Shenzhen CTL Testing Technology Co.,Ltd.
Tel: 0755-89486194 E-Mail: ctl@ctl-lab.com

Test Report

EN 55032 Electromagnetic compatibility of multimedia equipment - Emission Requirements
EN 55035 Electromagnetic compatibility of multimedia equipment - Immunity requirements

Report Reference No.....:	**CTL2405072131-E**
Original No.....	**CTL2405072121-E**
Compiled by (position+printed name+signature)..:	File administrators Hamia Huang
Supervised by (position+printed name+signature)..:	Technique principal Ivan Xie
Approved by (position+printed name+signature)..:	Manager Tracy Qi
Date of issue.....:	May. 22, 2024
Testing Laboratory Name.....:	**Shenzhen CTL Testing Technology Co., Ltd.**
Address.....:	Zone A, 1st Floor, Warehouse 2, Baisha Logistics Company, No. 3011 Shahe West Road, Nanshan District, Shenzhen, Guangdong, China
Web.....:	www.ctl-lab.com
Testing location/ procedure.....:	Full application of Harmonised standards ☒ Partial application of Harmonised standards ☐ Other standard testing methods ☐
Applicant's name.....:	**Guangdong Yiru Keji Wenhua Chuanmei Youxiangongsi**
Address.....:	101b Pan yu Da long jie bang jiang dong cun jiang yu da jie 53hao Guang zhou shi 510000 Guang dong sheng CN
Test specification:	
Standard.....:	**EN 55032: 2015/A1: 2020** **EN 55035: 2017/A11: 2020**
Non-standard test method……..:	/
Test Report Form No.....:	
TRF Originator.....:	Shenzhen CTL Testing Technology Co., Ltd

Test item description.....:	**Carbon Monoxide Gas Detector**
Trade Mark.....:	GZAIR
Test voltage.....:	DC 6V
Result.....:	**Pass**

EMC -- Test Report

Test Report No. :	CTL2405072121-E	May. 22, 2024 Date of issue

Equipment under Test	:	Carbon Monoxide Gas Detector
Type / Model	:	SA-V1000+
Listed Models	:	SA-V1000, SA103, SA-V108 Note: These models have all the same circuit and the only difference is color, so we choose SA-V1000+ to test.
Applicant	:	**Guangdong Yiru Keji Wenhua Chuanmei Youxiangongsi**
Address	:	101b Pan yu Da long jie bang jiang dong cun jiang yu da jie 53hao Guang zhou shi 510000 Guang dong sheng CN
Manufacturer	:	**Guangdong Yiru Keji Wenhua Chuanmei Youxiangongsi**
Address	:	101b Pan yu Da long jie bang jiang dong cun jiang yu da jie 53hao Guang zhou shi 510000 Guang dong sheng CN

Test Result	Pass

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

History of this test report

Report No.	Version	Description	Issued Date
CTL2405072121-E	V1.0	Initial Issued Report	May. 20, 2024
CTL2405072131-E	V2.0	Modify Applicant, Applicant Address, Manufacturer, Manufacturer Address, Trade Mark	May. 22, 2024

Modify content	V1.0	V2.0
Applicant	Beijing Shi'An Technology Instrument Co., Ltd	Guangdong Yiru Keji Wenhua Chuanmei Youxiangongsi
Applicant Address	Rm.623-625, Linji Industrial Park, No. 53 Shunren Road, Linhe Developing Zone, Shunyi District, Beijing, China, 101300	101b Pan yu Da long jie bang jiang dong cun jiang yu da jie 53hao Guang zhou shi 510000 Guang dong sheng CN
Manufacturer	Beijing Shi'An Technology Instrument Co., Ltd	Guangdong Yiru Keji Wenhua Chuanmei Youxiangongsi
Manufacturer Address	Rm.623-625, Linji Industrial Park, No. 53 Shunren Road, Linhe Developing Zone, Shunyi District, Beijing, China, 101300	101b Pan yu Da long jie bang jiang dong cun jiang yu da jie 53hao Guang zhou shi 510000 Guang dong sheng CN
Trade Mark	SA	GZAIR

Contents

1. TEST STANDARDS

The tests were performed according to following standards:

EN 55032: 2015/A1: 2020 Electromagnetic compatibility of multimedia equipment - Emission Requirements
EN 55035: 2017/A11: 2020 Electromagnetic compatibility of multimedia equipment - Immunity requirements

2. SUMMARY

2.1. General Remarks:

Date of receipt of test sample : May. 10, 2024

Sampling and Testing commenced on : May. 10, 2024

Testing concluded on : May. 13, 2024

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage : o 230V / 50 Hz o 230V / 60Hz
■ 6 V DC o 24 V DC
o Other (specified in blank below)

/

2.3. Description of test modes

The EUT were tested under the following modes, the final worst mode was marked in bold face and recorded in this report.

EMISSION TEST:

Description of Test Mode	Test Voltage
WORKING	**DC 6V**

IMMUNITY TESTS:

Description of Test Mode	Test Voltage
WORKING	DC 6V

Emissions tests…….: According to EN 55032, searching for the highest disturbance.

Immunity tests …….: According to EN 55035, searching for the highest susceptivity.

Note:
For the test results, the EUT had been tested with all conditions. But only the worst case was showed in test report.

2.4. Short description of the Equipment under Test (EUT)

The EUT is a Carbon Monoxide Gas Detector

2.5. Description of Support units

The EUT has been tested as a dependent 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.

■- supplied by the manufacturer

o - supplied by the lab

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.

2.6. Performance Criteria

Definition related to the performance level:

☒ based on the used product standard
☐ based on the declaration of the manufacturer, requestor or purchaser

Criterion A:
Definition: normal performance within limits specified by the manufacturer, requestor or purchaser:

The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Criterion B:
Definition: temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention:

The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Criterion C:
Definition: temporary loss of function or degradation of performance, the correction of which requires operator intervention:

Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.
Zone A, 1st Floor, Warehouse 2, Baisha Logistics Company, No. 3011 Shahe West Road, Nanshan District, Shenzhen, Guangdong, China

3.2. Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

Certificated by CNAS
Registration No.:CNAS L7497
Date of issue:Feb. 15, 2024
Valid until:Feb. 14, 2030

Certificated by A2LA, USA
Registration No.:4343.01
Date of issue:Mar.12, 2024
Valid until:Feb. 28, 2026

IC Registration No.: 9618B

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration No.: 9618B .

FCC-Registration No.: 399832

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 399832.

3.3. Test Description

Emission Measurement		
Radiated Emission	EN 55032: 2015/A1: 2020	PASS
Immunity Measurement		
Electrostatic Discharge	EN 55035: 2017/A11: 2020 IEC 61000-4-2: 2008	PASS
RF Field Strength Susceptibility	EN 55035: 2017/A11: 2020 IEC 61000-4-3: 2020	PASS
Power Frequency Magnetic Field Susceptibility Test	EN 55035: 2017/A11: 2020 IEC 61000-4-8: 2009	PASS

Remark:
1. The test result PASS and /or FAIL has no relationship with the measurement uncertainty.

3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen CTL Testing Technology Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar
to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission(chamber 1)	30~1000MHz	±4.10dB	(1)
Radiated Emission(chamber 2)	30~1000MHz	±4.10dB	(1)
Radiated Emission(chamber 2)	Above 1GHz	±4.32dB	(1)
Conducted Emission	0.15~30MHz	±3.20dB	(1)
Conducted Emission (signal terminal)	0.15~30MHz	±2.96dB	(1)
Disturbance Power	30~300MHz	±2.90dB	(1)

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

3.5. Equipments Used during the Test

Radiated Emission(chamber 1)						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	ULTRA-BROADBAND ANTENNA	Schwarzbeck	VULB 9168	824	2023/02/13	2026/02/12
2	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	1166.5950.03	2024/04/30	2025/04/29
Software:						
Name of Software:			Version:			
EZ_EMC(Below 1GHz)			V1.1.4.2			

Electrostatic Discharge						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	ESD Simulator	TESEQ AG	NSG 437	1058	2023/08/05	2024/08/04

Power Frequency Magnetic Field Susceptibility						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	Ultra Compact Simulator	HTEC Instruments Ltd.	HPFMF	154402	2024/04/30	2025/04/29

RF Field Strength Susceptibility						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	SIGNAL GENERATOR	Agilent	N5181A	MY49060125	2024/04/30	2025/04/29
2	Power Amplifier	MicoTop	MPA-80-1000-250	MPA1905162	2024/04/30	2025/04/29
3	Power Amplifier	MicoTop	MPA-1000-6000-100	MPA1906282	2024/04/30	2025/04/29
4	Power Meter	Agilent	E4419B	GB43317877	2023/08/02	2024/08/01
5	Test Antenna-Bi-Log	Schwarzbeck	VULB 9118 E	N/A	2021/08/24	2024/08/23
6	Horn Antenna	Sunol Sciences Corp	DRH-118	A062013	2021/12/23	2024/12/22
7	Power transmitter	HP	8481A	2349A43969	2023/08/02	2024/08/01
8	Power transmitter	Agilent	E9301A	MQ/2217182-2	2023/08/02	2024/08/01
Software:						
Name of Software:			Version:			
EM 3			V1.1.7			

Remark:
1. The test result PASS and /or FAIL has no relationship with the measurement uncertainty.

4. TEST CONDITIONS AND RESULTS

4.1. Radiated Emission

For test instruments and accessories used see section 3.5.

4.1.1. Description of the test location

Test location: Radiation Lab

4.1.2. Limits of disturbance

For frequency below 1000MHz

Frequency (MHz)	Class A(at 3m)	Class B(at 3m)
	Quasi-Peak dBμV/m	Quasi-Peak dBμV/m
30 ~ 230	50	40
230 ~ 1000	57	47

NOTE: 1.The tighter limit shall apply at the edge between two frequency bands.

2.Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

Frequency range of radiated measurement

Highest internal frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes(MHz)	Range(MHz)
Below 108	1000
108-500	2000
500-1000	5000
Above 1000	Up to 5 times of the highest frequency or 6GHz, whichever is less

For frequency above 1000MHz

Frequency (GHz)	Class A(dBμV/m)(at 3m)		Class B(dBμV/m)(at 3m)	
	Peak	Average	Peak	Average
1.0-3.0	76	56	70	50
3.0-6.0	80	60	74	54

NOTE: 1.The lower limit shall apply at transition frequencies.
2.Emission level(dBμV/m) = 20 log Emission level(μV/m)
3.All emanation from a class A/B digital device or system, including any net work of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

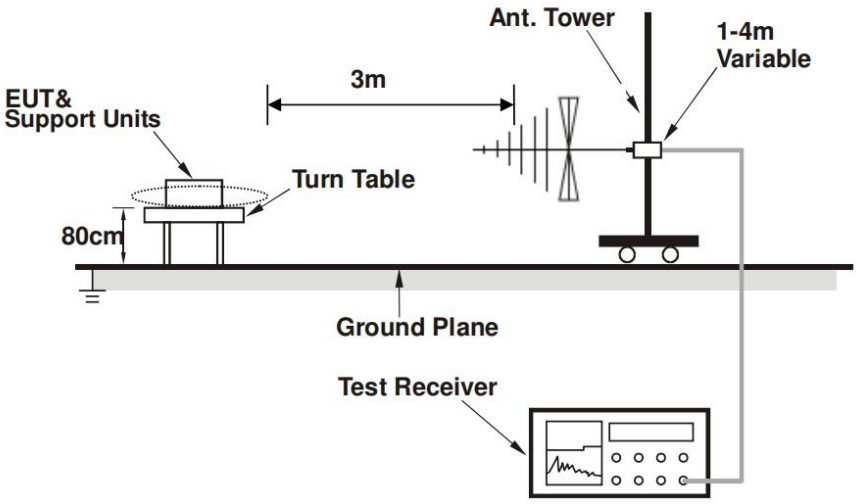
4.1.3. Description of the test set-up

4.1.3.1. Operating Condition

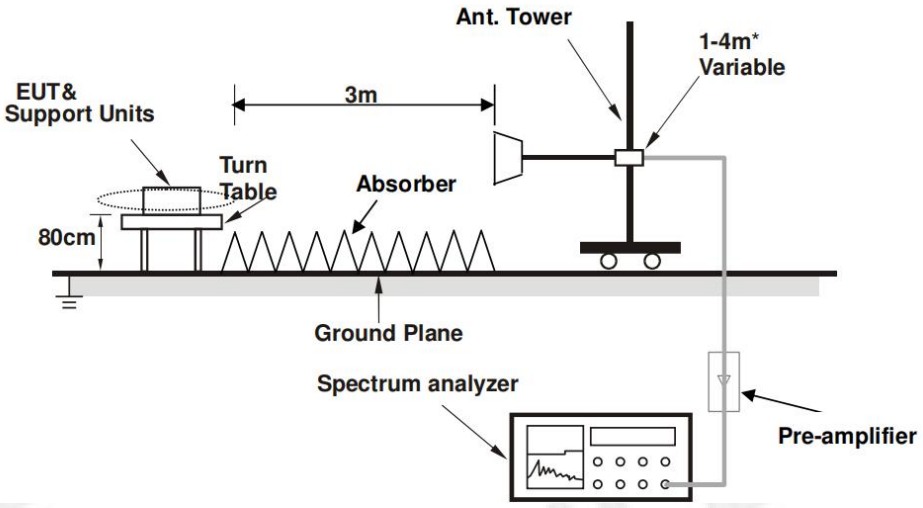
The EUT shall operate in the mode of operation described in Section 2.3, and the maximum emanating results are recorded.

4.1.3.2. Test setup

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>

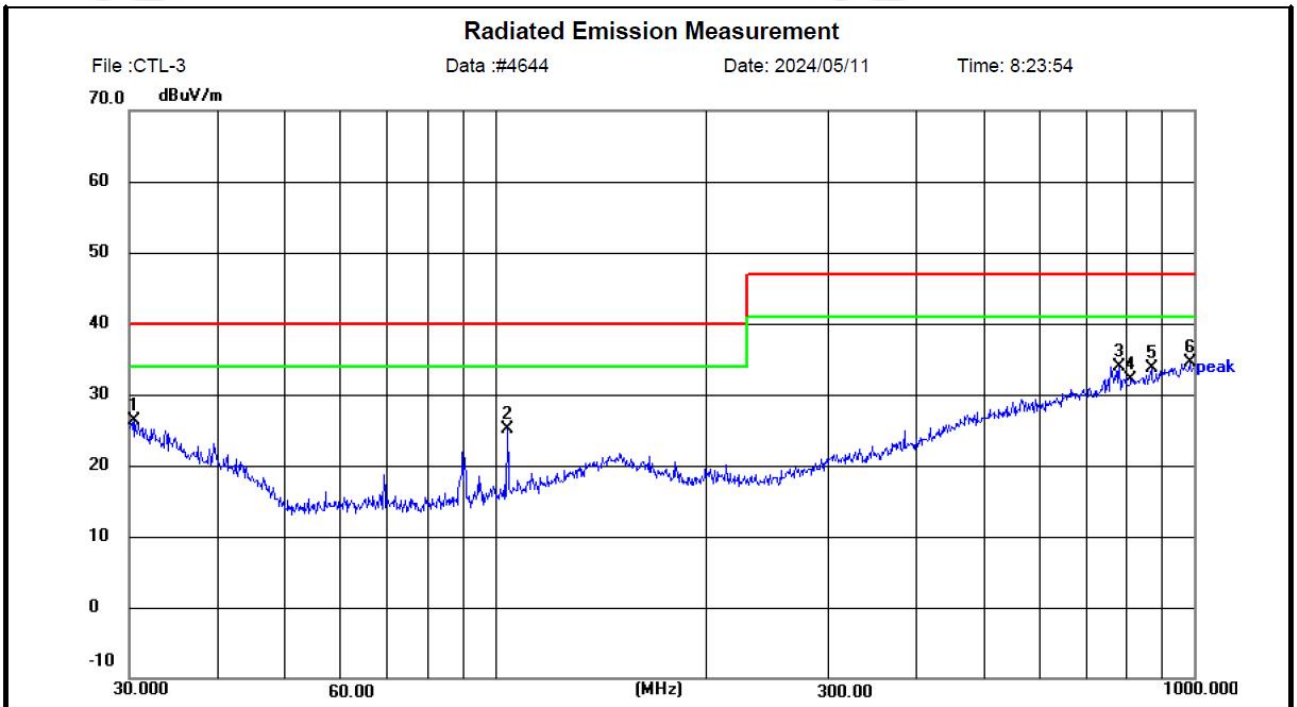


4.1.4. Test result

Frequency range	30-1000MHz
Detector function& Resolution bandwidth	Quasi-Peak, 100kHz

The requirements are **Fulfilled**

Remarks: The limits are kept. For detailed results, please see the following page(s).



Site LAB Chamber 1
Limit: EN 55032: 2015/A1: 2020 Class B
EUT: /
M/N: SA-V1000+
Mode: WORKING
Note: /
/

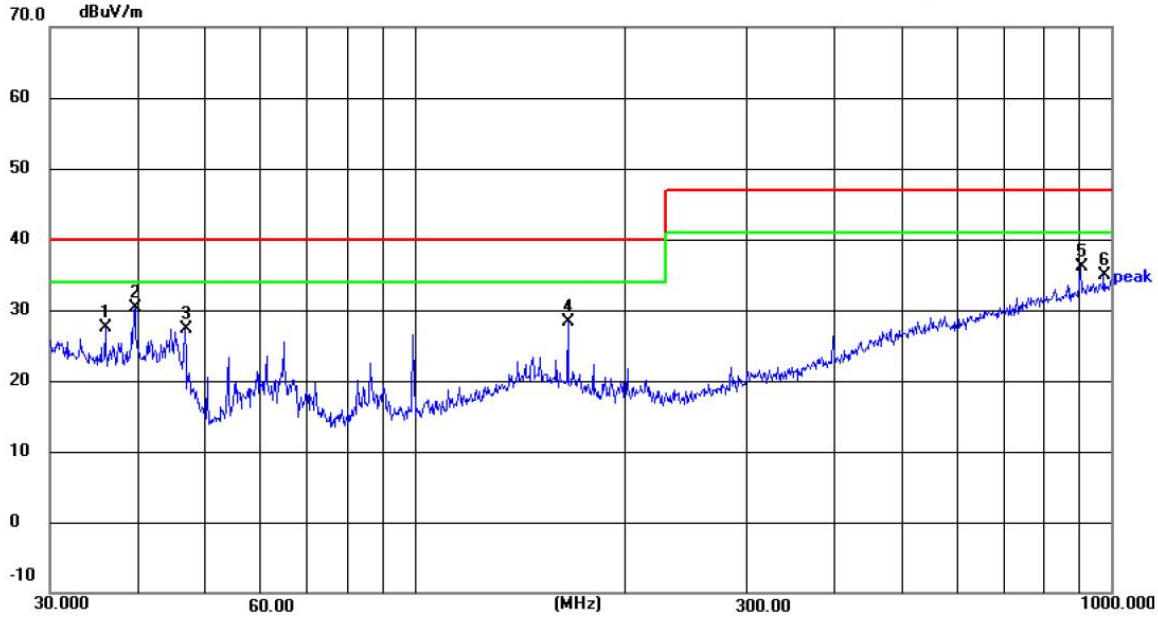
Polarization: *Horizontal*
Power: /
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	30.5306	6.04	20.23	26.27	40.00	13.73	peak	100	180	P	
2	104.1701	13.08	11.94	25.02	40.00	14.98	peak	200	39	P	
3	782.3453	8.19	25.75	33.94	47.00	13.06	peak	100	180	P	
4	813.1115	5.75	26.26	32.01	47.00	14.99	peak	100	133	P	
5	869.1302	7.07	26.71	33.78	47.00	13.22	peak	200	298	P	
6	986.0717	6.24	28.19	34.43	47.00	12.57	peak	100	321	P	

Radiated Emission Measurement

File :CTL-3 Data :#4645 Date: 2024/05/11 Time: 8:25:49



Site LAB Chamber 1
Limit: EN 55032: 2015/A1: 2020 Class B
EUT: /
M/N: SA-V1000+
Mode: WORKING
Note: /
/

Polarization: *Vertical*
Power: /
Distance: 3m

Temperature: 25(C)
Humidity: 50 %

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	36.0007	10.36	17.19	27.55	40.00	12.45	peak	100	314	P	
2	39.7146	14.70	15.54	30.24	40.00	9.76	peak	100	4	P	
3	46.8303	15.87	11.49	27.36	40.00	12.64	peak	100	11	P	
4	166.0680	12.91	15.36	28.27	40.00	11.73	peak	100	265	P	
5	903.3094	8.95	27.18	36.13	47.00	10.87	peak	100	88	P	
6	975.7529	6.86	27.98	34.84	47.00	12.16	peak	100	60	P	

4.2. Electrostatic discharge

For test instruments and accessories used see section 3.5.

4.2.1. Description of the test location and date

Test location: 1# EMC Test Room

Date of test: May. 13, 2024

Operator: Hamia Huang

4.2.2. Severity levels of electrostatic discharge

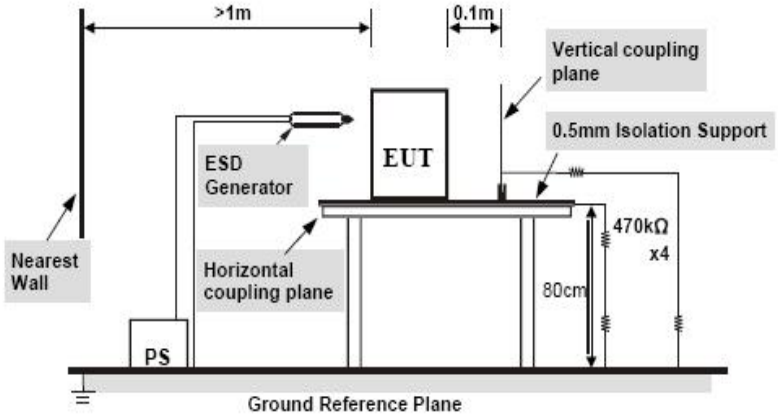
Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1	2	2
2	4	4
3	6	8
4	8	15
X	Special	Special

4.2.3. Description of the test set-up

4.2.3.1. Operating Condition

The EUT shall operate in the mode of operation described in Section 2.3, and the results of the maximum susceptive results are recorded.

4.2.3.2. Test setup



4.2.4. Test specification:

Contact discharge voltage:	■ 2 kV	■ 4 kV	
Air discharge voltage:	■ 2 kV	■ 4 kV	■ 8 kV
Number of discharges:	■ ≥ 10	□ ≥ 25	
Type of discharge:	Direct discharge	■ Air discharge ■ Contact discharge	
	Indirect discharge	■ Contact discharge	
Polarity:	■ Positive	■ Negative	
Discharge location:	■ see photo documentation of the test set-up		
	■ all external locations accessible by hand		
	■ horizontal plate (HCP)		
	■ vertical coupling plate (VCP)		

4.2.5. Test result

Environmental conditions	**Temperature**	25℃
	Humidity	55.0%RH

The requirements are **Fulfilled** Performance Criterion: **B**

Remarks: During the test no deviation was detected to the selected operation mode(s).

4.3. Radiated, radio-frequency, electromagnetic field

For test instruments and accessories used see section 3.5.

4.3.1. Description of the test location and date

Test location: Chamber 1

Date of test: May. 13, 2024

Operator: Hamia Huang

4.3.2. Severity levels of radiated, radio-frequency, electromagnetic field

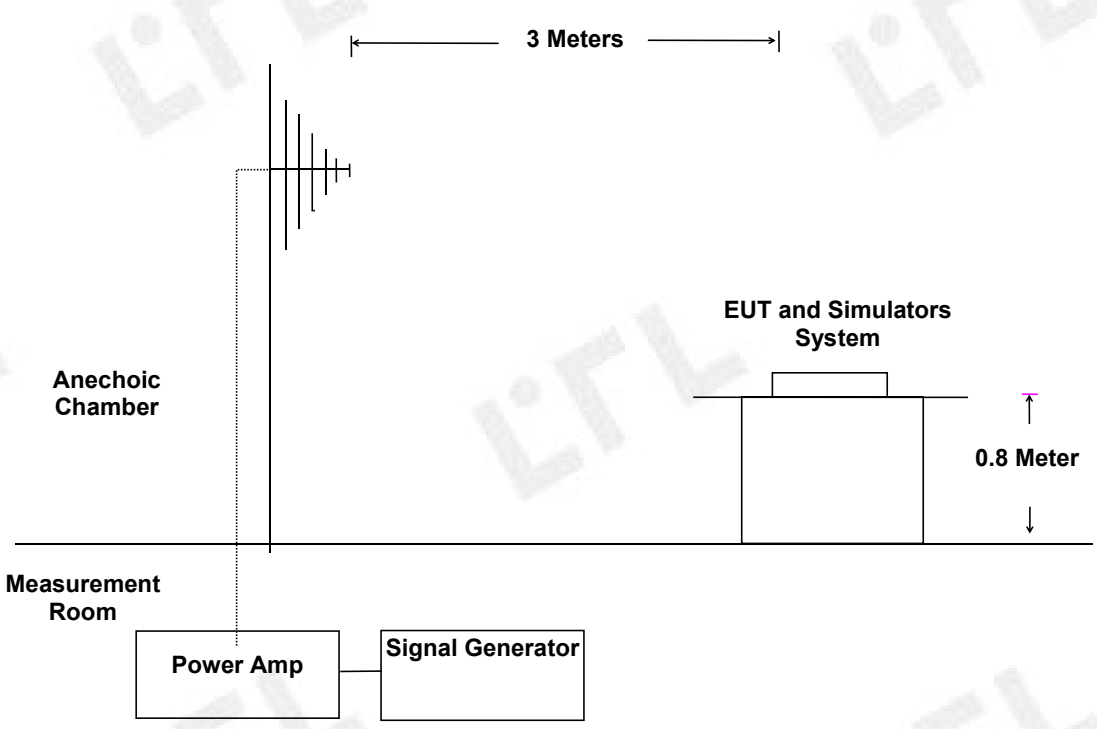
Level	Field Strength (V/m)
1.	1
2.	3
3.	10
X	Special

4.3.3. Description of the test set-up

4.3.3.1. Operating Condition

The EUT is set to work shall be carried out normal working mode during the test, and the results of the maximum susceptive results are recorded.

4.3.3.2. Test setup



4.3.4. Test specification:

Frequency range:	■ 80 MHz to 1000 MHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz
Field strength:	■ 3 V/m
EUT - antenna separation:	■ 3 m
Modulation:	■ AM: 80 % ■ sinusoidal 1000Hz
Frequency step:	■ 1 % with 1 s dwell time
Antenna polarisation:	■ horizontal ■ vertical

4.3.5. Test result

Environmental conditions	**Temperature**	25℃
	Humidity	55.0%RH

The requirements are **Fulfilled** Performance Criterion: **A**

Remarks: During the test no deviation was detected to the selected operation mode(s).

4.4. Magnetic Field Immunity

For test instruments and accessories used see section 3.5.

4.4.1. Description of the test location

Test location: EMC Test Room

Date of test: May. 13, 2024

Operator: Hamia Huang

4.4.2. Severity levels of magnetic field immunity

Level	Magnetic Field Strength (A/m)
1	1
2	3
3	10
4	30
5	100
X.	Special

4.4.3. Description of the test set-up

4.4.3.1. Operating Condition

The EUT shall operate in the mode of operation described in Section 2.3, and the results of the maximum susceptive results are recorded.

4.4.4. Test specification:

Test frequency: ■ 50 Hz ■ 60 Hz

Continuous field: ■ 1 A/m

Test duration: ■ 5 m

Antenna factor: 0.917 A/m

Axis: ■ x-axis ■ y-axis ■ z-axis

4.4.5. Test result

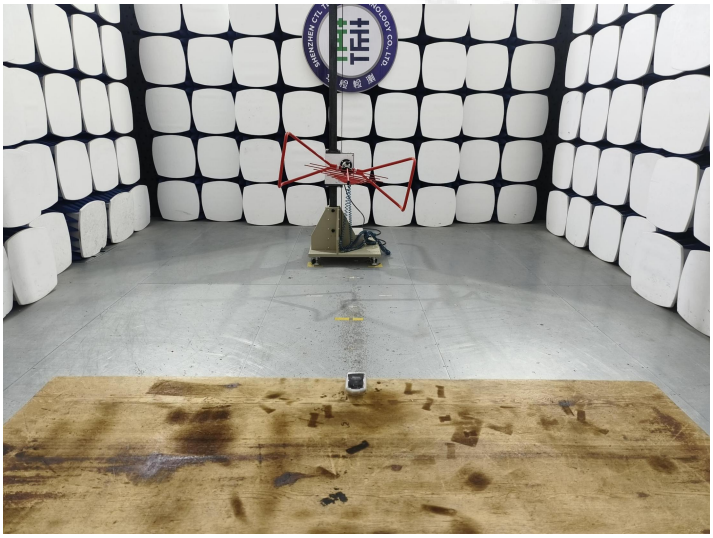
Environmental conditions	Temperature	25℃
	Humidity	55.0%RH

The requirements are **Fulfilled** Performance Criterion: **A**

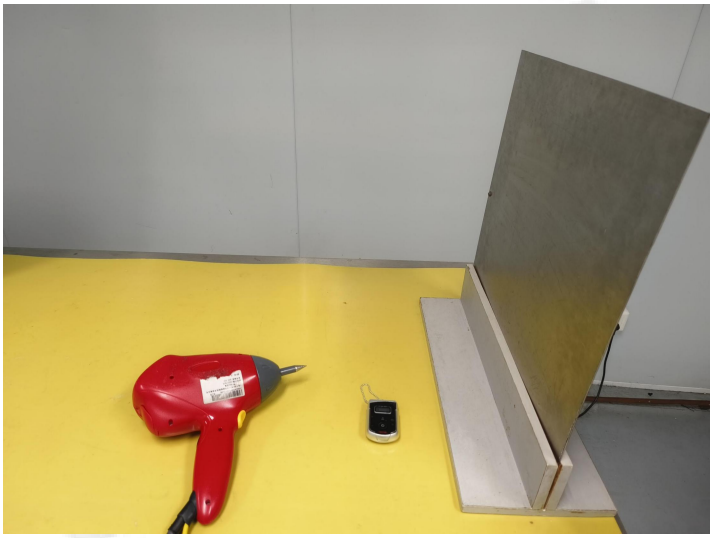
Remarks: During the test no deviation was detected to the selected operation mode(s).

5. Test Setup Photos

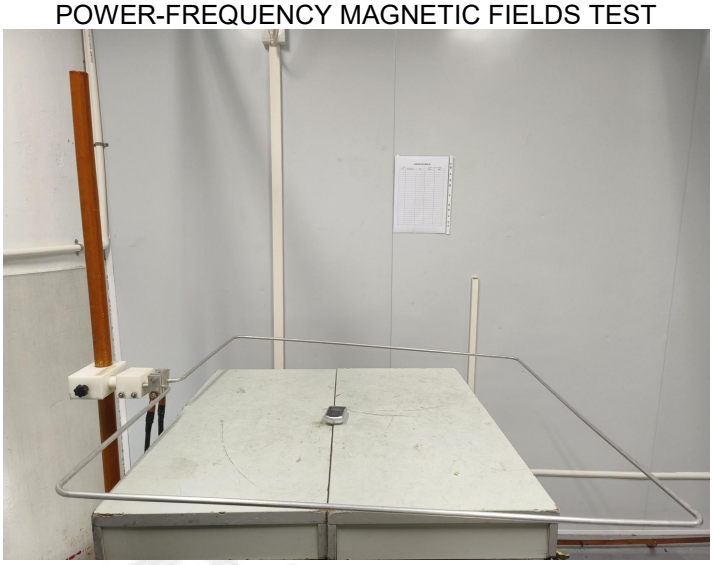
RADIATED EMISSION TEST



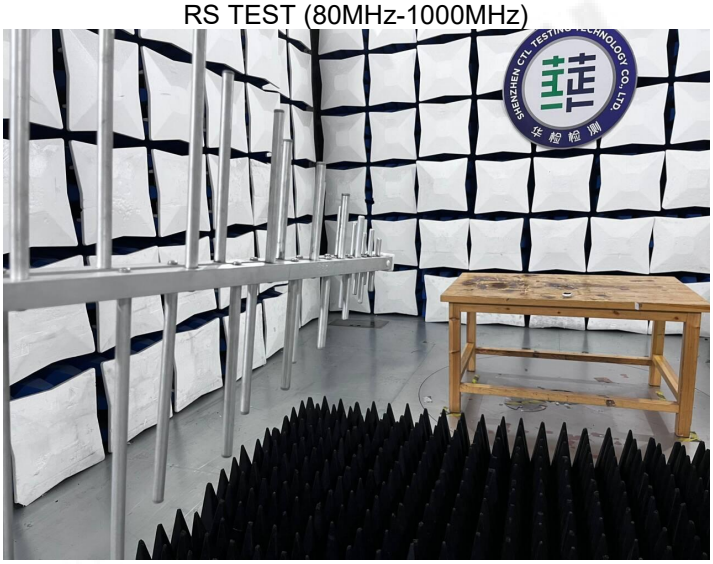
ESD TEST



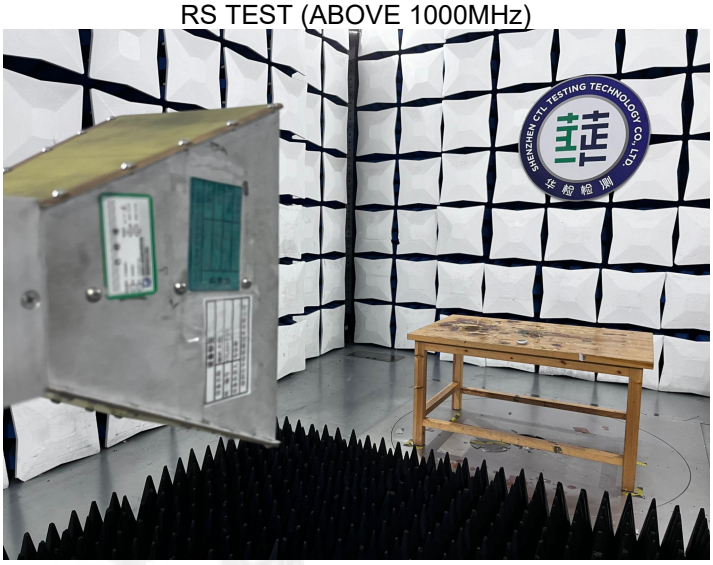
POWER-FREQUENCY MAGNETIC FIELDS TEST



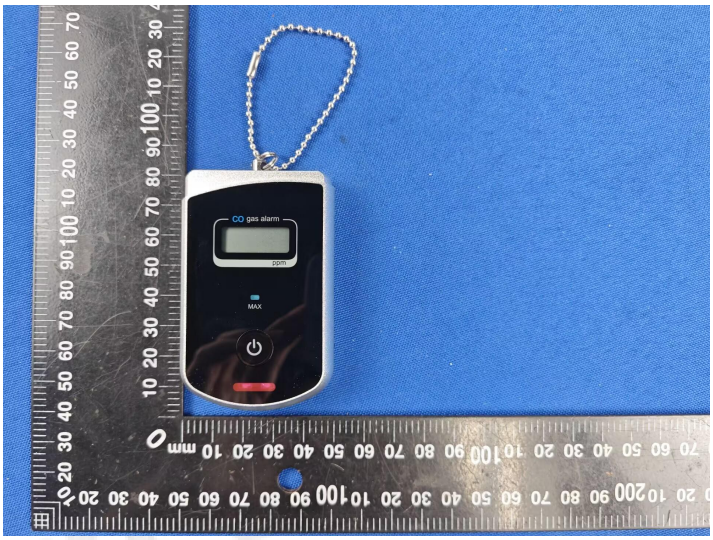
RS TEST (80MHz-1000MHz)

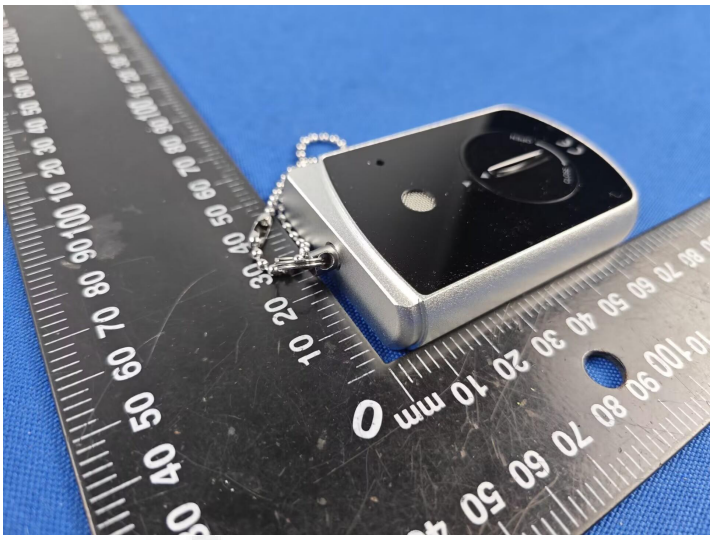


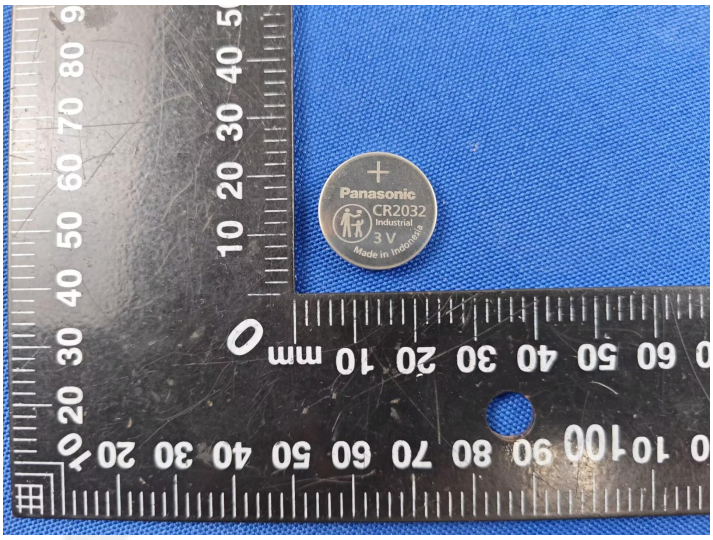
RS TEST (ABOVE 1000MHz)



6. Photos of the EUT







.....End of Report.....