test Result

4.1 Antenna Requirement

4.1.1 Standard Requirements

High Testing 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. And according to FCC 47 CFR Section 15.247, if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is a PCB Antenna, not easy to remove. It conforms to the standard requirements. The directional gains of antenna used for transmitting is -1.2dBi.

4.1.2 EUT Antenna



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.



4.2 AC Power Line Conducted Emission

4.2.1 Applied Procedures / Limit

According to FCC CFR Title 47 Part 15 Subpart C Section 15.207, AC Power Line Conducted Emissions Limits for Licence-Exempt Radio Apparatus as below:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency

4.2.2 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 C63.10:2020.
2. Support equipment, if needed, was placed as per ANSI C63.10:2020.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10:2020.
4. The adapter received AC120V/60Hz power 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.
8. During the above scans, the emissions were maximized by cable manipulation.

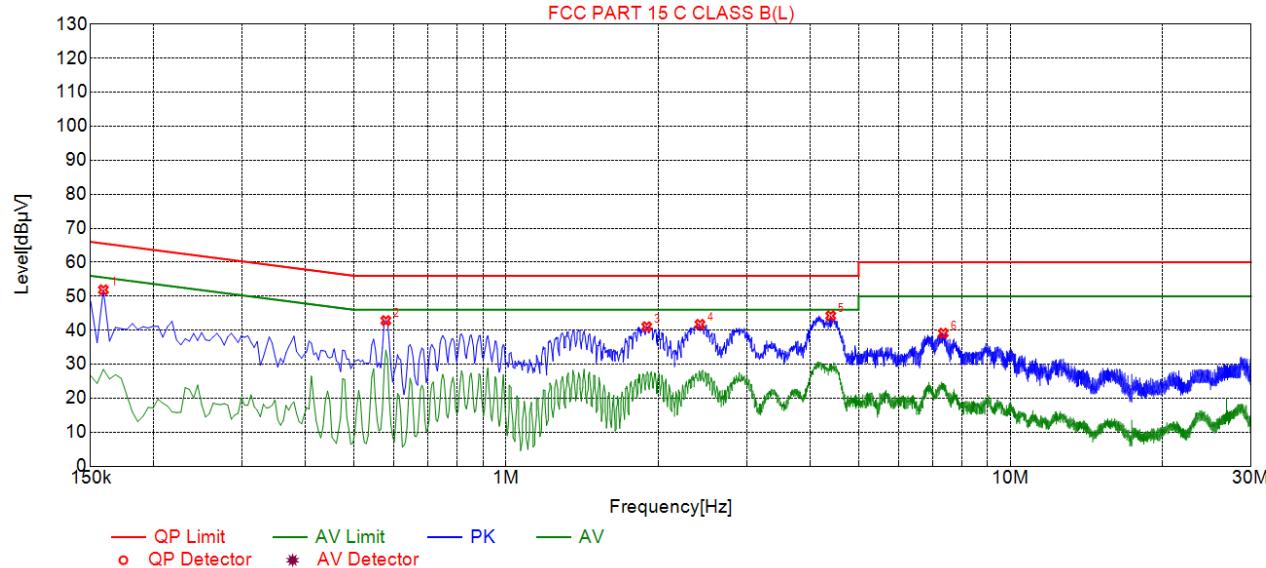
4.2.4 Test Results

Remark: All the test modes completed for test. only the worst result

Of was reported as below

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)

Test Specification: Line



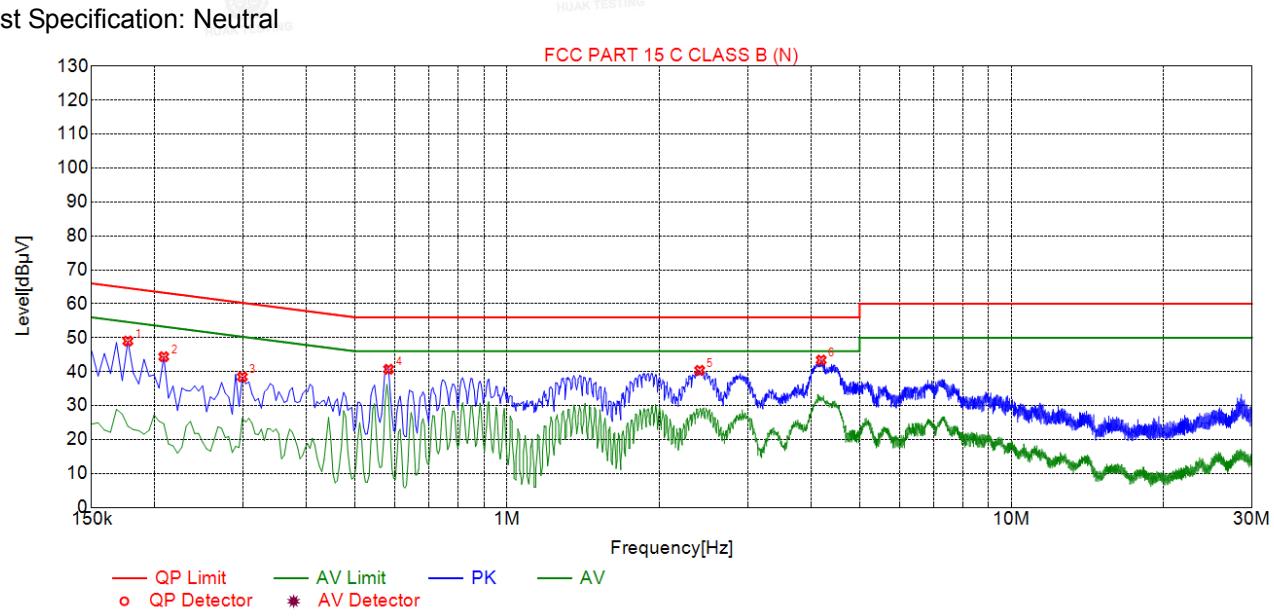
Suspected List

NO.	Freq. [MHz]	Level [dB μ V]	Factor [dB]	Limit [dB μ V]	Margin [dB]	Reading [dB μ V]	Detector	Type
1	0.1590	51.90	19.56	65.52	13.62	32.34	PK	L
2	0.5775	42.83	19.77	56.00	13.17	23.06	PK	L
3	1.9005	41.05	20.11	56.00	14.95	20.94	PK	L
4	2.4225	41.74	20.20	56.00	14.26	21.54	PK	L
5	4.4025	44.25	20.36	56.00	11.75	23.89	PK	L
6	7.3590	39.13	20.49	60.00	20.87	18.64	PK	L

Remark: Margin = Limit – Level

Correction factor = Cable loss + LISN insertion loss

Level = Test receiver reading \pm correction factor



Suspected List

NO.	Freq. [MHz]	Level [dB μ V]	Factor [dB]	Limit [dB μ V]	Margin [dB]	Reading [dB μ V]	Detector	Type
1	0.1770	49.02	19.65	64.63	15.61	29.37	PK	N
2	0.2085	44.41	19.64	63.26	18.85	24.77	PK	N
3	0.2985	38.47	19.67	60.28	21.81	18.80	PK	N
4	0.5820	40.71	19.75	56.00	15.29	20.96	PK	N
5	2.4090	40.38	20.00	56.00	15.62	20.38	PK	N
6	4.1955	43.42	20.18	56.00	12.58	23.24	PK	N

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

Shenzhen HUAK Testing Technology Co., Ltd. Tel: +86-0755-2302 9901 E-mail: info@huak.com Web: www.huak.com

Shenzhen Huak Testing Technology Co., Ltd. Tel.: +86-0755-2302 9901 E-mail: info@huak.com Web: www.huak.com

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

4.3 Radiated Emissions Measurement

4.3.1 Applied Procedures / Limit

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission out of authorized band shall not exceed the following table at a 3 meters measurement distance.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

Except when the requirements applicable to a given device state otherwise, emissions from license-exempt transmitters shall comply with the field strength limits shown in table below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission.

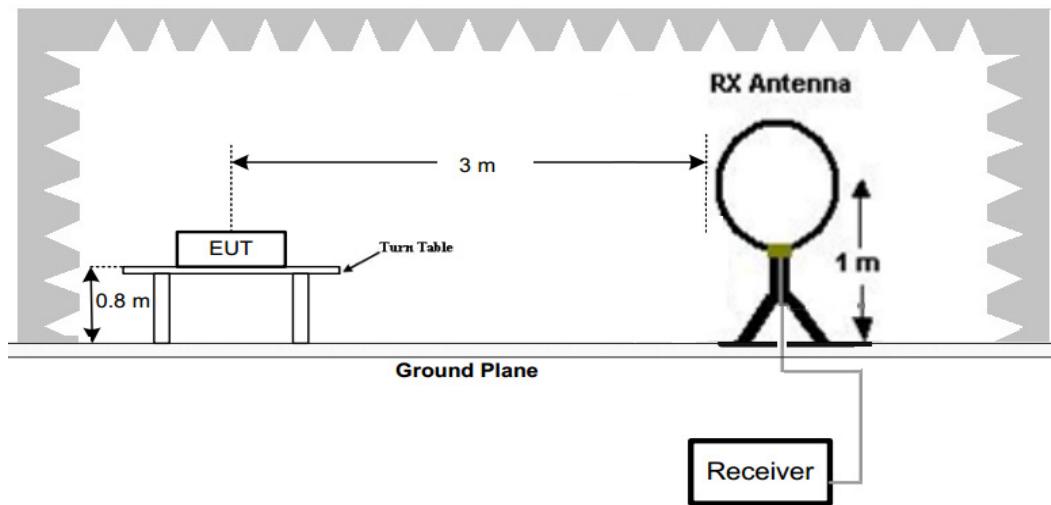
Radiated emission limits

Frequency (MHz)	Distance (Meters)	Radiated (dB μ V/m)	Radiated (μ V/m)
0.009-0.49	3	$20\log(2400/F(\text{KHz}))+40\log(300/3)$	$2400/F(\text{KHz})$
0.49-1.705	3	$20\log(24000/F(\text{KHz}))+40\log(30/3)$	$24000/F(\text{KHz})$
1.705-30	3	$20\log(30)+40\log(30/3)$	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

4.3.2 Test Setup

Test Configuration:

1) 9 kHz to 30 MHz emissions:



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.



HUAK TESTING

HUAK TESTING



HUAK TESTING



HUAK TESTING

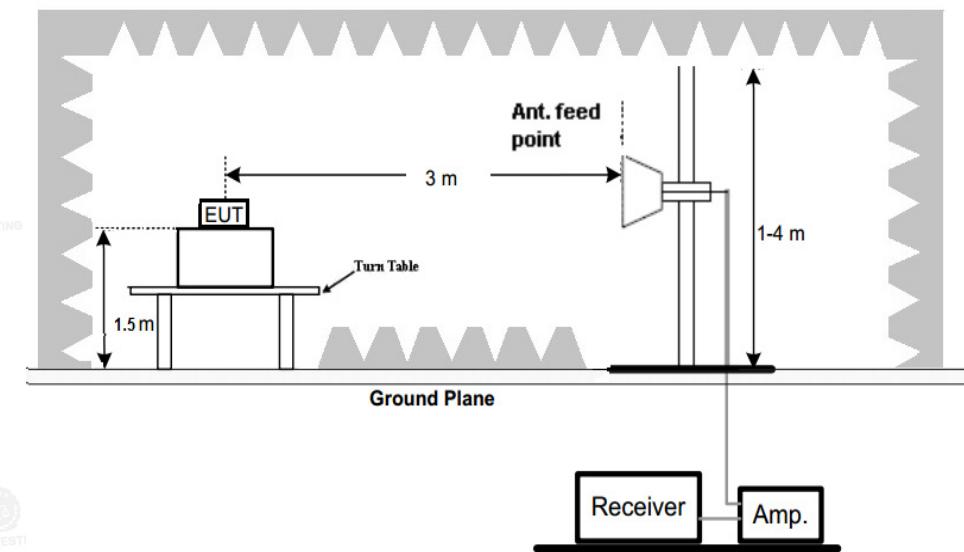
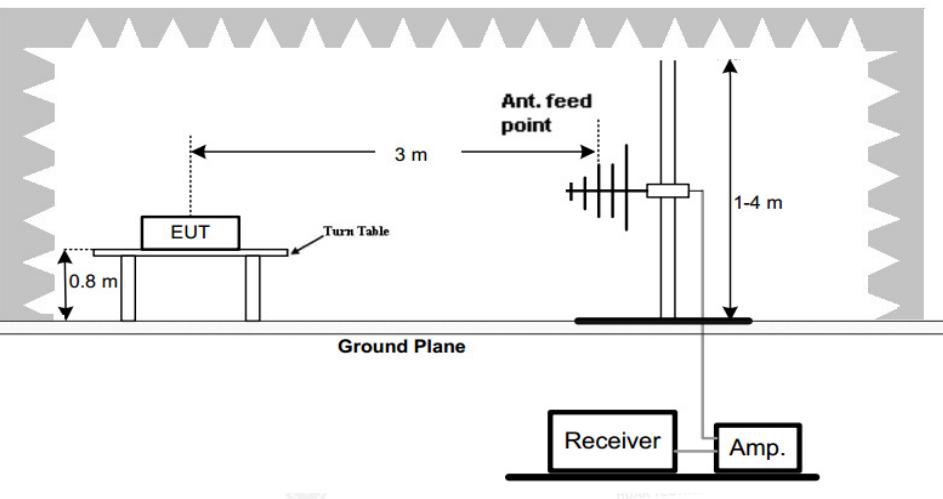


HUAK TESTING



HUAK TESTING

3) 1 GHz to 25 GHz emissions:



Test Procedure

1. The EUT was placed on turn table which is 0.8m above ground plane for below 1GHz test, and on a low permittivity and low loss tangent turn table which is 1.5m above ground plane for above 1GHz test.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

Shenzhen HUAK Testing Technology Co., Ltd. Tel.: +86-0755-2302 9901 E-mail: info@huak.com Web.: www.huak.com

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



HUAK TESTING

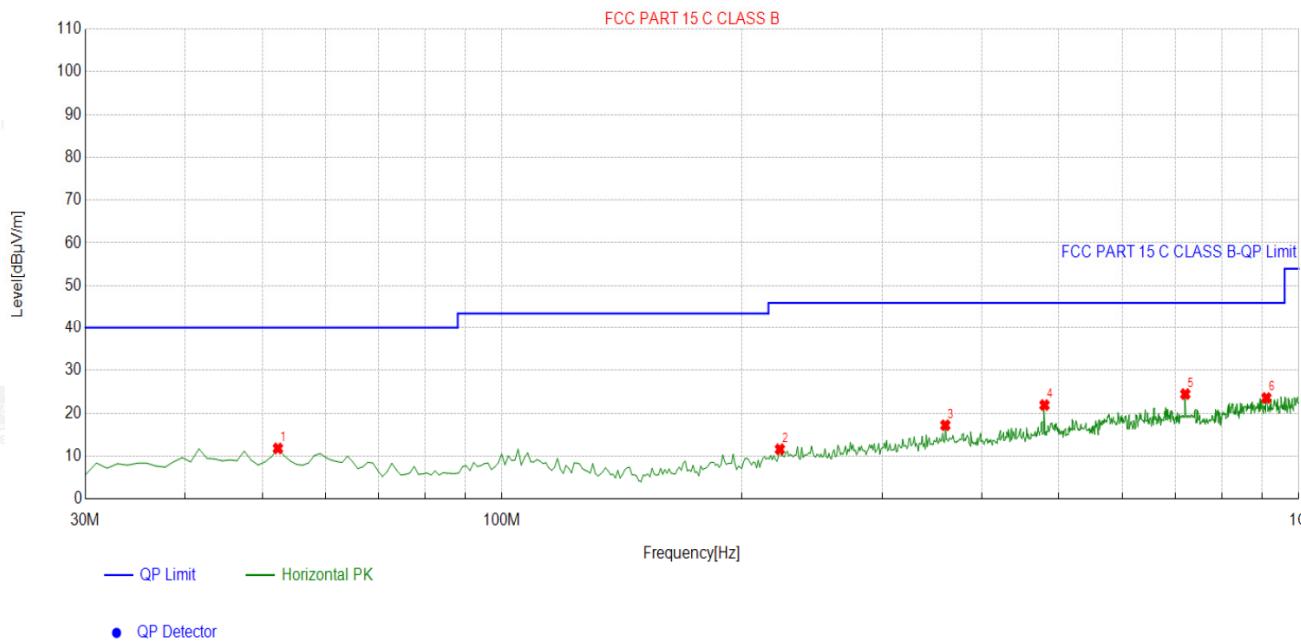
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

4.3.3 Test Result

Below 1GHz Test Results:

All modes have been tested, only the worst mode of GFSK Low channel TX is reflected.

Antenna polarity: H



Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dB μ V/m]	Level [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	52.3323	-13.35	25.17	11.82	40.00	28.18	100	72	Horizontal
2	223.2232	-14.15	25.78	11.63	46.00	34.37	100	348	Horizontal
3	360.1301	-9.86	27.08	17.22	46.00	28.78	100	82	Horizontal
4	479.5596	-8.27	30.19	21.92	46.00	24.08	100	146	Horizontal
5	720.3604	-4.25	28.73	24.48	46.00	21.52	100	107	Horizontal
6	910.6707	-1.21	24.79	23.58	46.00	22.42	100	355	Horizontal

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

**HUAK TESTING**

HUAK TESTING

HUAK TESTING

HUAK TESTING

For 1GHz to 25GHz**CH Low (2402MHz)****Horizontal:**

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
4804	54.65	-3.65	51.00	74.00	23.00	peak
4804	43.35	-3.65	39.70	54.00	14.30	Avg
7206	56.18	-0.95	55.23	74.00	18.77	peak
7206	44.12	-0.95	43.17	54.00	10.83	Avg

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

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
4804	55.23	-3.65	51.58	74.00	22.42	peak
4804	43.54	-3.65	39.89	54.00	14.11	Avg
7206	56.58	-0.95	55.63	74.00	18.37	peak
7206	44.73	-0.95	43.78	54.00	10.22	Avg

Remark: Factor = Cable loss + Antenna factor + Attenuator – 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 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

Shenzhen HUAK Testing Technology Co., Ltd. Tel.: +86-0755-2302 9901 E-mail: info@huak.com Web.: www.huak.com

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



HUAK TESTING

CH Middle (2440MHz)

Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
4880.00	56.09	-3.54	52.55	74.00	21.45	peak
4880.00	43.92	-3.54	40.38	54.00	13.62	AVG
7320.00	54.13	-0.81	53.32	74.00	20.68	peak
7320.00	42.50	-0.81	41.69	54.00	12.31	AVG

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
4880.00	54.29	-3.54	50.75	74.00	23.25	peak
4880.00	43.67	-3.54	40.13	54.00	13.87	AVG
7320.00	55.74	-0.81	54.93	74.00	19.07	peak
7320.00	44.98	-0.81	44.17	54.00	9.83	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 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

Shenzhen HUAK Testing Technology Co., Ltd. Tel : +86-0755-2302 9901 E-mail: info@huak.com Web : www.huak.com

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



HUAK TESTING

CH High (2480MHz)

Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
4960	56.06	-3.43	52.63	74.00	21.37	peak
4960	41.92	-3.44	38.48	54.00	15.52	AVG
7440	55.78	-0.77	55.01	74.00	18.99	peak
7440	43.43	-0.77	42.66	54.00	11.34	AVG

Monte Carlo

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
4960	56.51	-3.43	53.08	74.00	20.92	peak
4960	44.14	-3.44	40.70	54.00	13.30	AVG
7440	54.48	-0.77	53.71	74.00	20.29	peak
7440	42.90	-0.77	42.13	54.00	11.87	AVG

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 recorded 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 1MHz and video bandwidth is 3MHz for peak measurement with peak detector at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.

(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 73.16dB_V/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dB_V/m(PK Value) <54 dB_V/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 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.



HUAK TESTING

Radiated Band Edge Test:

Operation Mode: TX CH Low (2402MHz)

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
2310.00	54.68	-5.81	48.87	74	25.13	peak
2310.00	/	-5.81	/	54	/	AVG
2390.00	56.02	-5.84	50.18	74	23.82	peak
2390.00	/	-5.84	/	54	/	AVG
2400.00	54.35	-5.84	48.51	74	25.49	peak
2400.00	/	-5.84	/	54	/	AVG

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
2310.00	56.04	-5.81	50.23	74	23.77	peak
2310.00	/	-5.81	/	54	/	AVG
2390.00	54.46	-5.84	48.62	74	25.38	peak
2390.00	/	-5.84	/	54	/	AVG
2400.00	54.71	-5.84	48.87	74	25.13	peak
2400.00	/	-5.84	/	54	/	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 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

Shenzhen HUAK Testing Technology Co., Ltd. Tel : +86-0755-2302 9901 E-mail: info@huak.com Web : www.huak.com

Address: 13/F, Building B2, Junfeng Zhengcheng Zhibei Innovation Park, Heping, Fushui Street, Beisan District, Shenzhen, Guangdong, China

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

**HUAK TESTING**

HUAK TESTING

Horizontal**Operation Mode: TX CH High (2480MHz)**

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
2483.50	54.64	-5.81	48.83	74	25.17	peak
2483.50	/	-5.81	/	54	/	AVG
2500.00	54.45	-6.06	48.39	74	25.61	peak
2500.00	/	-6.06	/	54	/	AVG

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

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
2483.50	56.33	-5.81	50.52	74	23.48	peak
2483.50	/	-5.81	/	54	/	AVG
2500.00	54.53	-6.06	48.47	74	25.53	peak
2500.00	/	-6.06	/	54	/	AVG

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

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

Remark:

1. If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.
2. In restricted bands of operation, the spurious emissions below the permissible value more than 20dB.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



HUAK TESTING

The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

CH 00



Frequency

Auto Tune

Center Freq 2.402000000 GHz

Start Freq 2.400000000 GHz

Stop Freq 2.404000000 GHz

CF Step 400.000 kHz

Auto

Freq Offset 0 Hz

CH 19



Frequency

Auto Tune

Center Freq 2.440000000 GHz

Start Freq 2.438000000 GHz

Stop Freq 2.442000000 GHz

CF Step 400.000 kHz

Auto

Freq Offset 0 Hz

CH 39



Frequency

Auto Tune

Center Freq 2.480000000 GHz

Start Freq 2.478000000 GHz

Stop Freq 2.482000000 GHz

CF Step 400.000 kHz

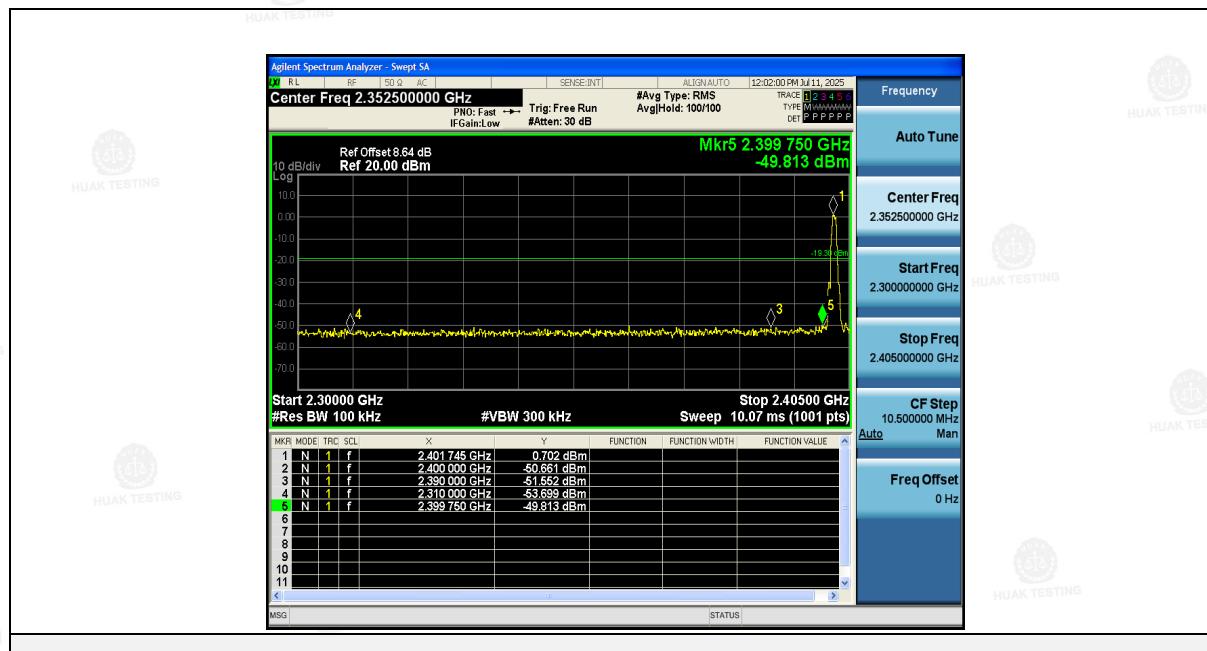
Auto

Freq Offset 0 Hz

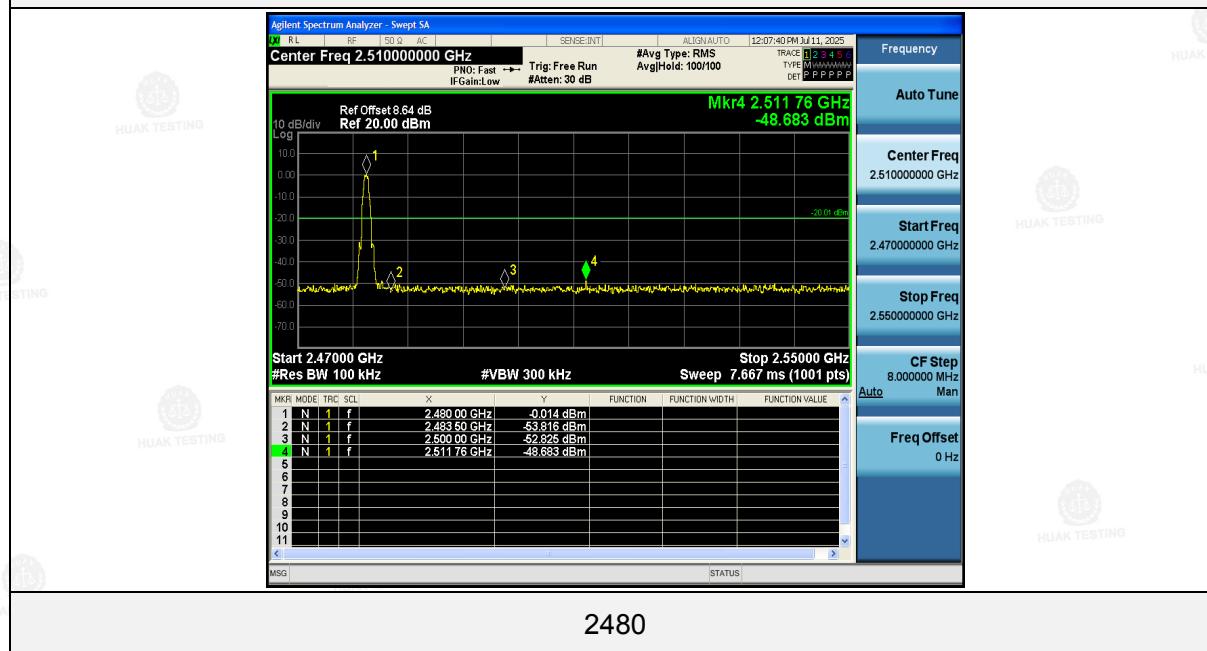
4.8.5 Test Results

Page 35 of 42

Report No.: HK2507083706-2E



2402



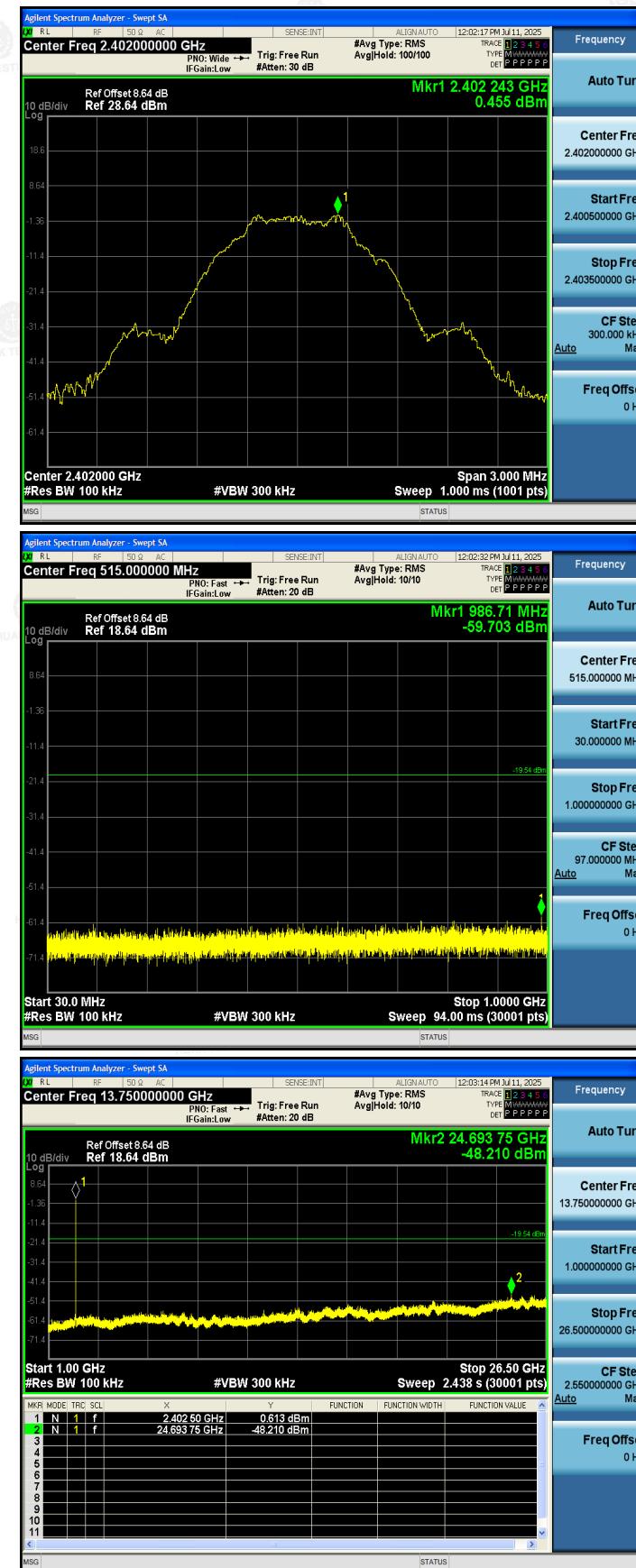
2480



HUAK TESTING

4.9.5 Test Results

CH 00



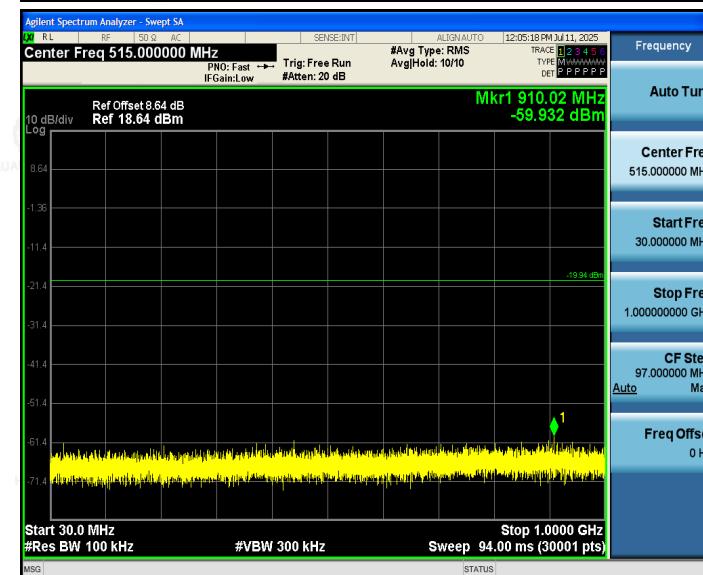
The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

Shenzhen HUAK Testing Technology Co., Ltd. Tel.: +86-0755-2302 9901 E-mail: info@huak.com Web.: www.huak.com

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



CH 19



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

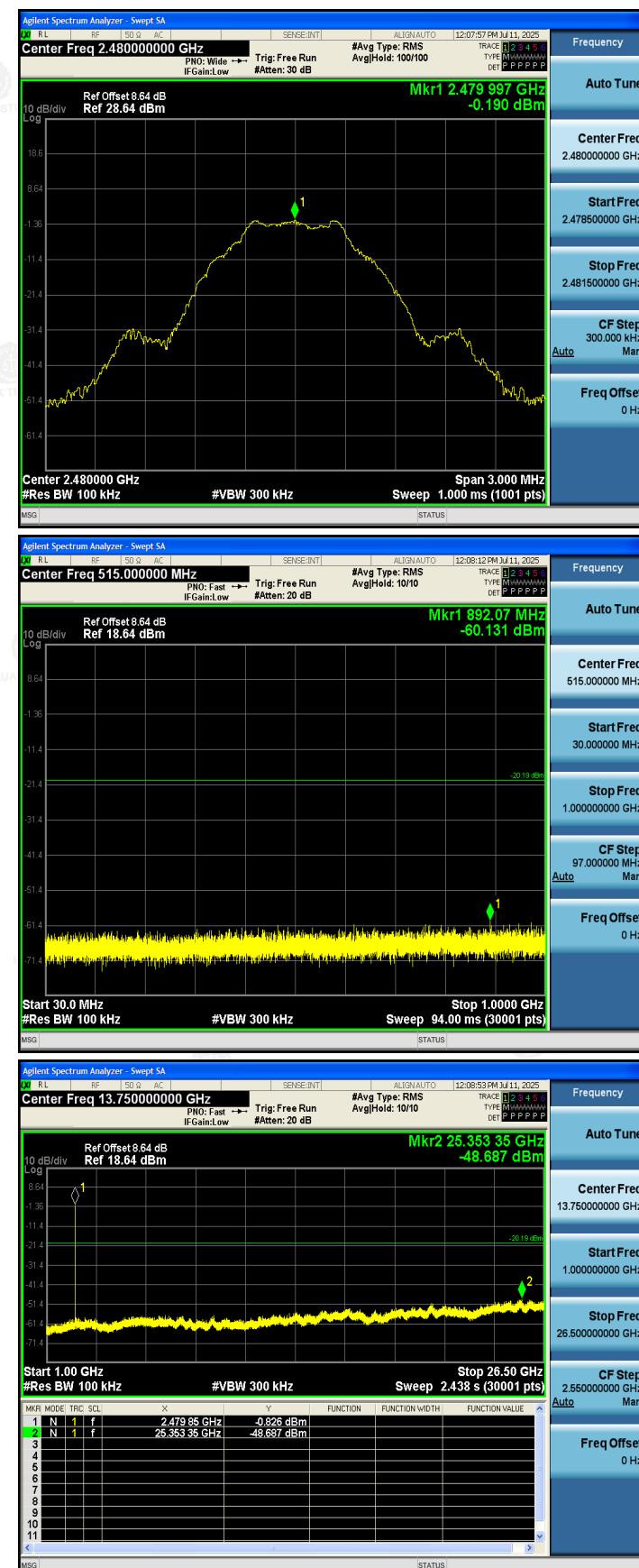
Shenzhen HUAK Testing Technology Co., Ltd. Tel.: +86-0755-2302 9901 E-mail: info@huak.com Web.: www.huak.com

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



HUAK TESTING

CH 39



The results shown in this test report refer only to the sample(s) tested unless otherwise stated and the sample(s) are retained for 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

Shenzhen HUAK Testing Technology Co., Ltd. Tel.: +86-0755-2302 9901 E-mail: info@huak.com Web.: www.huak.com

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



HUAK TESTING

HUAK TESTING

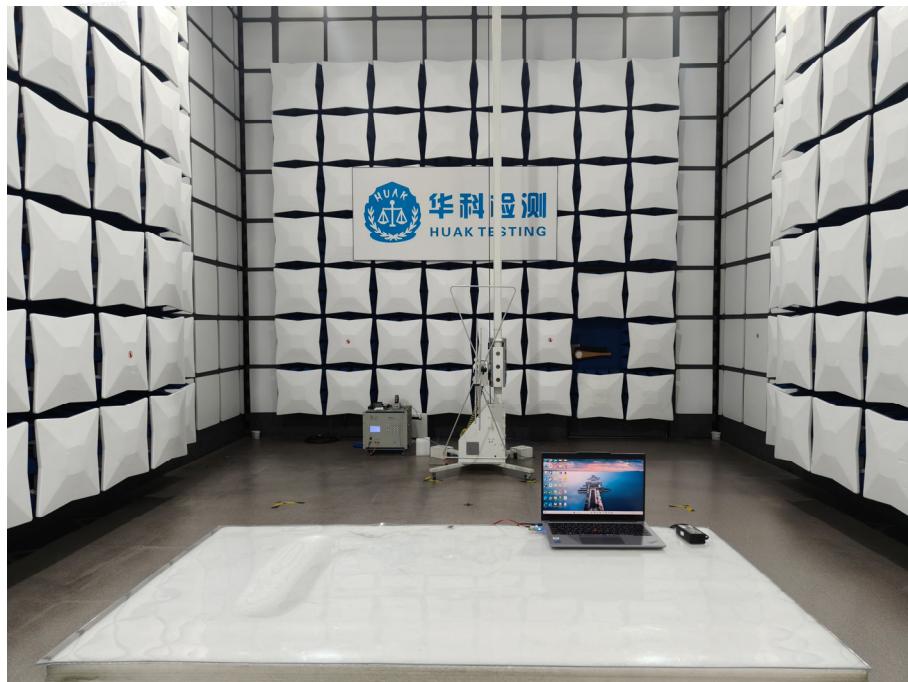
HUAK TESTING

HUAK TESTING

HUAK TESTING

5 Test Setup Photo

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 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

Shenzhen HUAK Testing Technology Co., Ltd. Tel.: +86-0755-2302 9901 E-mail: info@huak.com Web.: www.huak.com

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



HUAK TESTING

HUAK TESTING



HUAK TESTING



HUAK TESTING



HUAK TESTING



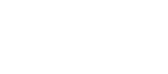
HUAK TESTING



HUAK TESTING



HUAK TESTING



HUAK TESTING



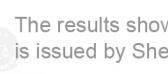
HUAK TESTING



HUAK TESTING



HUAK TESTING



HUAK TESTING



HUAK TESTING

HUAK TESTING

HUAK TESTING

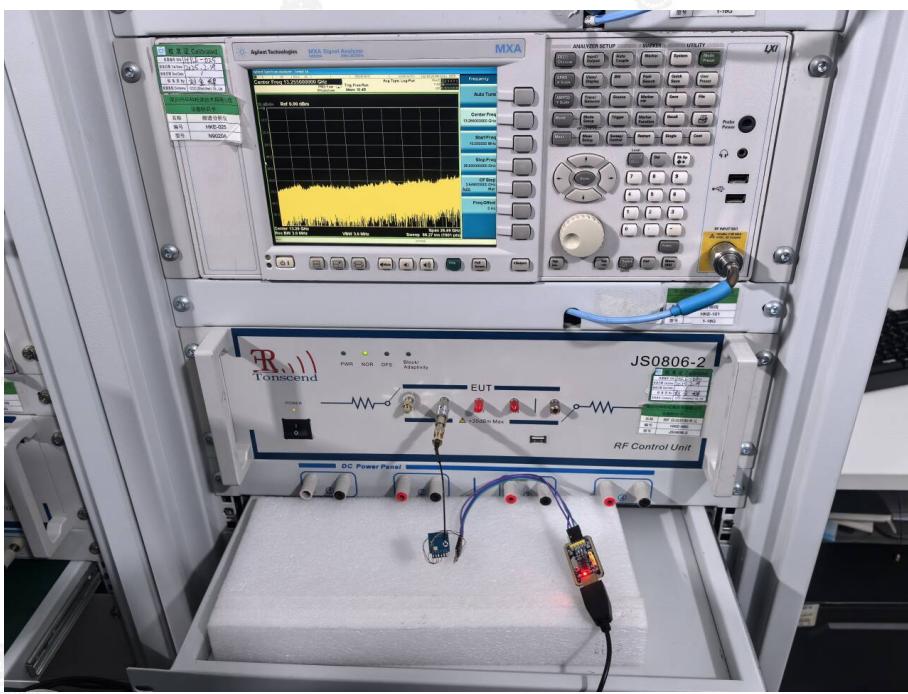
HUAK TESTING

HUAK TESTING

AC Conducted Emission



RF Conducted 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 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

Shenzhen HUAK Testing Technology Co., Ltd. Tel.: +86-0755-2302 9901 E-mail: info@huak.com Web.: www.huak.com

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



HUAK TESTING

HUAK TESTING

HUAK TESTING

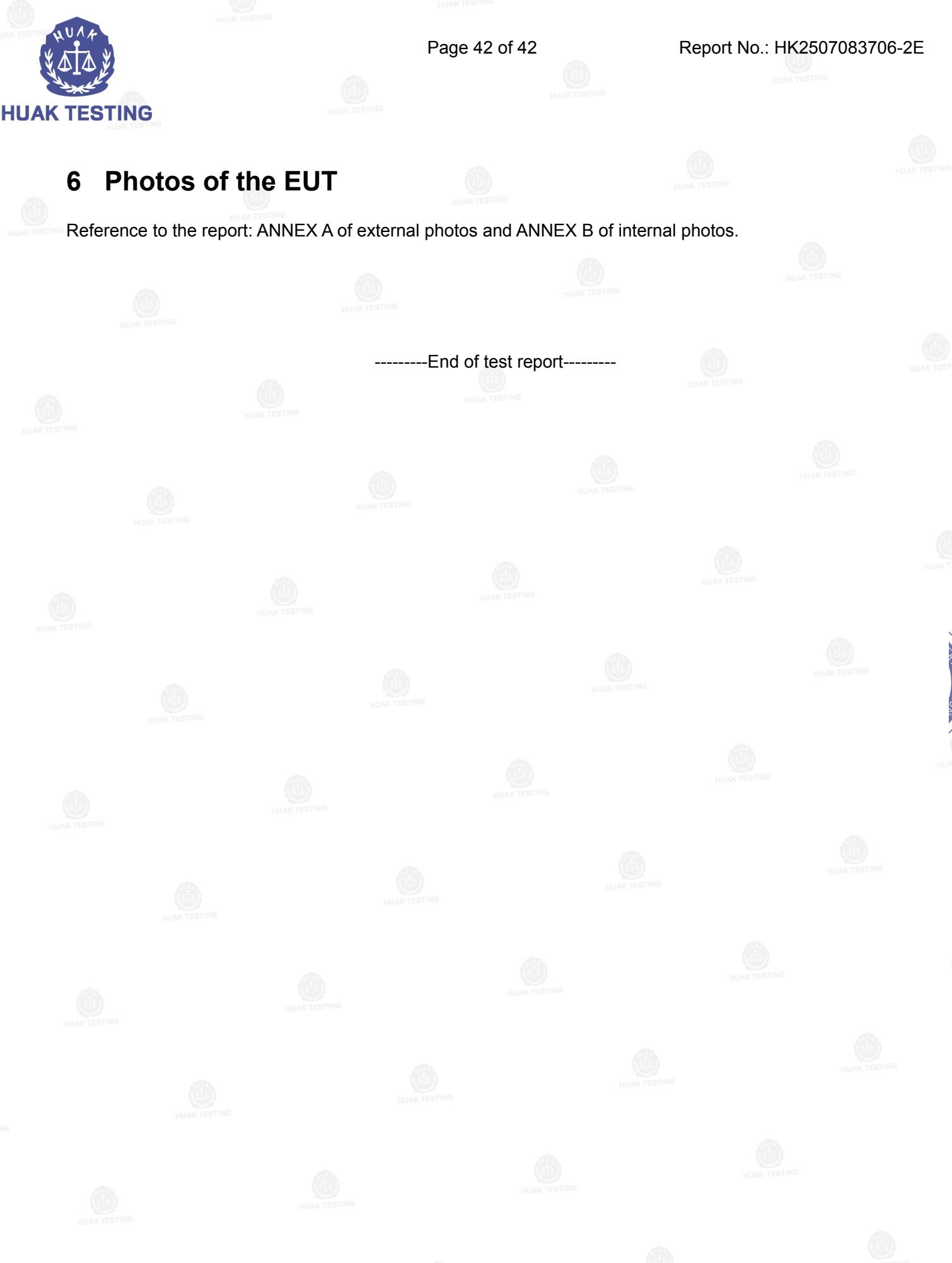
HUAK TESTING

HUAK TESTING

6 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 15 days only. The document is issued by Shenzhen HUAK Testing Technology Co., Ltd., this document cannot be reproduced except in full with our prior written permission.

Shenzhen HUAK Testing Technology Co., Ltd. Tel.: +86-0755-2302 9901 E-mail: info@huak.com Web.: www.huak.com

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