



## 안 전 확 인 신 고 증 명 서

### Confirmation Letter of Declaration

신고번호: XU101174-19003D  
(Application No.)

신고회사명: DONG GUAN YU XIN EN ENERGY TECHNOLOGY CO.,LTD.  
(Applicant)

주 소: Huangjiabo Industrial Park, Huangjiabo Village, Shipai Town,  
(Address) Dongguan Guangdong, 523000, P.R.China

제 품 명: 전지  
(Product)

기본모델명: 703450  
(Basic Model)

파생모델명 (Series Model):

402030	602025
503035	333450
802535	791852
103040	902248
803040	

정격/안전기준상의 모델구분: 3.7 Vdc, 1 200 mAh  
(Rating)

안전기준: KC 62133(2019-02)  
(Standard)

본 확인신고는 제 조 국 명: 중국

제조업자명: DONG GUAN YU XIN EN ENERGY TECHNOLOGY CO.,LTD.

제조공장의 주소: Huangjiabo Industrial Park, Huangjiabo Village, Shipai Town,  
Dongguan Guangdong, 523000, P.R.China

의 제품에만 해당함

「전기용품 및 생활용품 안전관리법 시행규칙」 제28조제1항, 같은 조 제3항, 제29조제2항 또는 제34조제2항에 따라 안전확인신고 증명서를 발급합니다.

We issue this Confirmation Letter of Declaration of the Safety Confirmation for the above appliances in accordance with Article 28(1), 28(3), 29(2) or 34(2) of the Electrical Appliances and Consumer Products Safety Control Act.

2021 년 01 월 08 일  
(Year) (Month) (Day)



한국기계전기전자시험연구원  
Korea Testing Certification



※ 이 신고증명서는 「전기용품 및 생활용품 안전관리법」에 따른 제품의 안전성 확인에 한정된 것이며, 그 밖의 다른 법률이 적용되는 제품의 경우에는 해당 법률에 따라 추가로 인증·허가 등을 받아야 합니다.

첨부서류

1. 전기용품의 안전관리부품 및 재질목록 (List of Critical Components)(전기용품에 한정한다)
2. 기본모델 · 파생모델의 내용 (Descriptions of the basic and series model)
3. 안전확인신고 내용의 변경 현황 (Revisions Status)

# 기술문서 Technical Document

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안전인증번호: XU101174-19003D  
(Certificate No)

접수번호: 20201218 - 0004  
(Receipt No)

## 1. 기본모델 · 파생모델의 내용 (General Descriptions of Certified Products)

### 1.1 제품의 설명 (Product description)

인증제품의 개요는 다음과 같다.

(Information on certified basic model product is as follow)

구분(Section)	내 용 (Description)
용도 (Normal use)	Lithium Battery Pack
내부구조 (Internal construction)	Single cell provided with 1S-1P, Protection circuit
외부구조 (External construction)	Secured with insulation tape partially
기타(Others)	CB Test Certificate is issued by TUV Rheinland Japan Ltd. (JPTUV-096791)

### 1.2 전기용품의 표시: 전기용품 및 생활용품 안전관리법 시행규칙 제37조(안전확인대상제품의 표시)에 따라 표시한다.

(Marking of KC Mark: Marking shall comply with the Article 37 of the Enforcement Rule of the Electrical Appliances and Consumer Products Safety Control Act.)

### 1.3 등록모델 (Registered Models)

구 분 (Class)	모 델 명 및 정 격 (Model / Rating)	기본모델과의 차이점 (Difference between basic model and series model)
기본모델 (Basic model)	703450 3.7 Vdc, 1 200 mAh	
파생모델 (Series model)	402030	Change capacity and cell size (3.7 Vdc, 200 mAh)
	902248	Change capacity and cell size (3.7 Vdc, 1 050 mAh)
	803040	정격 변경(3.7 Vdc, 1 000 mAh), 셀 크기 변경
	602025	Change capacity and cell size (3.7 Vdc, 240 mAh)
	503035	Change capacity and cell size (3.7 Vdc, 500 mAh)
	333450	Change capacity and cell size (3.7 Vdc, 500 mAh)



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	802535	Change capacity and cell size (3.7 Vdc, 700 mAh)
	791852	Change capacity and cell size (3.7 Vdc, 750 mAh)
	103040	Change cell size



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(Receipt No)

## 2. 안전관리 부품 및 재질목록(List of Critical Components)

부품명(회로기호) Components(Part no.)	제조사(상표명) Manufacturer(Brand)	모델명(형식) Model(Type)	정격 또는 특성 (Technical Data)	인증규격 (Certification)
Battery Cell	DONG GUAN YU XIN EN ENERGY TECHNOLOGY CO., LTD	703450 [703450]	3.7 Vdc, 1 200 mAh	Tested with appliance
Protect IC (U1)	ABLIC Inc.	S-8261ABJMD- G3JT2x [Used for all models]	Overcharge detection voltage: 4.280±0.025 V, Overdischarge detection voltage: 3.000±0.050 V	Tested with appliance
MOS-FET (U2, U3)	PUOLOP	8205A [Used for all models]	VDS: 20 V, VGS: ±12 V, TJ: -55 °C to 150 °C	Tested with appliance
Battery Cell	DONG GUAN YU XIN EN ENERGY TECHNOLOGY CO., LTD	103040 [103040]	3.7 Vdc, 1 200 mAh	
Battery Cell	DONG GUAN YU XIN EN ENERGY TECHNOLOGY CO., LTD	333450 [333450]	3.7 Vdc, 500 mAh	
Battery Cell	DONG GUAN YU XIN EN ENERGY TECHNOLOGY CO., LTD	402030 [402030]	3.7 Vdc, 200 mAh	
Battery Cell	DONG GUAN YU XIN EN ENERGY TECHNOLOGY CO., LTD	503035 [503035]	3.7 Vdc, 500 mAh	
Battery Cell	DONG GUAN YU XIN EN ENERGY TECHNOLOGY CO., LTD	602025 [602025]	3.7 Vdc, 240 mAh	
Battery Cell	DONG GUAN YU XIN EN ENERGY TECHNOLOGY CO., LTD	791852 [791852]	3.7 Vdc, 750 mAh	
Battery Cell	DONG GUAN YU XIN EN ENERGY TECHNOLOGY CO., LTD	802535 [802535]	3.7 Vdc, 700 mAh	
Battery Cell	DONG GUAN YU XIN EN ENERGY TECHNOLOGY CO., LTD	902248 [902248]	3.7 Vdc, 1 050 mAh	

[서식 CP401-18-00]





기 술 문 서  
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(Receipt No)

부품명(회로기호) Components(Part no.)	제조사(상표명) Manufacturer(Brand)	모델명(형식) Model(Type)	정격 또는 특성 (Technical Data)	인증규격 (Certification)
Battery Cell	DONG GUAN YU XIN EN ENERGY TECHNOLOGY CO., LTD	803040 [803040]	3.7 Vdc, 1 000 mAh	



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### 3. 전기용품안전인증의 변경현황(Status of Certificate Revisions)

일자(Date)	발급현황(Status of issues)
	변경내용(Modification of Contents)
2019/05/30	안전확인(기본)
2020/08/20	안전확인(내용변경+파생)
2020/12/03	안전확인(파생등록)
2021/01/08	안전확인(파생등록)

### 4. 기타(Carefully Informed Note)

- 1) 안전관리부품 및 재질목록에 기재된 사항은 안전에 직접적인 영향을 주는 부분이므로 내용을 변경 또는 복수등록을 원하는 경우 안전인증변경신청 또는 안전확인변경신고를 하여야 합니다. 안전인증변경신청 또는 안전확인변경신고를 하지 않고 임의로 변경하는 경우에는 전기용품 및 생활용품 안전관리법에 따라 행정조치 될 수 있습니다.

The certificate holder should apply for a revision of the certificate if the registered critical components are to be changed, modified or alternated. Should the contents of Certificate are altered without the application for the modification, the administrative measures can occur according to the Electrical Appliances and Consumer Products Safety Control Act.

- 2) 공장주소(전화번호포함), 대표자, 상호 및 부품변경, 신고인정보 등 안전인증 또는 안전확인신고의 내용이 변경되었을 때, 안전인증변경신청 또는 안전확인변경신고를 하지 않을 경우에는 전기용품 및 생활용품 안전관리법에 따라 행정조치 될 수 있습니다.

Should a factory address, president name, manufacturer name and critical component are altered without the application for the modification, the administrative measures can occur according to the Electrical Appliances and Customer Products Safety Control Act.

- 3) 조건부 인증사항 (Conditional certification items):




# 기술문서붙임자료

안전인증번호 : XU101174-19003D

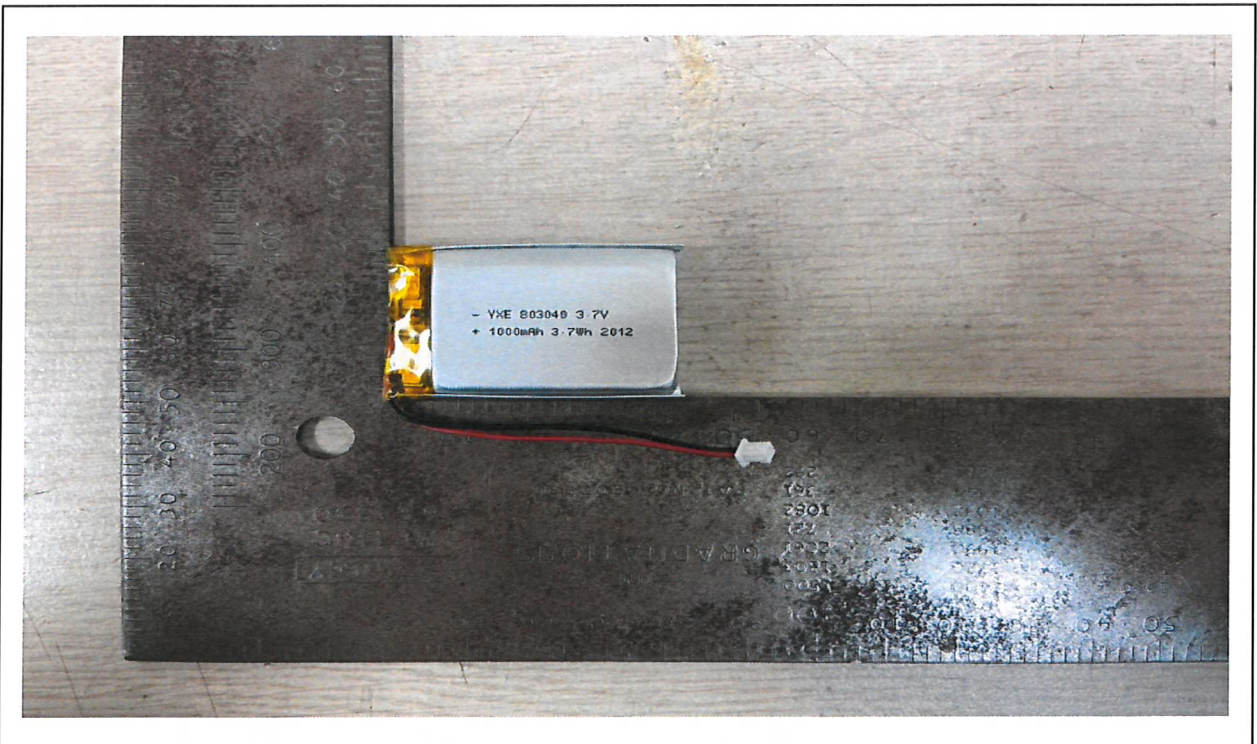
접수번호 : 20201218-0004

## No.1 표시사항

전기용품의 표시사항	
안전인증번호	XXXXXXXX-XXXXX
모델명	803040
제품명	전지
정격	3.7 Vdc, 1 000 mAh
제조업체명	DONG GUAN YU XIN EN ENERGY TECHNOLOGY CO.,LTD.
제조년월	2020. 10.
A/S	031-695-6763
제조국	중국



## No.2 제품전면



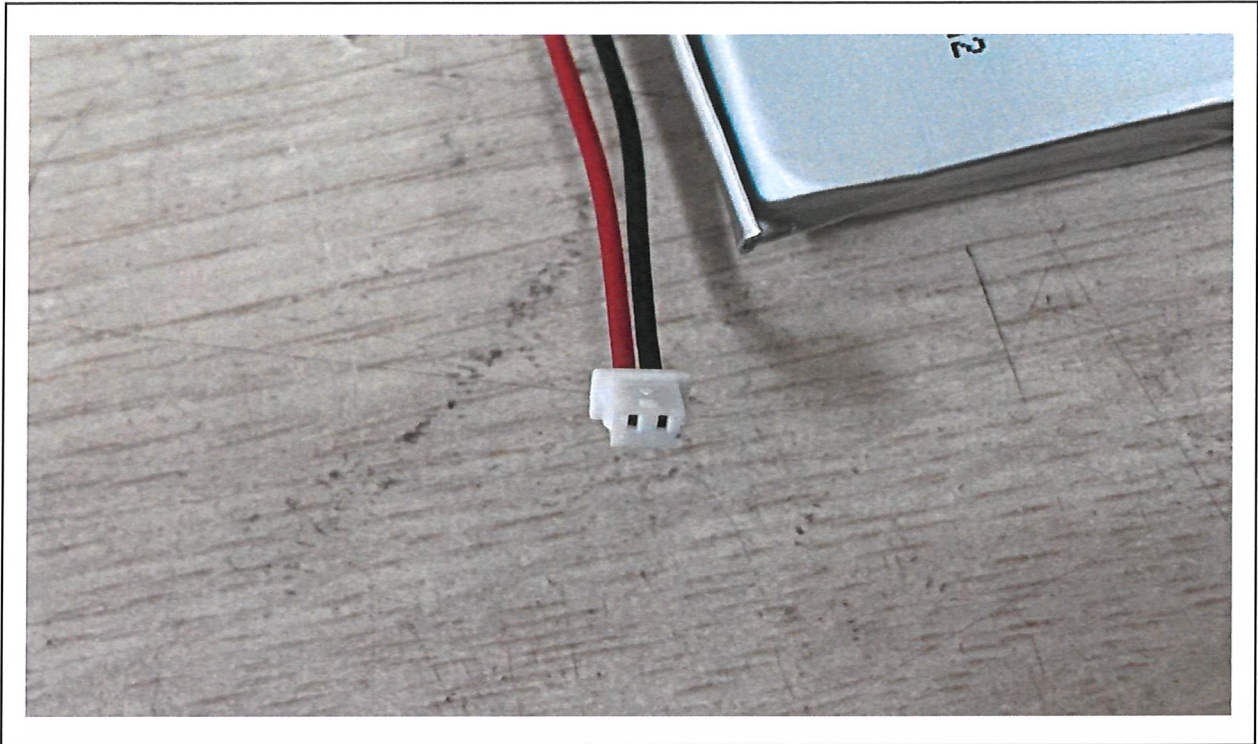


## 기술문서붙임자료

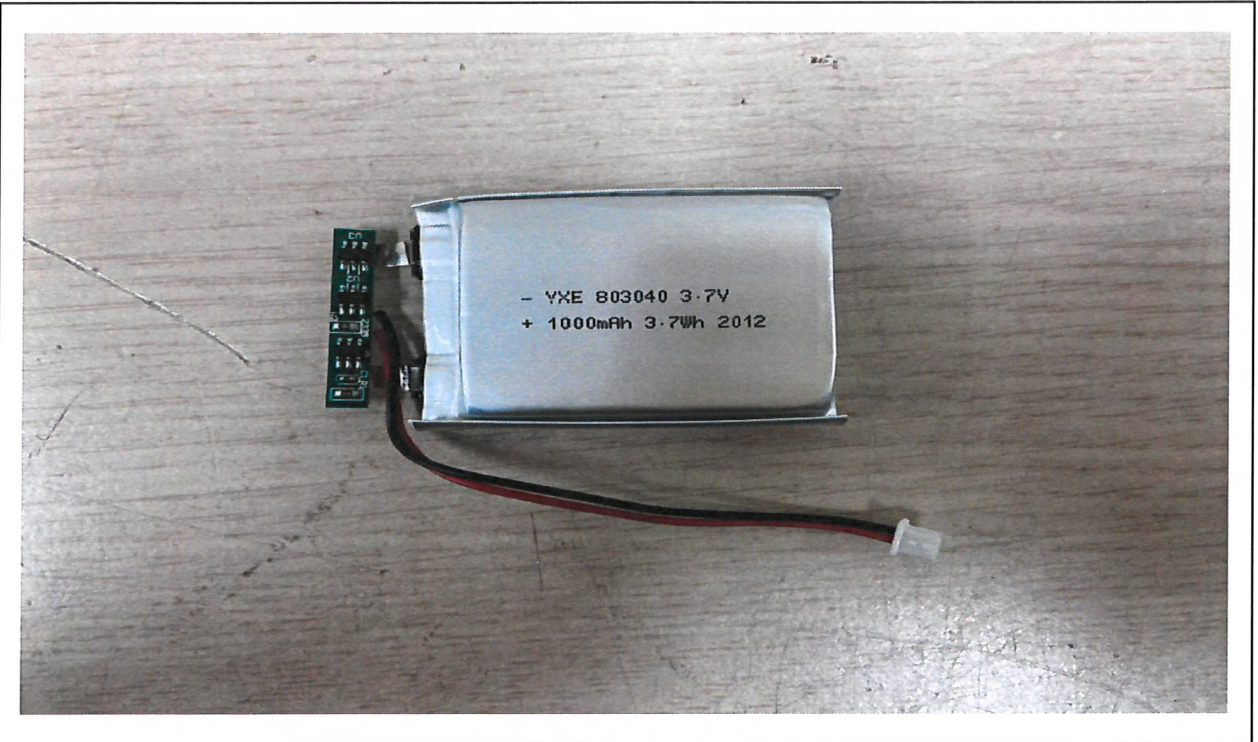
안전인증번호 : XU101174-19003D

접수번호 : 20201218-0004

### No.3 연결단자



### No.4 제품내부



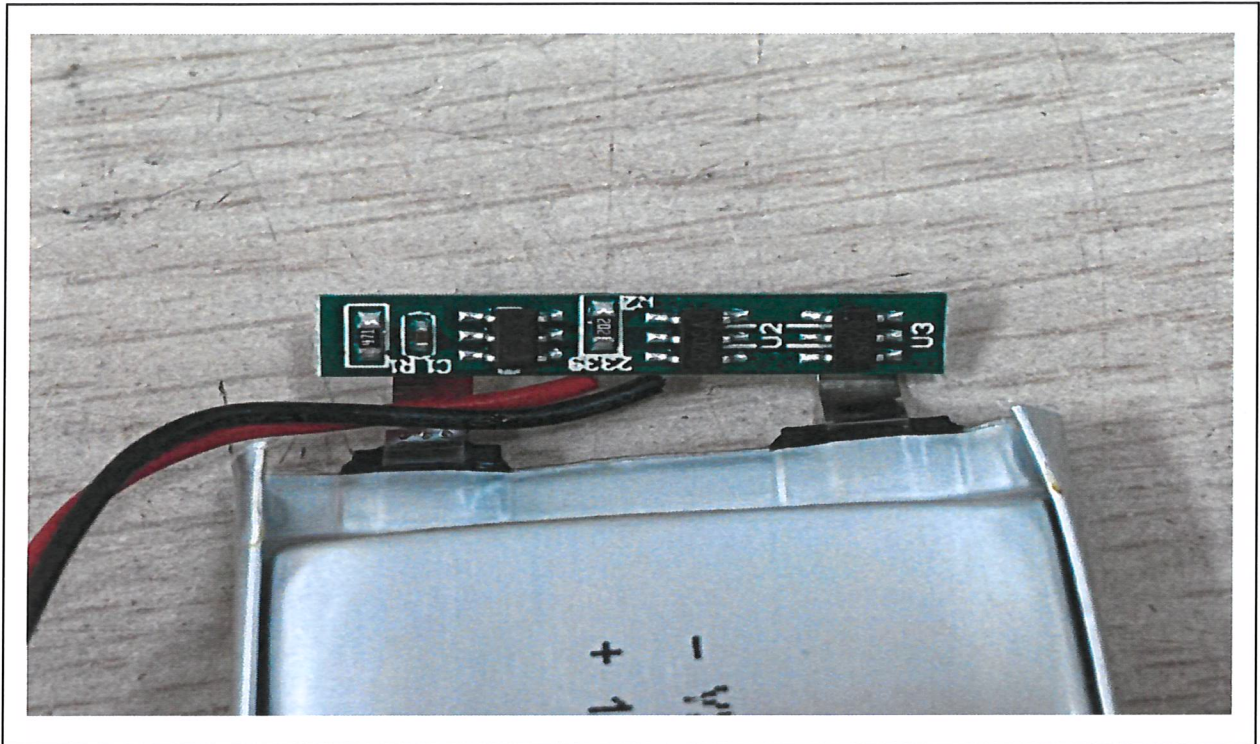


## 기술문서붙임자료

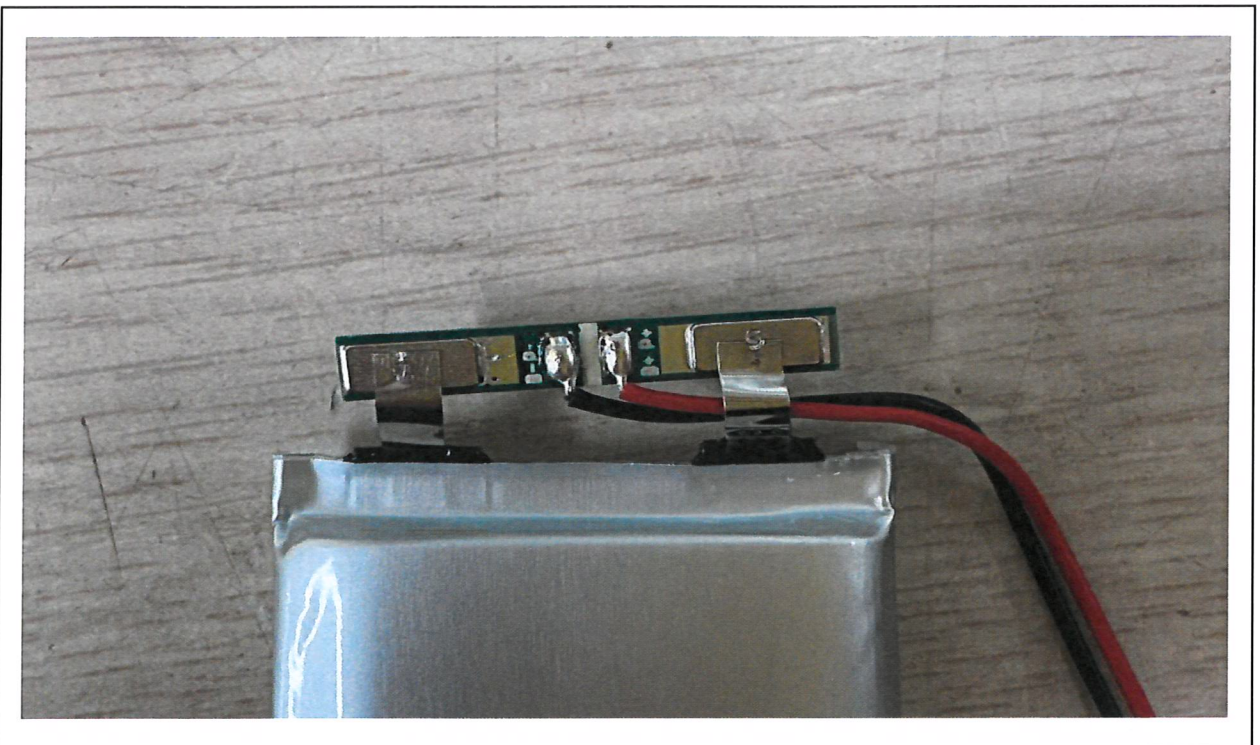
안전인증번호 : XU101174-19003D

접수번호 : 20201218-0004

### No.5 회로전면



### No.6 회로후면





# CE EMC TEST REPORT

**Product: Portable anti-theft detector**

**Model: AK470**

**Report No.: HTT202211080ER**

**Issued Date: Nov.07,2022**

Issued for:

**Shenzhen Ylcgo Electronics Co., Ltd**

**Room 825, 8th Floor, Aihua Building, No. 2038, Shennan Middle Road,  
Fuqiang Community, Huaqiang North Street, Futian District, Shenzhen**

Issued By:

**Shenzhen HTT Technology Co., Ltd.**

**1F, B Building, Huafeng International Robotics Industrial Park,  
Gushu, Xixiang Street, Bao'an District, Shenzhen**

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Shenzhen HTT Technology Co., Ltd.

Report No.: HTT202211080ER

# 1 TEST CERTIFICATION

**Product:** Portable anti-theft detector

**Model:** AK470

**Applicant:** Shenzhen Ylcgo Electronics Co., Ltd  
Room 825, 8th Floor, Aihua Building, No. 2038, Shennan Middle Road,  
Fuqiang Community, Huaqiang North Street, Futian District, Shenzhen

**Factory:** Shenzhen Ylcgo Electronics Co., Ltd  
Room 825, 8th Floor, Aihua Building, No. 2038, Shennan Middle Road,  
Fuqiang Community, Huaqiang North Street, Futian District, Shenzhen

**Trade Mark:** N/A

**Tested:** Nov.01,2022~Nov.07,2022

**Applicable Standards:** EN 55032:2015+A11:2020  
EN IEC 61000-3-2: 2019 +A1:2021  
EN 61000-3-3:2013+A1:2019  
EN 55035:2017+A11:2020

## Deviation from Applicable Standard

None

The above equipment has been tested by Shenzhen HTT Technology Co., Ltd. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

**Tested By:** Ervin Xu

**Date:** Nov.07,2022

**Check By:** Bruce Zhu

**Date:** Nov.07,2022

**Approved By:** Kevin Yang  
(Kevin Yang)

**Date:** Nov.07,2022





## 2 TEST RESULT SUMMARY

EMISSION			
Standard	Item	Result	Remarks
EN 55032:2015+A11:2020	Conducted (Main Port)	N/A	Meet Class B limit
	Radiated	Pass	Meet Class B limit
EN IEC 61000-3-2: 2019 +A1:2021	Harmonic current emissions	N/A	Meets the requirements
EN 61000-3-3:2013+A1:2019	Voltage fluctuations & flicker	N/A	Meets the requirements

IMMUNITY [ EN 55035:2017+A11:2020 ]			
Standard	Item	Result	Remarks
EN 61000-4-2:2009	ESD	Pass	Meets the requirements of Performance Criterion B
EN 61000-4-3:2006+A1:2008 +A2:2010	RS	Pass	Meets the requirements of Performance Criterion A
EN 61000-4-4:2012	EFT	N/A	Meets the requirements of Performance Criterion B
EN 61000-4-5:2014+A1:2017	Surge	N/A	Meets the requirements of Performance Criterion B
EN 61000-4-6:2014+AC:2015	CS	N/A	Meets the requirements of Performance Criterion A
EN 61000-4-8: 2010	PFMF	N/A	Meets the requirements of Performance Criterion A
EN IEC 61000-4-11:2020	Voltage dips & voltage variations	N/A	Meets the requirements of Voltage dips: 1) >95% reduction performance Criterion B 2) 30% reduction performance Criterion C Voltage variations: 1)>95% reduction performance Criterion C

- Note:**
1. The test result judgment is decided by the limit of test standard
  2. The information of measurement uncertainty is available upon the customer's request.



### 3 EUT DESCRIPTION

Product	Portable anti-theft detector
Model	AK470
Trade Mark	N/A
Applicant	Shenzhen Ylcgo Electronics Co., Ltd
EUT Type	<input checked="" type="checkbox"/> Engineering Sample. <input type="checkbox"/> Product Sample, <input type="checkbox"/> Mass Product Sample.
Serial Number	N/A
Power Rating	DC 5V, 0.5A
Data Line	N/A

#### I/O PORT

I/O PORT TYPES	Q'TY	TESTED WITH
N/A	N/A	N/A

#### Model list and Models difference

No.	Model Number	Tested With
1	AK470	<input checked="" type="checkbox"/>

NOTE: AK470 is tested model, other models are derivative models, The models are identical in circuit , only different on the model names, size, So the test data of AK470 can represent the remaining models.



## 4 TEST METHODOLOGY

### 4.1. DECISION OF FINAL TEST MODE

The EUT was tested together with the thereafter additional components, and a configuration, which produced the worst emission levels, was selected and recorded in this report.

The following test mode(s) were scanned during the preliminary test:

Pre-Test Mode		
Emission	Conducted Emission	Mode : Working
	Radiated Emission	Mode : Working

After the preliminary scan, the following test mode was found to produce the highest emission level.

The Worst Test Mode		
Emission	Conducted Emission	Mode : Working
	Radiated Emission	Mode : Working

### 4.2. EUT SYSTEM OPERATION

1. Set up EUT with the support equipments.
2. Make sure the EUT work normally during the test.



## 5 SETUP OF EQUIPMENT UNDER TEST

### 5.1. 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.

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
1	PC	dx2700	CNG7140T7P	N/A	HP	Unshielded 1.4m	Unshielded 1.6m
2	Monitor	HPL1706V	CND74535YZ	N/A	HP	Unshielded 1.2m	Unshielded 1.6m
3	Keyboard	SK-2880	435302-AA1	N/A	HP	Unshielded 1.2m	N/A
4	Mouse	N/A	N/A	N/A	HP	Unshielded 1.2m	N/A

**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.

### 5.2. CONFIGURATION OF SYSTEM UNDER TEST

N/A





## 6 FACILITIES AND ACCREDITATIONS

### 6.1. FACILITIES

All measurement facilities used to collect the measurement data are located at HTT Lab.

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 32. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

### 6.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Uncertainty
Conducted emission	150kHz~30MHz	+/- 2.66dB
Radiated emission	30MHz ~1000MHz	+/- 3.45dB
Harmonic current emission	/	0.634%
Voltage fluctuations & flicker	/	0.780%

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



## 7 EMISSION TEST

### 7.1. CONDUCTED EMISSION MEASUREMENT

#### 7.1.1. LIMITS

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

**NOTE:**

- (1) The lower limit shall apply at the transition frequencies.
- (2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
- (3) All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 7.1.2. TEST INSTRUMENTS

Conducted Emission Shielding Room Test Site (843)				
Equipment	Manufacturer	Model	Serial Number	Calibration date
EMI Test Receiver	Rohde & Schwarz	ESCS30	845550/030	2022.05.21
LISN	Rohde & Schwarz	ESH3-Z5	100181	2022.05.21
Attenuator	Robinson	6810.17A	6810.17A	2022.05.21
Cable Line	Robinson	Z302S-NJ-BNCJ-1.5M	18126545	2022.05.21
Test Software	EZ	EZ-EMC (Ver. EMC-CON 3A1.1 )	N/A	N/A

- NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).  
2. N.C.R = No Calibration Request.



### **7.1.3. TEST PROCEDURES**

#### **Procedure of Preliminary Test**

The EUT and Support equipment, if needed, was set up as per the test configuration to simulate typical usage per the user's manual. When 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 EN55032 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor standing equipment, it is placed on the ground plane, which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

All I/O cables were positioned to simulate typical actual usage as per EN55032.

The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in Item 3.1 were scanned during the preliminary test.

After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.

The EUT configuration and cable configuration of the above highest emission levels were recorded for reference of the final test.

#### **Procedure of Final Test**

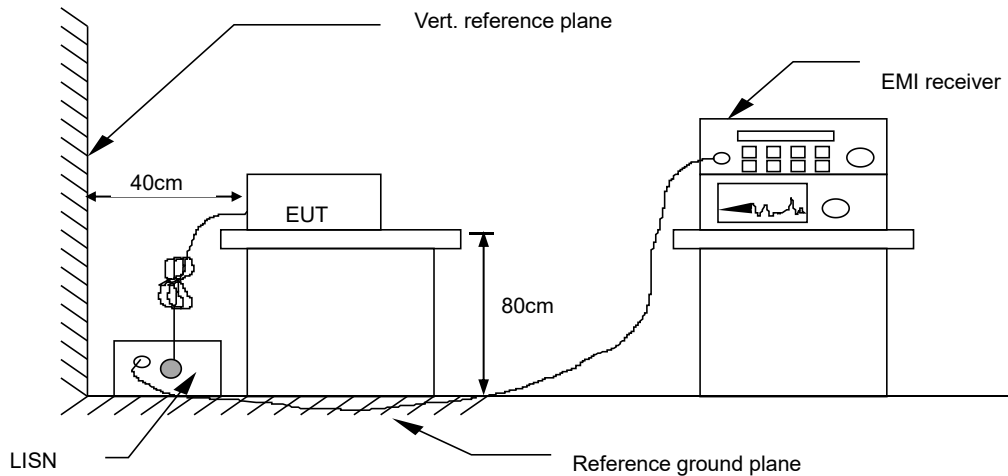
EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.



#### 7.1.4. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 7.1.5. TEST RESULTS

<b>6dB Bandwidth</b>	10 KHz	<b>Environmental Conditions</b>	26°C, 55% RH
<b>Test Mode</b>	Working	<b>Detector Function</b>	Peak / Quasi-peak/AV
<b>Test Result</b>	N/A	<b>Test By</b>	Ervin Xu

**NOTE:**

L1 = Line One (Live Line) / L2 = Line Two (Neutral Line).

“---” denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.

Freq. = Emission frequency in MHz

Reading level(dBuV) = Receiver reading

Corr. Factor (dB) = Anttenuator factor + Cable loss

Level (dBuV) = Reading level(dBuV) + Corr. Factor (dB)

Limit (dBuV) = Limit stated in standard

Margin (dB) = Level (dBuV) – Limits (dBuV)

Q.P.=Quasi-Peak



## 7.2. RADIATED EMISSION MEASUREMENT

### 7.2.1. LIMITS

FREQUENCY (MHz)	dBuV/m (At 3m)	
	Class A	Class B
30 ~ 230	50	40
230 ~ 1000	57	47

**NOTE:** (1) The lower limit shall apply at the transition frequencies.

(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

### 7.2.2. TEST INSTRUMENTS

Radiated Emission Test Site (966)				
Equipment	Manufacturer	Model	Serial Number	Calibration date
EMI Test Receiver	Rohde & Schwarz	ESCI7	100920	2022.05.21
low frequency Amplifier	Sonoma Instrument	310	323089	2022.05.21
high-frequency Amplifier	HP	8449B	P180313003	2022.05.21
Composite logarithmic antenna	SCHWARZBECK	VULB 9168	00931	2020.05.21
System-Controller	CCS	N/A	N/A	N/A
Turn Table	CCS	N/A	N/A	N/A
Antenna Tower	CCS	N/A	N/A	N/A
RF Line	Robinson	ZT26-NJ-NJ-0.6 M	18126549	2022.05.21
RF Line	Robinson	ZT26-NJ-SMAJ-2M	18126550	2022.05.21
RF Line	Robinson	ZT26-NJ-SMAJ-0.6M	18126548	2022.05.21
RF Line	Robinson	ZT26-NJ-SMAJ-8.5M	18126547	2022.05.21
Test Software	EZ	EZ-EMC (Ver. FA-03A2)	N/A	N/A

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

2. N.C.R = No Calibration Request.



### 7.2.3. TEST PROCEDURE

#### Procedure of Preliminary Test

The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is a floor standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

Support equipment, if needed, was placed as per EN55032.

All I/O cables were positioned to simulate typical usage as per EN55032.

Mains cables, telephone lines or other connections to auxiliary equipment located outside the test are shall drape to the floor, be fitted with ferrite clamps or ferrite tubes placed on the floor at the point where the cable reaches the floor and then routed to the place where they leave the turntable. No extension cords shall be used to mains receptacle.

The antenna was placed at 3 meter away from the EUT as stated in EN 55032. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.

The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

The test mode(s) described in Item 3.1 were scanned during the preliminary test:

After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level. The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

#### Procedure of Final Test

EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test.

The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

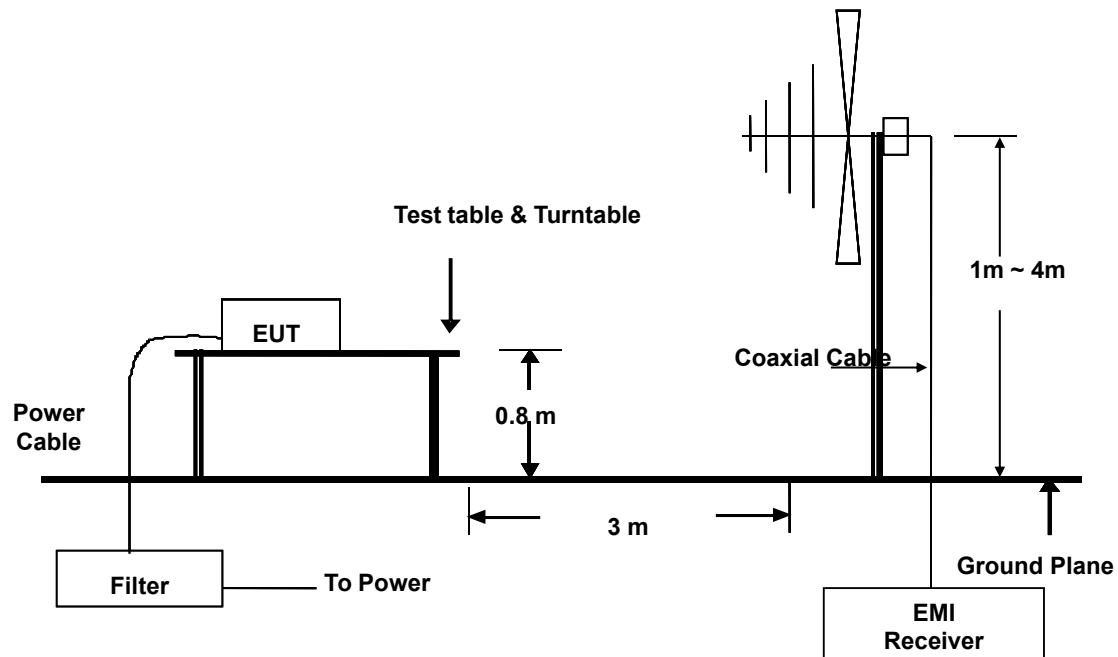
Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.

The test data of the worst-case condition(s) was recorded.





#### 7.2.4. TEST SETUP



#### 7.2.5 TEST RESULTS

For the actual test configuration, please refer to the related item – Photographs of the Test

<b>Test Mode</b>	Working	<b>Environmental Conditions</b>	26°C, 55% RH
<b>6dB Bandwidth</b>	120 KHz	<b>Antenna Pole</b>	Vertical / Horizontal
<b>Antenna Distance</b>	3m	<b>Detector Function</b>	Peak / Quasi-peak
<b>Tested by</b>	Ervin Xu		

#### Configuration

Freq. = Emission frequency in MHz

Reading level(dBuV) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

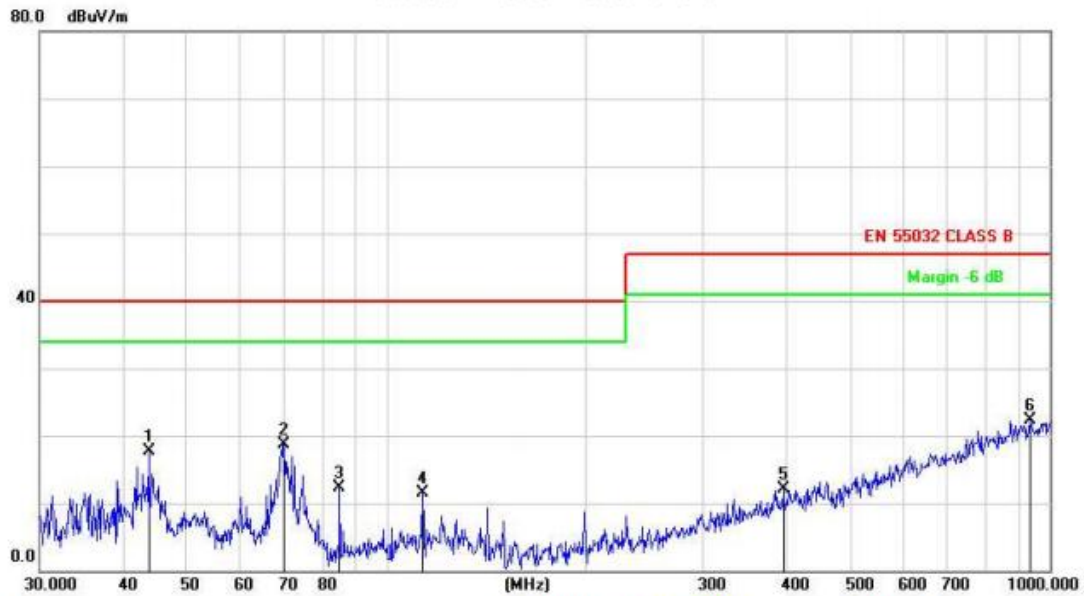
Measurement (dBuV) = Reading level(dBuV) + Corr. Factor (dB)

Limit (dBuV) = Limit stated in standard

Margin (dB) = Measurement (dBuV) – Limits (dBuV)



## Radiated Emission Measurement



Site LAB

Polarization: **Horizontal**

Temperature:

Limit: EN 55032 CLASS B

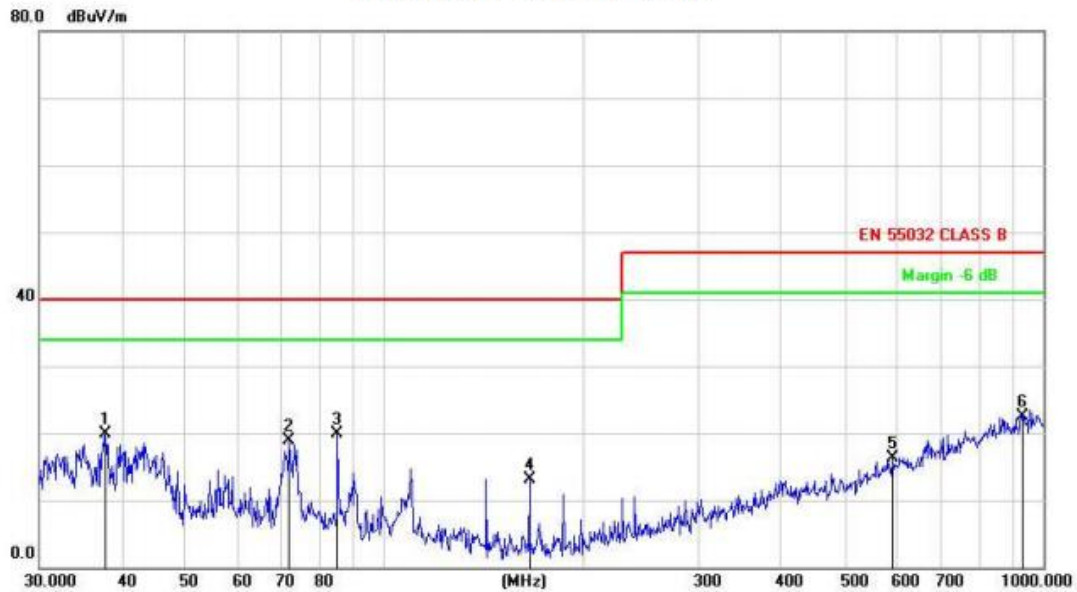
Power:

Humidity: %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1		43.8119	35.02	-17.27	17.75	40.00	-22.25	peak		
2	*	70.0903	38.67	-19.99	18.68	40.00	-21.32	peak		
3		84.9995	34.18	-21.96	12.22	40.00	-27.78	peak		
4		113.3163	31.70	-20.18	11.52	40.00	-28.48	peak		
5		396.2415	26.94	-14.76	12.18	47.00	-34.82	peak		
6		932.2715	26.89	-4.65	22.24	47.00	-24.76	peak		



## Radiated Emission Measurement



Site LAB

Polarization: *Vertical*

Temperature:

Limit: EN 55032 CLASS B

Power:

Humidity: %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Antenna Height cm	Table Degree degree	Comment
1	*	37.8121	37.61	-17.71	19.90	40.00	-20.10	peak		
2		71.8320	39.22	-20.34	18.88	40.00	-21.12	peak		
3		84.9995	41.81	-21.96	19.85	40.00	-20.15	peak		
4		166.0680	31.93	-18.76	13.17	40.00	-26.83	peak		
5		590.9737	26.51	-10.18	16.33	47.00	-30.67	peak		
6		929.0082	27.51	-4.91	22.60	47.00	-24.40	peak		



### 7.3. HARMONICS CURRENT MEASUREMENT

#### 7.3.1. LIMITS OF HARMONICS CURRENT MEASUREMENT

Limits for Class A equipment		Limits for Class D equipment		
Harmonics Order n	Max. permissible harmonics current A	Harmonics Order n	Max. permissible harmonics current per watt mA/W	Max. permissible harmonics current A
Odd harmonics		Odd Harmonics only		
3	2.30	3	3.4	0.23
5	1.14	5	1.9	1.14
7	0.77	7	1.0	0.77
9	0.40	9	0.5	0.40
11	0.33	11	0.35	0.33
13	0.21	13	0.30	0.21
15<=n<=39	0.15x15/n	15<=n<=39	3.85/n	0.15x15/n
Even harmonics				
2	1.08			
4	0.43			
6	0.30			
8<=n<=40	0.23x8/n			

**NOTE:** 1. Class A and Class D are classified according to item 4.4.3.

2. According to section 7 of EN IEC 61000-3-2, the above limits apply for all equipments with a rated power more than 75W, except for lighting equipment.

#### 7.3.2. TEST INSTRUMENTS

Equipment	Manufacturer	Model	Serial Number	Calibration date
Electric Power Analyzer	EVERFINE	PF6000	P619086TF1411112	2021.05.26
Harmonics&Flicker Testing Power Source	EVERFINE	HFS-1000	P624484TM1411115	2022.05.21
Software	EVERFINE	HFMSuite_V2.00.105	N/A	N/A

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).



### 7.3.3. TEST PROCEDURE

The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under Standard Mode operating conditions for each successive harmonic component in turn.

The classification of EUT is according to section 5 of EN IEC 61000-3-2.

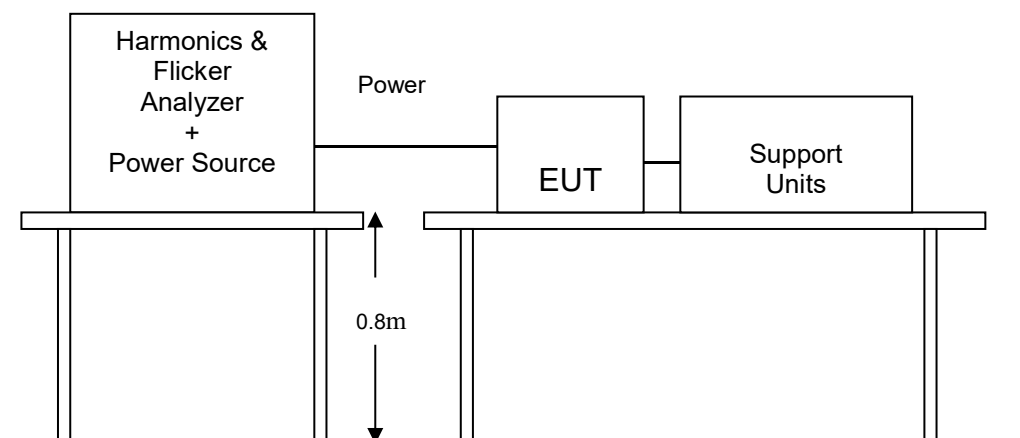
The EUT is classified as follows:

- Class A: Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment, equipment not specified in one of the three other classes.
- Class B: Portable tools; Arc welding equipment which is not professional equipment.
- Class C: Lighting equipment.
- Class D: Equipment having a specified power less than or equal to 600 W of the following types: Personal computers and personal computer monitors and television receivers.

The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.



### 7.3.4. TEST SETUP



For the actual test configuration, please refer to the related item .

### 7.3.5. TEST RESULTS

<b>POWER CONSUMPTION</b>	Rated power exceeding 75W	<b>Test Mode</b>	Working
<b>ENVIRONMENTAL CONDITIONS</b>	24.5deg.C, 56% RH, 992 hPa	<b>Limits</b>	Class <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D
<b>Test Result</b>	N/A	<b>Tested by</b>	Ervin Xu

**NOTE:** 1. Limits classified according to item 7.3.1.

2. There is no need for Harmonics test to be performed on this product(rated power is less than 75W) in accordance with EN IEC 61000-3-2.

For further details, please refer to Clause 7 of EN IEC 61000-3-2 which states:

“For the following categories of equipment, limits are not specified in this edition of the standard: equipment with a rated power of 75W or less, other than lighting equipment.”





## 7.4. VOLTAGE FLUCTUATION AND FLICKS MEASUREMENT

### 7.4.1. LIMITS OF VOLTAGE FLUCTUATION AND FLICKS MEASUREMENT

TEST ITEM	LIMIT	REMARK
$P_{st}$	1.0	$P_{st}$ means short-term flicker indicator.
$P_{lt}$	0.65	$P_{lt}$ means long-term flicker indicator.
$T_{dt}$ (ms)	500	$T_{dt}$ means maximum time that dt exceeds 3 %.
$d_{max}$ (%)	4%	$d_{max}$ means maximum relative voltage change.
dc (%)	3.3%	dc means relative steady-state voltage change

### 7.4.2. TEST INSTRUMENTS

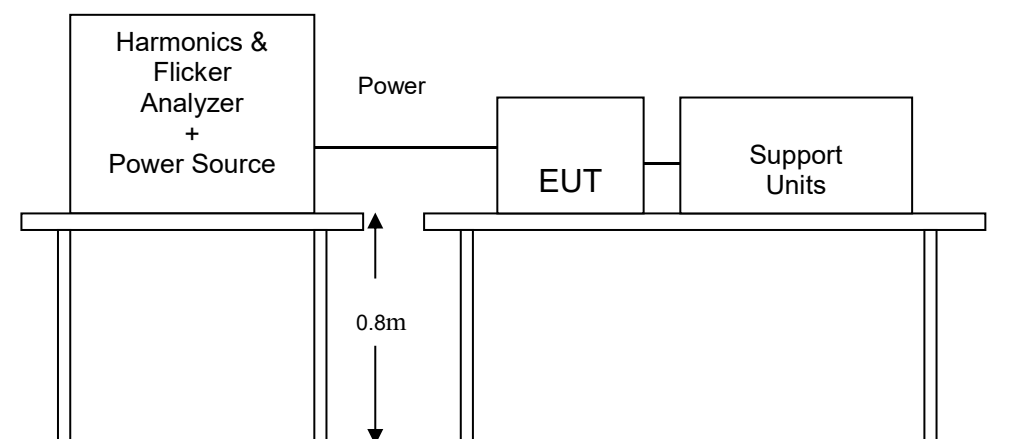
Equipment	Manufacturer	Model	Serial Number	Calibration date
Electric Power Analyzer	EVERFINE	PF6000	P619086TF1411112	2021.05.26
Harmonics&Flicker Testing Power Source	EVERFINE	HFS-1000	P624484TM1411115	2022.05.21
Software	EVERFINE	HFMSuite_V2.00.105	N/A	N/A

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

### 7.4.3. TEST PROCEDURE

The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under Standard Mode operating conditions.

During the flick measurement, the measure time shall include that part of whole operation cycle in which the EUT produce the most unfavorable sequence of voltage changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

**7.4.4. TEST SETUP**

For the actual test configuration, please refer to the related item .

**7.4.5. TEST RESULTS**

<b>OBSERVATION PERIOD (Tp)</b>	10mins	<b>Test Mode</b>	Working
<b>ENVIRONMENTAL CONDITIONS</b>	24.5deg.C, 56% RH, 992 hPa	<b>Tested by:</b>	Ervin Xu
<b>Test Result</b>	N/A		



## 8 IMMUNITY TEST

### 8.1. GENERAL DESCRIPTION

Product Standard	EN 55035:2017+A11:2020	
	Test Type	Minimum Requirement
<b>Basic Standard, Specification, and Performance Criterion required</b>	EN 61000-4-2	Electrostatic Discharge – ESD: 8kV air discharge, 4kV Contact discharge, Performance Criterion B
	EN 61000-4-3	Radio-Frequency Electromagnetic Field Susceptibility Test – RS: 80 ~1000 MHz, 1800 MHz, 2600 MHz, 3500 MHz, 5000 MHz, 3V/m, 80% AM(1kHz), Performance Criterion A
	EN 61000-4-4	Electrical Fast Transient/Burst - EFT, Power line: 1kV, Direct For signal port Direct For dc input port: 0.5kV Performance Criterion B
	EN 61000-4-5	Surge Immunity Test: Test level for AC mains ports, Line to line: 1kV(1.2/50(8/20)us), Line to ground: 2kV(1.2/50(8/20)us); Analogue/digital data port, Port type: coaxial or shielded: Shield to ground: 0.5 kV (1.2/50(8/20)us); DC network power port: Line to reference ground: 0.5 kV(1.2/50(8/20)us); Performance Criterion B. Analogue/digital data port, Port type: unshielded symmetrical Lines to ground : 1kV and 4kV(10/700(5/320)us (with the primary protection)); Performance Criterion C.
	EN 61000-4-6	Conducted Radio Frequency Disturbances Test –CS: 0.15 ~ 80 MHz, 3Vrms, 80% AM, 1kHz, Performance Criterion A
	EN 61000-4-8	Power frequency magnetic field immunity test 50 Hz, 1A/m Performance Criterion A
	EN IEC 61000-4-11	Voltage Dips: i) >95% reduction for 0.5 period, Performance Criterion B ii) 30% reduction for 25 period, Performance Criterion C Voltage Interruptions: >95% reduction for 250 period Performance Criterion C



## 8.2. GENERAL PERFORMANCE CRITERIA DESCRIPTION

<b>Criteria A:</b>	The apparatus shell continues to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. If the manufacturer does not specify the minimum performance level or the permissible performance loss, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
<b>Criteria B:</b>	<p>After test, the apparatus shell continues to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomenon below a performance level specified by the manufacturer, when the apparatus is used as intended. The performance level may be replaced by a permissible loss of performance.</p> <p>During the test, degradation of performance is however allowed. However, no change of operating state if stored data is allowed to persist after the test. If the manufacturer does not specify the minimum performance level or the permissible performance loss, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.</p>
<b>Criteria C:</b>	<p>Temporary loss of function is allowed, provided the functions is self-recoverable or can be restored by the operation of controls by the user in accordance with the manufacturer instructions.</p> <p>Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.</p>



### 8.3. ELECTROSTATIC DISCHARGE (ESD)

#### 8.3.1. TEST SPECIFICATION

<b>Basic Standard:</b>	EN 61000-4-2
<b>Discharge Impedance:</b>	330 ohm
<b>Charging Capacity:</b>	150pF
<b>Discharge Voltage:</b>	Air Discharge: 8 kV (Direct) Contact Discharge: 4 kV (Direct/Indirect)
<b>Polarity:</b>	Positive & Negative
<b>Number of Discharge:</b>	Minimum 25 times at each test point
<b>Discharge Mode:</b>	1 time/s
<b>Performance Criterion:</b>	B

#### 8.3.2. TEST INSTRUMENT

IMMUNITY SHIELDED ROOM				
Equipment	Manufacturer	Model	Serial Number	Calibration date
ESD Tester	LIONCEL	ESD-202A	0180801	2021.05.27
ESD Gun	LIONCEL	N/A	N/A	2021.05.27

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



### 8.3.3. TEST PROCEDURE

The discharges shall be applied in two ways:

a) Contact discharges to the conductive surfaces and coupling planes:

The EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points. One of the test points shall be subjected to at least 50 indirect discharges to the center of the front edge of the **Horizontal Coupling Plane (HCP)**. The remaining three test points shall each receive at least 50 direct contact discharges. If no direct contact test points are available, then at least 200 indirect discharges shall be applied in the indirect mode. Test shall be performed at a maximum repetition rate of one discharge per second.

b) Air discharges at slots and apertures and insulating surfaces:

On those parts of the EUT where it is not possible to perform contact discharge testing, the equipment should be investigated to identify user accessible points where breakdown may occur. Such points are tested using the air discharge method. This investigation should be restricted to those area Running PC Systemly handled by the user. A minimum of 10 single air discharges shall be applied to the selected test point for each such area.

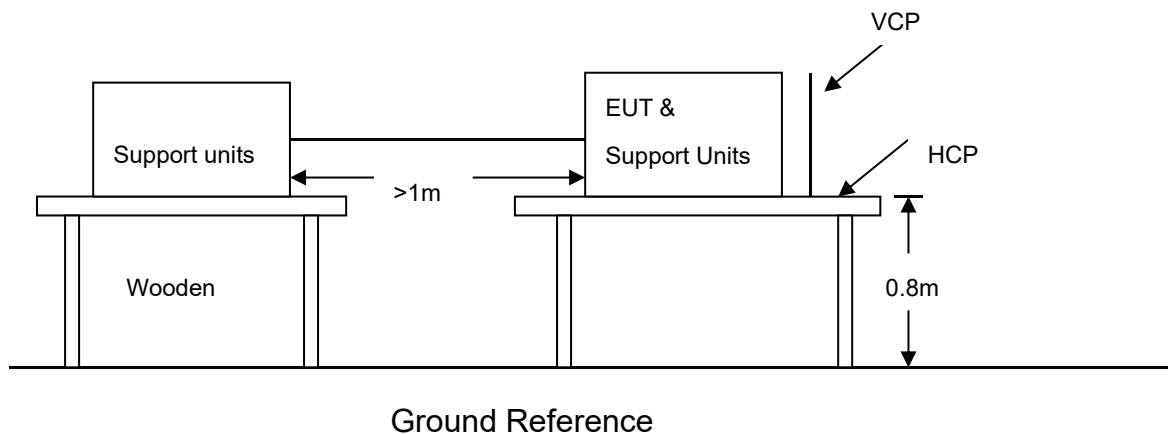
The basic test procedure was in accordance with IEC 61000-4-2:

- a) The EUT was located 0.1 m minimum from all side of the **HCP** (dimensions 1.6m x 0.8m).
- b) The support units were located another table 30 cm away from the EUT, but direct support unit was/were located at same location as EUT on the HCP and keep at a distance of 10 cm with EUT.
- c) The time interval between two successive single discharges was at least 1 second.
- d) Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
- e) Air discharges were applied with the round discharge tip of the discharge electrode approaching the EUT as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator was removed from the EUT and re-triggered for a new single discharge. The test was repeated until all discharges were complete.
- f) At least ten single discharges (in the most sensitive polarity) were applied at the front edge of each **HCP** opposite the center point of each unit of the EUT and 0.1 meters from the front of the EUT. The long axis of the discharge electrode was in the plane of the **HCP** and perpendicular to its front edge during the discharge.
- g) At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the **Vertical Coupling Plane (VCP)** in sufficiently different positions that the four faces of the EUT were completely illuminated. The **VCP** (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the EUT.





### 8.3.4. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### NOTE:

##### TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the **Ground Reference Plane**. The **GRP** consisted of a sheet of aluminum at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system. A **Horizontal Coupling Plane** (1.6m x 0.8m) was placed on the table and attached to the **GRP** by means of a cable with 940k total impedance. The equipment under test, was installed in a representative system as described in section 7 of EN 61000-4-2, and its cables were placed on the **HCP** and isolated by an insulating support of 0.5mm thickness. A distance of 1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

##### FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of IEC 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of 0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.

**8.3.5. TEST RESULTS**

Temperature:	25°C	Humidity	50% RH
Pressure	996mbar	Test result	Pass
Test mode	Working	Test By	Ervin Xu

Air Discharge					
Test locations	Test Levels		Results		
	± 8 kV	Pass	Fail	Performance Criterion	Observation
Slot      8Points	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	Note <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2

Contact Discharge					
Test Points	Test Levels		Results		
	± 4 kV	Pass	Fail	Performance Criterion	Observation
HCP      4Points	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	Note <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2
VCP      4Points	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	Note <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2
Port      4Points	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	B	Note <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2

**NOTE:** 1. There was no change compared with initial operation during the test.  
2. The loss of function of the EUT during the test and it was recovered by itself operation after the test.



## 8.4. RADIATED, RADIO-FREQUENCY, ELECTROMAGNETIC FIELD (RS)

### 8.4.1. TEST SPECIFICATION

<b>Basic Standard:</b>	EN 61000-4-3
<b>Frequency Range:</b>	80 MHz ~1000 MHz, 1800 MHz, 2600 MHz, 3500 MHz, 5000 MHz
<b>Field Strength:</b>	3 V/m
<b>Modulation:</b>	1kHz Sine Wave, 80%, AM Modulation
<b>Frequency Step:</b>	1 % of preceding frequency value
<b>Polarity of Antenna:</b>	Horizontal and Vertical
<b>Test Distance:</b>	3 m
<b>Antenna Height:</b>	1.5m
<b>Performance Criterion:</b>	A

### 8.4.2. TEST INSTRUMENT

743 RS Chamber				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration date
Signal Generator	Maconi	2022D	119246/003	2022.05.21
Power Amplifier	M2S	A00181-1000	9801-112	2022.05.21
Power Amplifier	M2S	AC8113/ 800-250A	9801-179	2022.05.21
Power Antenna	SCHAFFNER	CBL6140A	1204	2022.05.21

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).  
2. N.C.R.= No Calibration required

### 8.4.3. TEST PROCEDURE

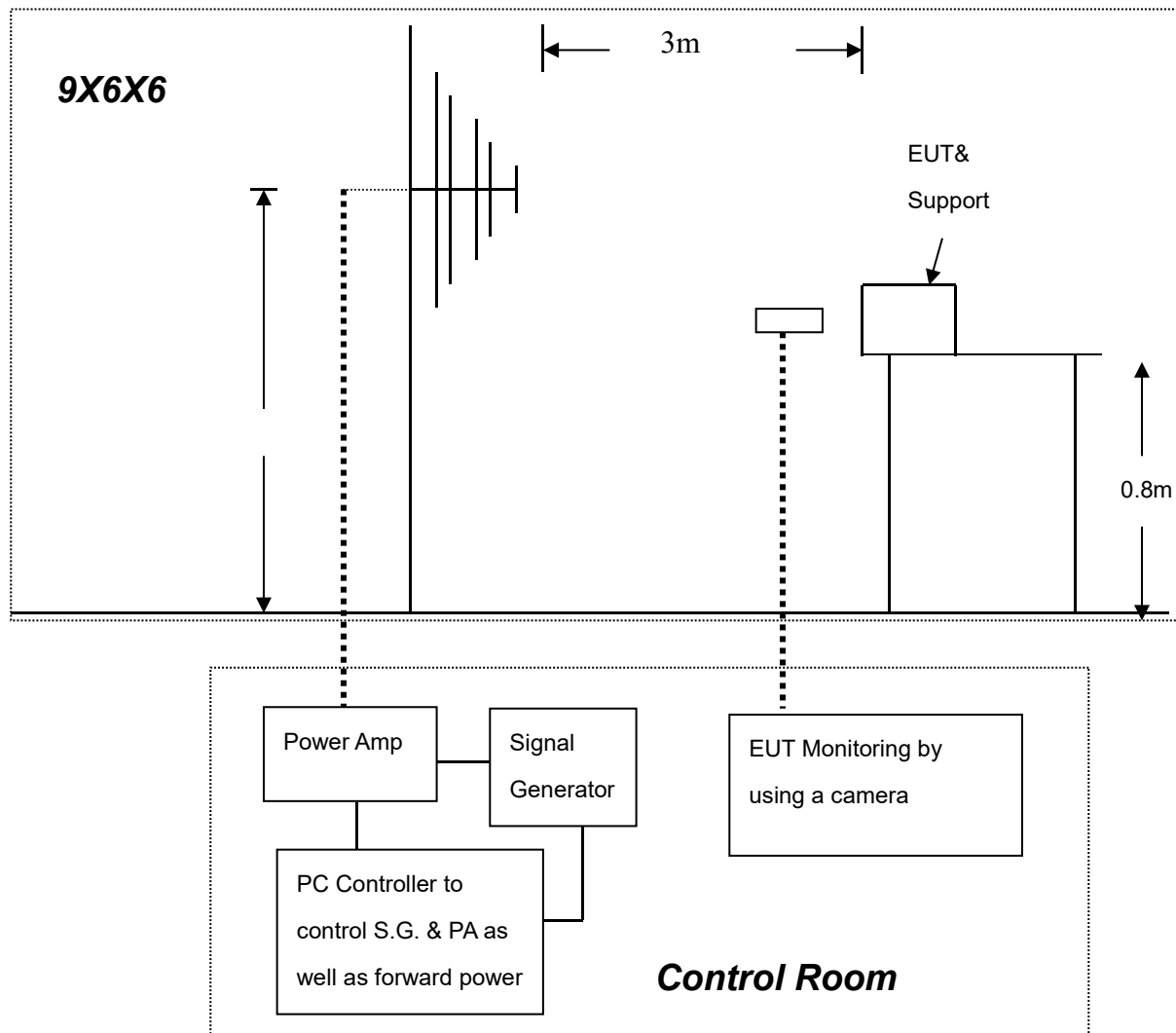
The test procedure was in accordance with EN 61000-4-3

- The testing was performed in a fully anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.
- The frequency range is swept from 80 MHz to 1000 MHz, with the signal 80% amplitude modulated with a 1kHz sine-wave. The rate of sweep did not exceed  $1.5 \times 10^{-3}$  decade/s, where the frequency range is swept incrementally, the step size was 1% of preceding frequency value.
- The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.



- d) The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

#### 8.4.4. TEST SETUP



For the actual test configuration, please refer to the related item .

#### NOTE:

##### TABLETOP EQUIPMENT

The EUT installed in a representative system as described in section 7 of EN 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

##### FLOOR STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

**8.4.5. TEST RESULTS**

<b>Temperature:</b>	25°C	<b>Humidity</b>	50% RH
<b>Pressure</b>	996mbar	<b>Test result</b>	Pass
<b>Test mode</b>	Working	<b>Test By</b>	Ervin Xu

Frequency (MHz)	Polarity	Postion	Field Strength (V/m)	Observation	Result
80 ~ 1000	V&H	Front	3	Note	Pass
80 ~ 1000	V&H	Rear	3	Note	Pass
80 ~ 1000	V&H	Left	3	Note	Pass
80 ~ 1000	V&H	Right	3	Note	Pass
1800, 2600, 3500, 5000	V&H	Front	3	Note	Pass
	V&H	Rear	3	Note	Pass
	V&H	Left	3	Note	Pass
	V&H	Right	3	Note	Pass

**NOTE:** 1. There was no change compared with the initial operation during the test.



## 8.5. ELECTRICAL FAST TRANSIENT (EFT)

### 8.5.1. TEST SPECIFICATION

<b>Basic Standard:</b>	EN 61000-4-4
<b>Test Voltage:</b>	Power Line: 1 kV Signal/Control Line: 0.5 kV
<b>Polarity:</b>	Positive & Negative
<b>Impulse Frequency:</b>	5 kHz
<b>Impulse Wave-shape:</b>	5/50 ns
<b>Burst Duration:</b>	15 ms
<b>Burst Period:</b>	300 ms
<b>Test Duration:</b>	Not less than 1 min.
<b>Performance criterion:</b>	B

### 8.5.2. TEST INSTRUMENT

Immunity Shield Room				
Equipment	Manufacturer	Model	Serial Number	Calibration date
EFT Tester	LIONCEL	LSE-545CB	0180601	2022.05.21
Specialized Isolated Voltage Regulator For Surge	EVERFINE	GT2502	P185365CM5391123	2022.05.21
Coupling Clamp	LIONCEL	EFTC	018071809	2022.05.21

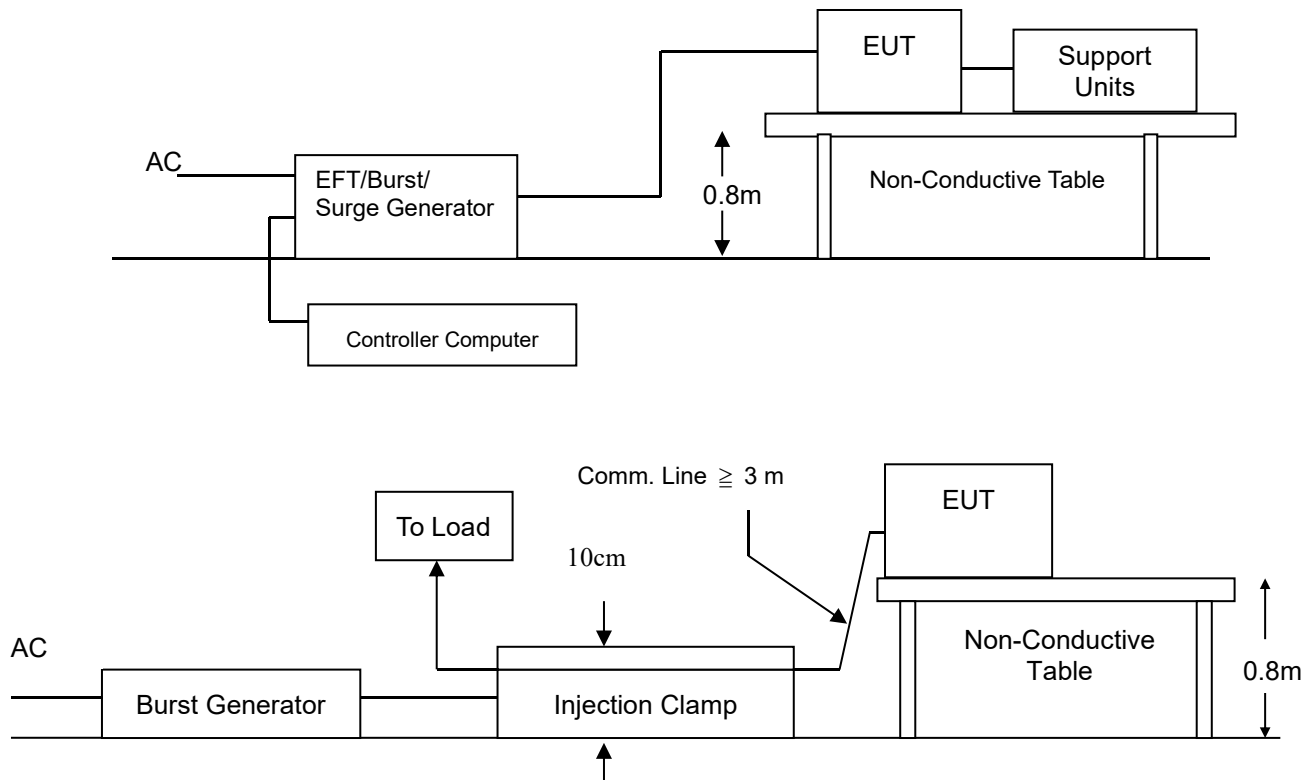
**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

2. N.C.R.= No Calibration required

### 8.5.3. TEST PROCEDURE

- Both positive and negative polarity discharges were applied.
- The length of the “hot wire” from the coaxial output of the EFT generator to the terminals on the EUT should not exceed 1 meter.
- The duration time of each test sequential was 1 minute.
- The transient/burst waveform was in accordance with EN 61000-4-4, 5/50ns.



**8.5.4. TEST SETUP**

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

**NOTE:****TABLETOP EQUIPMENT**

The configuration consisted of a wooden table (0.8m high) standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system. A minimum distance of 0.5m was provided between the EUT and the walls of the laboratory or any other metallic structure.

**FLOOR STANDING EQUIPMENT**

The EUT installed in a representative system as described in section 7 of IEC 61000-4-4 and its cables, were isolated from the Ground Reference Plane by an insulating support that is 0.1-meter thick. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system.

**8.5.5. TEST RESULTS**

<b>Temperature:</b>	25°C	<b>Humidity</b>	50% RH
<b>Pressure</b>	996mbar	<b>Test result</b>	N/A
<b>Test mode</b>	Working	<b>Test By</b>	Ervin Xu

Test Point	Polarity	Test Level (kV)	Performance Criterion	Observation	Result
L	+/-	1	B	Note <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2	N/A
N	+/-	1	B	Note <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2	N/A
L – N	+/-	1	B	Note <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2	N/A
PE	+/-	1	B	Note <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2	N/A
L – PE	+/-	1	B	Note <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2	N/A
N – PE	+/-	1	B	Note <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2	N/A
L – N – PE	+/-	1	B	Note <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2	N/A
Signal Line	--	--	--	Note <input type="checkbox"/> 1 <input type="checkbox"/> 2	N/A

**NOTE:** 1. There was no change compared with initial operation during the test.  
2. The loss of function of the EUT during the test and it was recovered by itself operation after the test.



## 8.6. SURGE IMMUNITY TEST

### 8.6.1. TEST SPECIFICATION

<b>Basic Standard:</b>	EN 61000-4-5
<b>Wave-Shape:</b>	Combination Wave 1.2/50 us Open Circuit Voltage 8/20 us Short Circuit Current
<b>Test Voltage:</b>	Power line ~ line to line: 1 kV; line to ground: 2kV Telecommunication line: 1 kV;
<b>Surge Input/Output:</b>	Power Line: L-N / L-PE / N-PE Telecommunication line: T-Ground / R-Ground
<b>Generator Source Impedance:</b>	2 ohm between networks 12 ohm between network and ground
<b>Polarity:</b>	Positive/Negative
<b>Phase Angle:</b>	0 /90 /180 /270
<b>Pulse Repetition Rate:</b>	1 time / min. (maximum)
<b>Number of Tests:</b>	5 positive and 5 negative at selected points
<b>Performance Criterion:</b>	B

### 8.6.2. TEST INSTRUMENT

Immunity Shield Room				
Equipment	Manufacturer	Model	Serial Number	Calibration date
Surge Tester	LIONCEL	LSE-545CB	0180601	2022.05.21
Specialized Isolated Voltage Regulator For Surge	EVERFINE	GT2502	P185365CM5391123	2022.05.21

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).  
2. N.C.R.= No Calibration required



### 8.6.3. TEST PROCEDURE

a) For EUT power supply:

The surge is applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave. The power cord between the EUT and the coupling/decoupling networks was shorter than 2 meters in length.

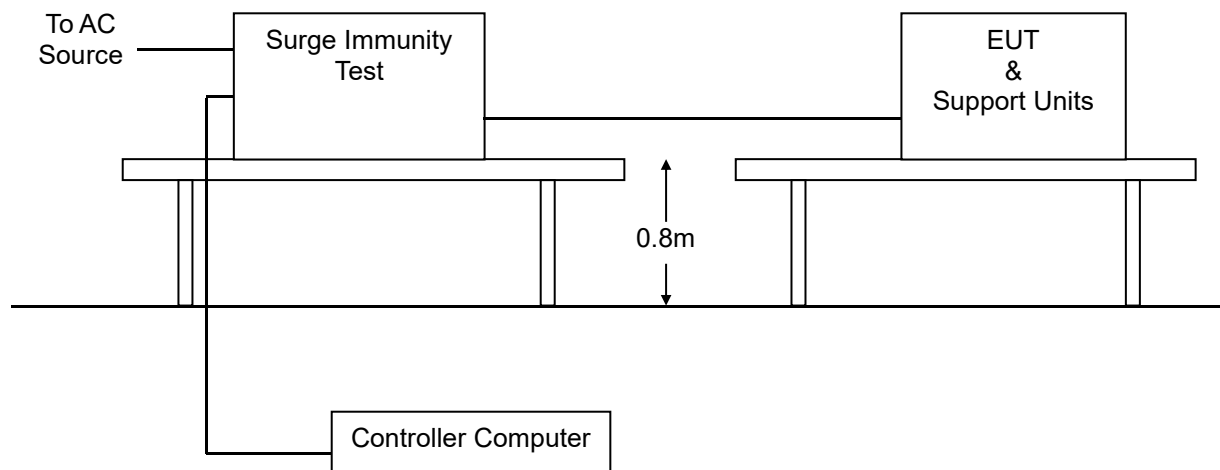
b) For test applied to unshielded un-symmetrically operated interconnection lines of EUT:

The surge was applied to the lines via the capacitive coupling. The coupling / decoupling networks didn't influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks was shorter than 2 meters in length.

c) For test applied to unshielded symmetrically operated interconnection / telecommunication lines of EUT:

The surge was applied to the lines via gas arrestors coupling. Test levels below the ignition point of the coupling arrestor were not specified. The interconnection line between the EUT and the coupling/decoupling networks was shorter than 2 meters in length.

### 8.6.4. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

**8.6.5. TEST RESULTS**

<b>Temperature:</b>	25°C	<b>Humidity</b>	50% RH
<b>Pressure</b>	996mbar	<b>Test result</b>	N/A
<b>Test mode</b>	Working	<b>Test By</b>	Ervin Xu

Test Point	Polarity	Test Level (kV)	Performance Criterion	Observation	Result
L - N	+/-	1	B	Note <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2	N/A
L - PE	+/-	2	B	Note <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2	N/A
N - PE	+/-	2	B	Note <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2	N/A

**NOTE:** 1. There was no change compared with initial operation during the test.  
2. The loss of function of the EUT during the test and it was recovered by itself operation after the test.



## 8.7. CONDUCTED RADIO FREQUENCY DISTURBANCES (CS)

### 8.7.1. TEST SPECIFICATION

<b>Basic Standard:</b>	EN 61000-4-6
<b>Frequency Range:</b>	0.15 MHz ~ 80 MHz
<b>Field Strength:</b>	3 V
<b>Modulation:</b>	1kHz Sine Wave, 80%, AM Modulation
<b>Frequency Step:</b>	1 % of preceding frequency value
<b>Coupled cable:</b>	Power Mains, Shielded
<b>Coupling device:</b>	CDN-M3/2 (2 wires)
<b>Performance criterion:</b>	A

### 8.7.2. TEST INSTRUMENT

CS Test				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration date
Signal Generator	Maconi	2022D	119246/003	2022.05.21
Power Amplifier	M2S	A00181-1000	9801-112	2022.05.21
CDN	MEB	M3-8016	003683	2022.05.21

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).  
2. N.C.R.= No Calibration required





### 8.7.3. TEST PROCEDURE

The EUT shall be tested within its intended operating and climatic conditions.

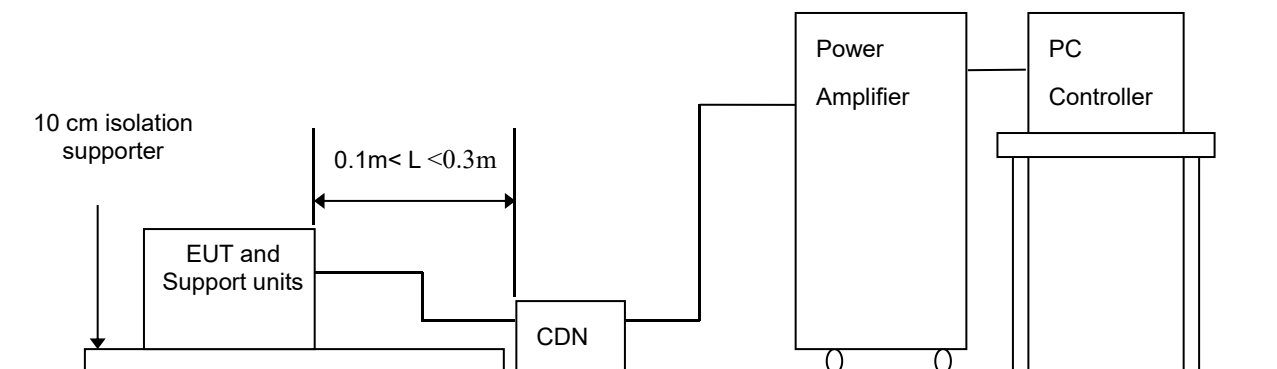
The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn, while the other non-excited RF input ports of the coupling devices are terminated by a 50-ohm load resistor.

The frequency range was swept from 150 kHz to 80 MHz, using the signal level established during the setting process and with a disturbance signal of 80 % amplitude. The signal was modulated with a 1 kHz sine wave, pausing to adjust the RF signal level or the switch coupling devices as necessary. The sweep rate was  $1.5 \times 10^{-3}$  decades/s. Where the frequency range is swept incrementally, the step size was 1 % of preceding frequency value from 150 kHz to 80 MHz.

The dwell time at each frequency was less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies such as clock frequency(ies) and harmonics or frequencies of dominant interest, was analyzed separately.

Attempts were made to fully exercise the EUT during testing, and to fully interrogate all exercise modes selected for susceptibility.

### 8.7.4. TEST SETUP



- Note:**
1. The EUT is setup 0.1m above Ground Reference Plane
  2. The CDNS and / or EM clamp used for real test depends on ports and cables configuration of EUT.

For the actual test configuration, please refer to the related item .

**NOTE:**

TABLE-TOP AND FLOOR-STANDING EQUIPMENT

The equipment to be tested is placed on an insulating support of 0.1 meters height above a ground reference plane. All relevant cables shall be provided with the appropriate coupling and decoupling devices at a distance between 0.1 meters and 0.3 meters from the projected geometry of the EUT on the ground reference plane.

**8.7.5. TEST RESULTS**

<b>Temperature:</b>	25°C	<b>Humidity</b>	50% RH
<b>Pressure</b>	996mbar	<b>Test result</b>	N/A
<b>Test mode</b>	Working	<b>Test By</b>	Ervin Xu

Frequency Band (MHz)	Field Strength (Vrms)	Injected Position	Injection Method	Performance Criterion	Observation	Result
0.15 ~ 80	3	AC Mains	CDN-M2	A	Note <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2	N/A
0.15 ~ 80	3	DC Mains	CDN-M2	A	Note <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2	N/A

**NOTE:** 1. There was no change compared with initial operation during the test.  
2. The loss of function of the EUT during the test and it was recovered by itself operation after the test.  
3. N/A means to no applicable.



## 8.8. POWER FREQUENCY MAGNETIC FIELD

### 8.8.1. TEST SPECIFICATION

<b>Basic Standard:</b>	EN 61000-4-8
<b>Frequency Range:</b>	50Hz
<b>Field Strength:</b>	1A/m
<b>Observation Time:</b>	5 minutes
<b>Inductance Coil:</b>	Rectangular type, 1mx1m
<b>Performance criterion:</b>	A

### 8.8.2. TEST INSTRUMENT

Immunity Shield Room				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration date
Power-frequency Magnetic field	SCHAFFNER	CCN 1000-1	72046	2022.05.21
Induction Coil Interface	SCHAFFNER	INA2141	6003	2022.05.21

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

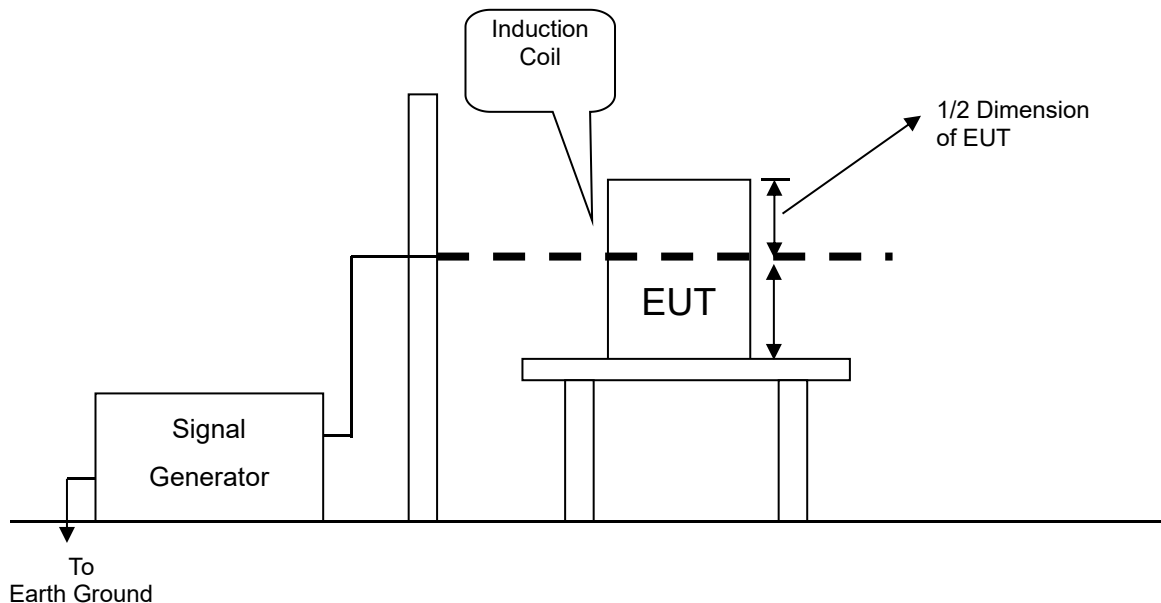
2. N.C.R.= No Calibration required

### 8.8.3. TEST PROCEDURE

- The equipment is configured and connected to satisfy its functional requirements. It shall be placed on the GRP with the interposition of a 0.1m-thick insulating support.
- The equipment cabinets shall be connected to the safety earth directly on the GRP via the earth terminal of the EUT.
- The power supply, input and output circuits shall be connected to the sources of power supply, control and signal.
- The cables supplied or recommended by the equipment manufacturer shall be used. 1 meter of all cables used shall be exposed to the magnetic field.



### 8.8.4. TEST SETUP



For the actual test configuration, please refer to the related item .

#### NOTE:

##### TABLETOP EQUIPMENT

The equipment shall be subjected to the test magnetic field by using the induction coil of standard dimension (1 m x 1 m). The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

##### FLOOR-STANDING EQUIPMENT

The equipment shall be subjected to the test magnetic field by using induction coils of suitable dimensions. The test shall be repeated by moving and shifting the induction coils, in order to test the whole volume of the EUT for each orthogonal direction. The test shall be repeated with the coil shifted to different positions along the side of the EUT, in steps corresponding to 50 % of the shortest side of the coil. The induction coil shall then be rotated by 90 degrees in order to expose the EUT to the test field with different orientations.

### 8.8.5. TEST RESULTS

Temperature:	25°C	Humidity	50% RH
Pressure	996mbar	Test result	N/A
Test mode	Working	Test By	Ervin Xu

DIRECTION	Field Strength (A/m)	Performance Criterion	OBSERVATION	RESULTS
X	1	A	Note <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2	N/A
Y	1	A	Note <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2	N/A
Z	1	A	Note <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2	N/A

**NOTE:** 1. There was no change compared with initial operation during the test.

2. The loss of function of the EUT during the test and it was recovered by itself operation after the test.



## 8.9. VOLTAGE DIP & VOLTAGE INTERRUPTIONS

### 8.9.1. TEST SPECIFICATION

<b>Basic Standard:</b>	EN IEC 61000-4-11
<b>Test duration time:</b>	Minimum three test events in sequence
<b>Interval between event:</b>	Minimum 10 seconds
<b>Phase Angle:</b>	0 /45 / 90/ 135/ 180/ 225/ 270/ 315/ 360
<b>Test cycle:</b>	3 times
<b>Performance criterion:</b>	B,C

### 8.9.2. TEST INSTRUMENT

Immunity shielded room				
Equipment	Manufacturer	Model	Serial Number	Calibration date
Dips Tester	LIONCEL	VSD-1102	0181202	2022.05.21
Voltage-Stabilized Source	LIONCEL	RGL-220	0180901	2022.05.21
Voltage-Stabilized Source	LIONCEL	RGL-220	0180902	2022.05.21

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

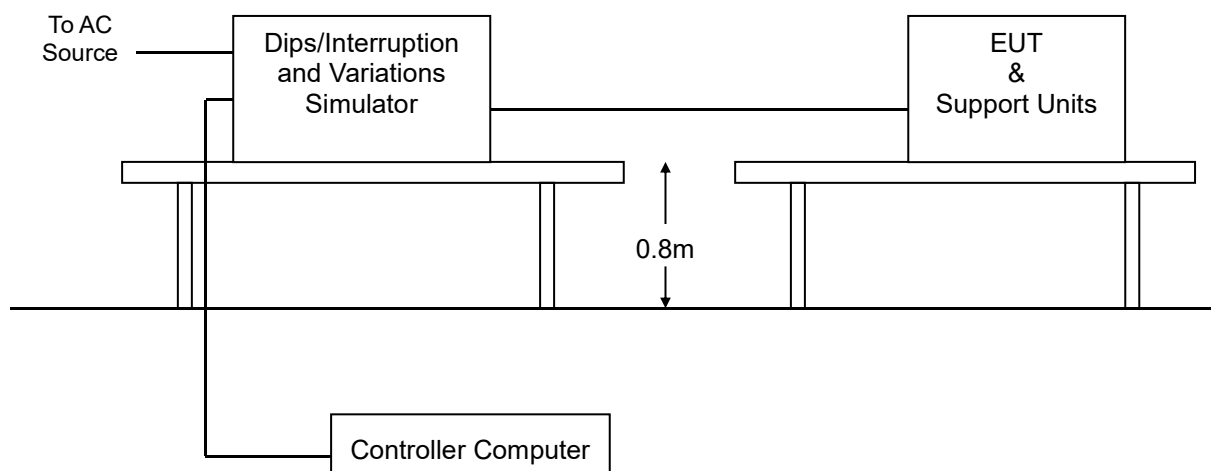
2. N.C.R.= No Calibration required

### 8.9.3. TEST PROCEDURE

1. The EUT and support units were located on a wooden table, 0.8 m away from ground floor.
2. Setting the parameter of tests and then perform the test software of test simulator.
3. Conditions changes to occur at 0 degree crossover point of the voltage waveform.
4. Recording the test result in test record form.



#### 8.9.4. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 8.9.5. TEST RESULTS

Temperature:	25°C	Humidity	50% RH
Pressure	996mbar	Test result	N/A
Test mode	Working	Test By	Ervin Xu

Voltage (% Reduction)	Duration (Period)	Performance Criterion	Observation	Test Result
5	0.5	<input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C	Note <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3	N/A
70	25	<input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C	Note <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3	N/A
0	250	<input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C	Note <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3	N/A

**NOTE:** 1. There was no change compared with initial operation during and after the test.

No unintentional response was found during the test.

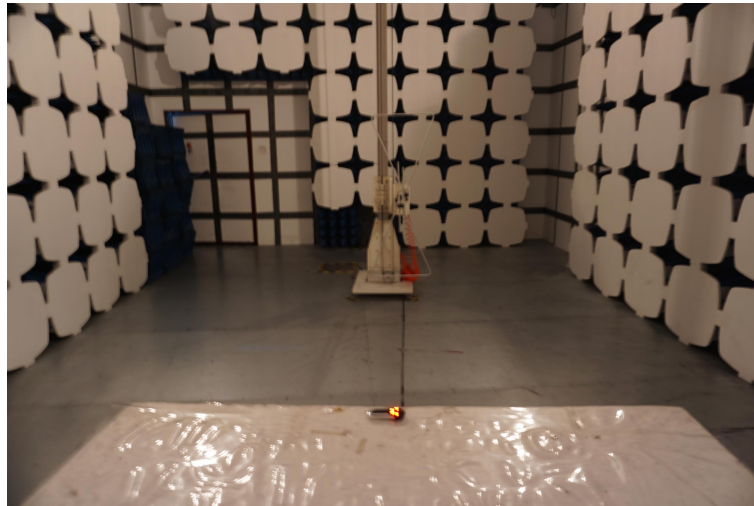
2. The function stopped during the test, but can be recoverable by itself operation after the test.

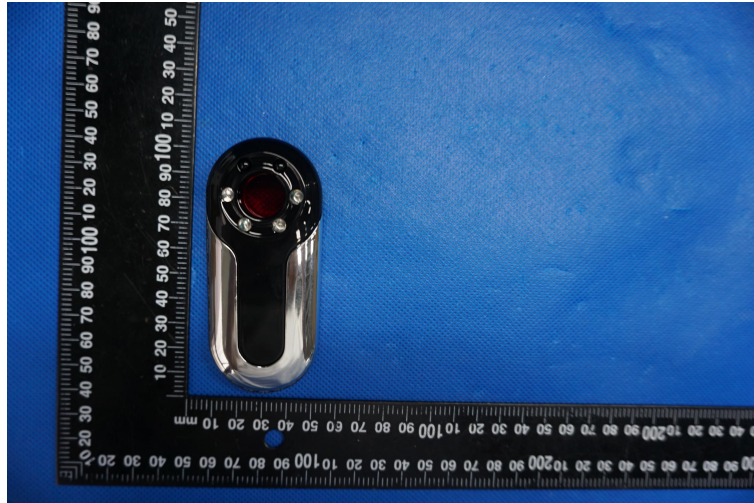
3. The function stopped during the test, but can be recoverable manually after the test.





## 9 PHOTOGRAPHS OF EUT







# ***Certificate of Conformity***

**Certificate No.** : HTT202211080E

**Applicant** : Shenzhen Ylco Electronics Co., Ltd  
Room 825, 8th Floor, Aihua Building, No. 2038,  
**Applicant Address** : Shennan Middle Road, Fuqiang Community,  
Huaqiang North Street, Futian District, Shenzhen

**Manufacturer** : Shenzhen Ylco Electronics Co., Ltd  
Room 825, 8th Floor, Aihua Building, No. 2038,  
**Manufacturer Address** : Shennan Middle Road, Fuqiang Community,  
Huaqiang North Street, Futian District, Shenzhen

**Product** : Portable anti-theft detector

**Model No.** : AK470

**Trademark** : N/A

The following products have been tested by us with listed standards and found in compliance with the council EMC 2014/30/EU. It is possible to use CE marking to demonstrate the compliance with the EMC directive

Test standards:	Report(s) Number	Issued By	Issued Date
EN 55032:2015+A11:2020 EN 55035: 2017+A11:2020 EN IEC 61000-3-2: 2019 +A1:2021 EN 61000-3-3:2013+A1:2019	HTT202211080ER	HTT	Nov.07,2022

This certificate of conformity is not transferable and based on an evaluation of a sample of the above mentioned product.



Authorised Signatory:

KevinYang/Senior Manager

Date: Nov.07,2022





Shenzhen HTT Technology Co., Ltd.

Report No.: HTT202211080FR

# FC TEST REPORT

**Product: Portable anti-theft detector**

**Model: AK470**

**Report No.: HTT202211080FR**

**Issued Date: Nov.07,2022**

Issued for:

**Shenzhen Ylcgo Electronics Co., Ltd  
Room 825, 8th Floor, Aihua Building, No. 2038, Shennan Middle Road,  
Fuqiang Community, Huaqiang North Street, Futian District, Shenzhen**

Issued by:

**Shenzhen HTT Technology Co., Ltd.  
1F, B Building, Huafeng International Robotics Industrial Park,  
Gushu, Xixiang Street, Bao'an District, Shenzhen**

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Shenzhen HTT Technology Co., Ltd.

Report No.: HTT202211080FR

# 1 TEST RESULT CERTIFICATION

**Product:** Portable anti-theft detector

**Model:** AK470

**Applicant:** Shenzhen Ylco Electronics Co., Ltd  
Room 825, 8th Floor, Aihua Building, No. 2038, Shennan Middle Road,  
Fuqiang Community, Huaqiang North Street, Futian District, Shenzhen

**Factory:** Shenzhen Ylco Electronics Co., Ltd  
Room 825, 8th Floor, Aihua Building, No. 2038, Shennan Middle Road,  
Fuqiang Community, Huaqiang North Street, Futian District, Shenzhen

**Trade Mark:** N/A

**Tested:** Nov.01,2022~Nov.07,2022

EMISSION			
Standard	Item	Result	Remarks
FCC CFR Title 47 Part 15 Subpart B:2019	Conducted (Main Port)	N/A	Meet Class B limit
	Radiated	Pass	Meet Class B limit

Note: 1. The test result judgment is decided by the limit of measurement standard  
2. The information of measurement uncertainty is available upon the customer's request.

Deviation from Applicable Standard
None

The above equipment has been tested by Shenzhen HTT Technology Co., Ltd. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

Tested By: Ervin Xu

Date: Nov.07,2022

Check By: Bruce Zhu

Date: Nov.07,2022

Approved By: Kevin Yang  
(Kevin Yang)

Date: Nov.07,2022





Shenzhen HTT Technology Co., Ltd.

Report No.: HTT202211080FR

## 2 EUT DESCRIPTION

Product	Portable anti-theft detector
Model	AK470
Trade Mark	N/A
Applicant	Shenzhen Ylcgo Electronics Co., Ltd
EUT Type	<input checked="" type="checkbox"/> Engineering Sample. <input type="checkbox"/> Product Sample, <input type="checkbox"/> Mass Product Sample.
Serial Number	N/A
Power Rating	DC 5V, 0.5A
Data Line	N/A

### I/O PORT

I/O PORT TYPES	Q'TY	TESTED WITH
N/A	N/A	N/A

### Model list and Models difference

No.	Model Number	Tested With
1	AK470	<input checked="" type="checkbox"/>

NOTE: AK470 is tested model, other models are derivative models, The models are identical in circuit , only different on the model names, size, So the test data of AK470 can represent the remaining models.





### 3 TEST METHODOLOGY

#### 3.1. DECISION OF FINAL TEST MODE

The EUT was tested together with the thereafter additional components, and a configuration, which produced the worst emission levels, was selected and recorded in this report.

The following test mode(s) were scanned during the preliminary test:

Pre-Test Mode		
Emission	Conducted Emission	Mode: Working
	Radiated Emission	Mode: Working

After the preliminary scan, the following test mode was found to produce the highest emission level.

The Worst Test Mode		
Emission	Conducted Emission	Mode: Working
	Radiated Emission	Mode: Working

Then, the EUT configuration and cable configuration of the above highest emission mode was chosen for all final test items.

#### 3.2. EUT SYSTEM OPERATION

1. Set up EUT with the relative support equipments.
2. Make sure the EUT worked normally during the test.



## 4 SETUP OF EQUIPMENT UNDER TEST

### 4.1. 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.

No.	Equipment	Model No.	Serial No.	FCC ID	Trade Name	Data Cable	Power Cord
	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**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.



## 5 FACILITIES AND ACCREDITATIONS

### 5.1. FACILITIES

All measurement facilities used to collect the measurement data are located at HTT

The sites are constructed in conformance with the requirements of ANSI C63.4 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

### 5.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency		Uncertainty
Conducted emissions	150kHz~30MHz		+/- 3.59dB
Radiated emissions	Horizontal	30MHz ~ 200MHz	+/- 4.77dB
		200MHz ~1000MHz	+/- 4.93dB
	Vertical	30MHz ~ 200MHz	+/- 5.04dB
		200MHz ~1000MHz	+/- 4.93dB

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



## 6 CONDUCTED EMISSION MEASUREMENT

### 6.1. LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

**NOTE:**

- (1) The lower limit shall apply at the transition frequencies.
- (2) The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
- (3) All emanations from EUT or system shall not exceed the level of field strengths specified above.

### 6.2. TEST INSTRUMENTS

Conducted Emission Shielding Room Test Site 843				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration date
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	100005	06/09/2021
LISN	AFJ	LS16	16010222119	06/09/2021
LISN	Meestec	AN3016	04/10040	06/09/2021

- NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to International system of unit (SI).  
2. N.C.R = No Calibration Request.



## **6.3. TEST PROCEDURES**

### **Procedure of Preliminary Test**

The EUT and Support equipment, if needed, was set up as per the test configuration to simulate typical usage per the user's manual. When 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 C63.4 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor standing equipment, it is placed on the ground plane, which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4.

The EUT test program was started. Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected to the LISN powering the EUT.

The Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in Item 3.1 were scanned during the preliminary test.

After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

### **Procedure of Final Test**

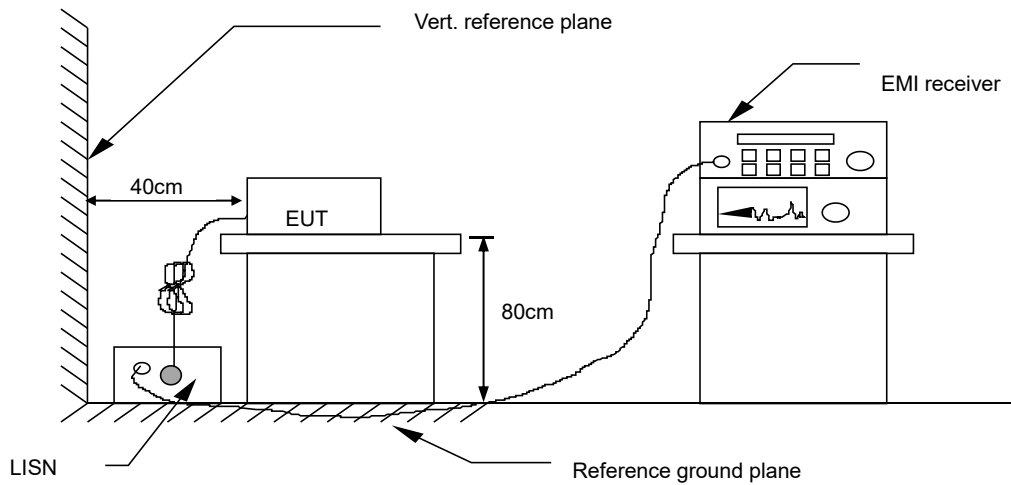
EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.



## 6.4. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

## 6.5. TEST RESULTS

N/A



## 7 RADIATED EMISSION MEASUREMENT

### 7.1. LIMITS OF RADIATED EMISSION MEASUREMENT

#### Maximum permissible level of Radiated Emission measured at 3 meter

FREQUENCY (MHz)	dBuV/m (At 3m)
	Class B
30~88	40.00
88~216	43.50
216~960	46.00
960~1000	54.00

**NOTE:** (1) The lower limit shall apply at the transition frequencies.

(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).

### 7.2. TEST INSTRUMENTS

Radiated Emission Test Site 966				
Name of Equipment	Manufacturer	Model	Serial Number	Calibration date
EMI Test Receiver	ROHDE&SCHWARZ	ESCI	100005	06/09/2021
Spectrum Analyzer	R&S	FSU	100114	06/09/2021
Pre Amplifier	H.P.	HP8447E	2945A02715	06/09/2021
Bilog Antenna	SUNOL Sciences	JB3	A021907	06/09/2021
Cable	TIME MICROWAVE	LMR-400	N-TYPE04	06/09/2021
System-Controller	CCS	N/A	N/A	N.C.R
Turn Table	CCS	N/A	N/A	N.C.R
Antenna Tower	CCS	N/A	N/A	N.C.R

**NOTE:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to International system of unit (SI).

2. N.C.R = No Calibration Request.



### **7.3. TEST PROCEDURES**

#### **Procedure of Preliminary Test**

The equipment was set up as per the test configuration to simulate typical usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane. When the EUT is a floor standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.

Support equipment, if needed, was placed as per ANSI C63.4.

All I/O cables were positioned to simulate typical usage as per ANSI C63.4.

Mains cables, telephone lines or other connections to auxiliary equipment located outside the test are shall drape to the floor, be fitted with ferrite clamps or ferrite tubes placed on the floor at the point where the cable reaches the floor and then routed to the place where they leave the turntable. No extension cords shall be used to mains receptacle.

The antenna was placed at 3 meter away from the EUT as stated in ANSI C63.4. The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.

The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

The test mode(s) described in Item 3.1 were scanned during the preliminary test:

After the preliminary scan, we found the test mode described in Item 3.1 producing the highest emission level.

The EUT and worse cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

When measuring emissions above 1GHz, the frequencies of maximum emission shall be determined by manually positioning the antenna close to the EUT and by moving the antenna over all sides of the EUT while observing a spectral display. It will be advantageous to have prior knowledge of the frequencies of emissions above 1GHz. If the EUT is a device with dimensions approximately equal to that of the measurement antenna beam width, the measurement antenna shall be aligned with the EUT.





### **Procedure of Final Test**

EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test.

The Analyzer / Receiver scanned from 30MHz to 1000MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.

For the measurement above 1GHz, use the cable, EUT arrangement, and mode of operation determined in the exploratory testing to produce the emission that has the highest amplitude relative to the limit.

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the antenna in the "cone of radiation" from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.

The antenna may have to be higher or lower than the EUT, depending on the EUT's size and mounting height, but the antenna should be restricted to a range of height of from 1m to 4m above the ground or reference ground plane.

If the transmission line for the measurement antenna restricts its range of height and polarization, the steps needed to ensure the correct measurement of the maximum emissions, shall be described in detail in the report of the measurements.

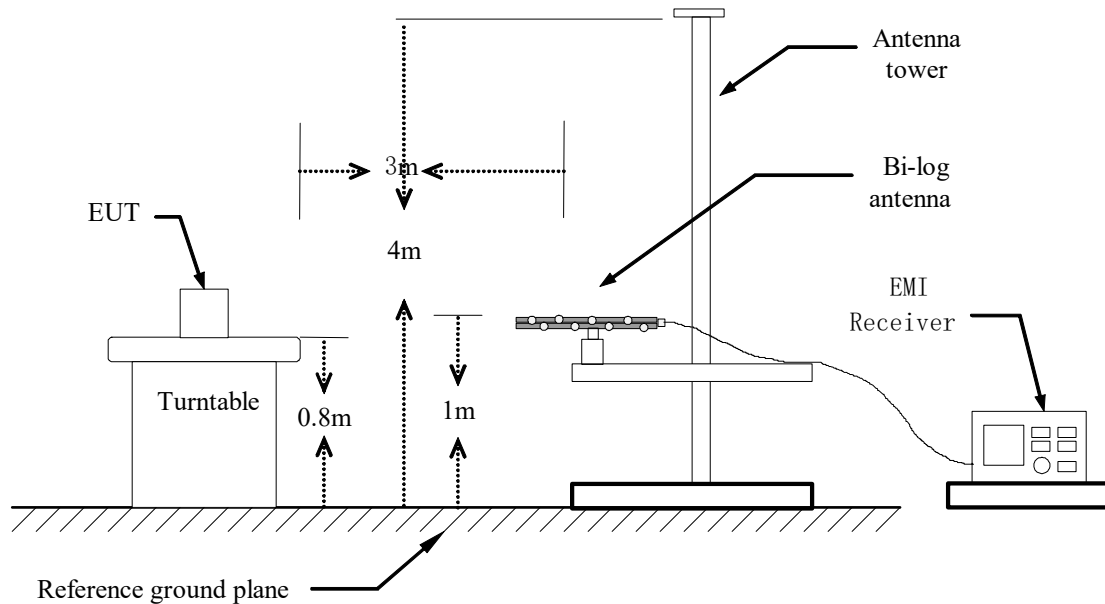
using the procedures above to measure with peak detector function, if the result comply with the average limit specified by the appropriate regulation, record the EUT arrangement, mode of operation, and cable positions used for final radiated emission measurement, this can be done with either diagrams or photographs.

Set the detector function of the measuring instrument to average mode, using the procedures above and remeasure only those emissions that complied with the peak limits but exceeded the average limits.

Recorded at least the six highest emissions.



## 7.4. TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

## 7.5. TEST RESULTS

<b>Test Mode</b>	Working	<b>Environmental Conditions</b>	26°C, 55% RH
<b>6dB Bandwidth</b>	120 KHz	<b>Antenna Pole</b>	Vertical / Horizontal
<b>Antenna Distance</b>	3m	<b>Detector Function</b>	Peak / Quasi-peak
<b>Test Result</b>	Pass		

Freq. = Emission frequency in MHz

Reading level (dBuV) = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

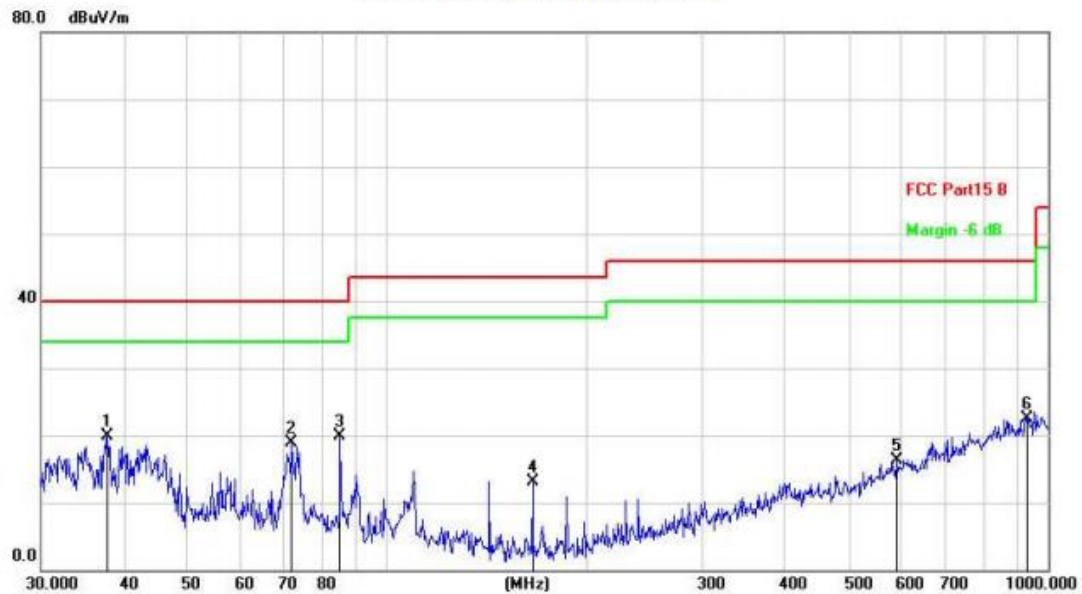
Measurement (dBuV) = Reading level (dBuV) + Corr. Factor (dB)

Limit (dBuV) = Limit stated in standard

Margin (dB) = Measurement (dBuV) – Limits (dBuV)



## Radiated Emission Measurement



Site LAB

Polarization: **Vertical**

Temperature:

Limit: FCC Part15 B

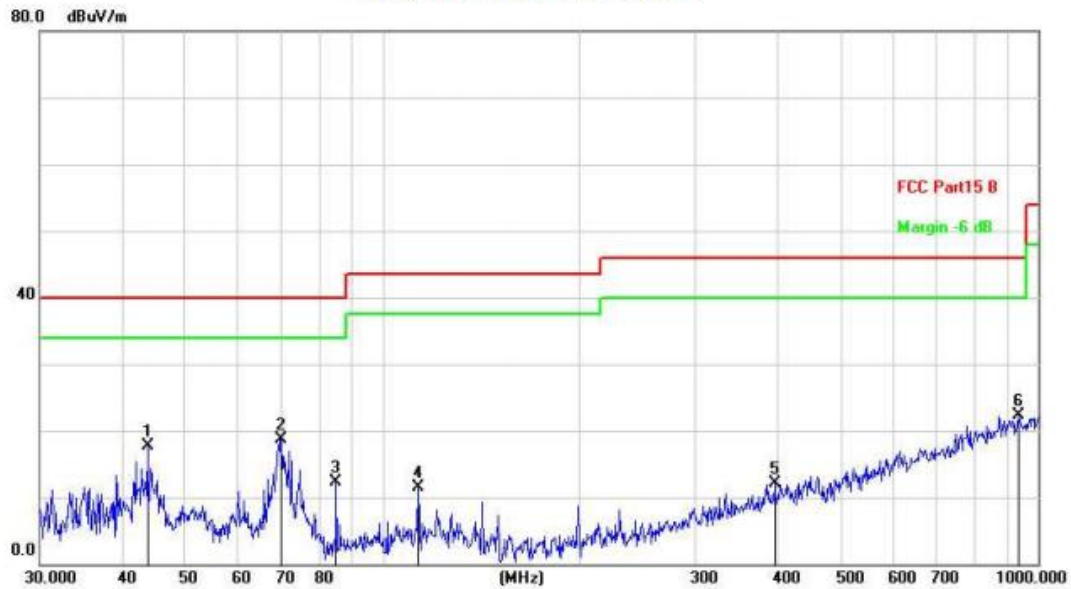
Power:

Humidity: %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	cm	degree	Comment
1	*	37.8121	37.61	-17.71	19.90	40.00	-20.10	peak		
2		71.8320	39.22	-20.34	18.88	40.00	-21.12	peak		
3		84.9995	41.81	-21.96	19.85	40.00	-20.15	peak		
4		166.0680	31.93	-18.76	13.17	43.50	-30.33	peak		
5		590.9737	26.51	-10.18	16.33	46.00	-29.67	peak		
6		929.0082	27.51	-4.91	22.60	46.00	-23.40	peak		



## Radiated Emission Measurement



Site LAB

Polarization: **Horizontal**

Temperature:

Limit: FCC Part15 B

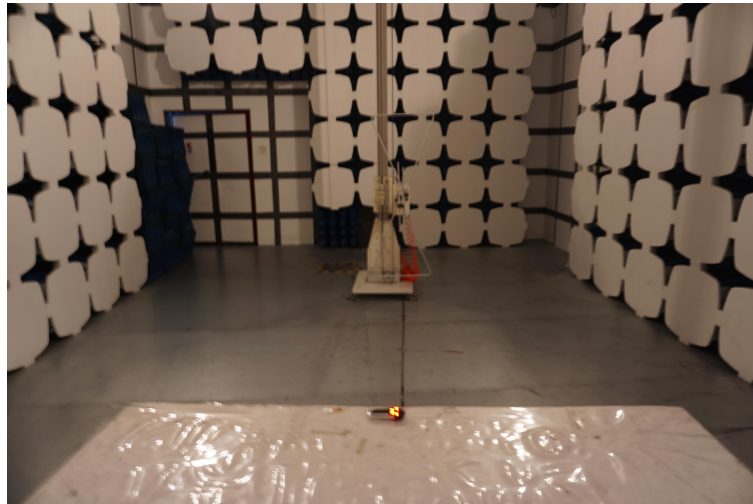
Power:

Humidity: %

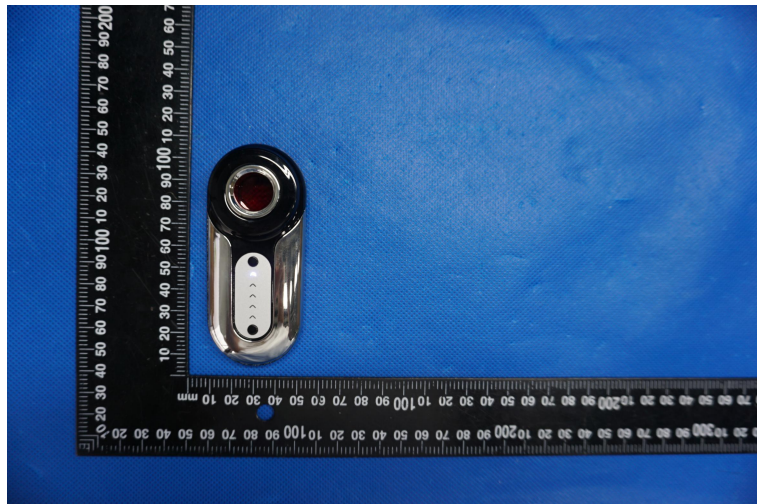
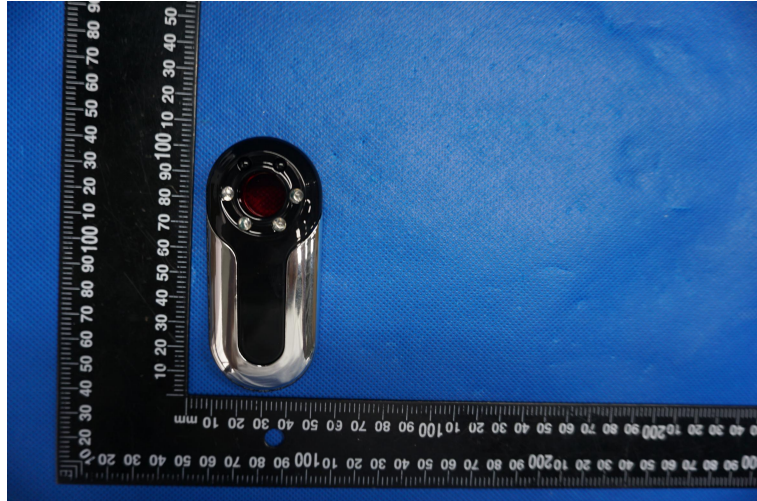
No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	Antenna	Table	
		MHz	Level	Factor	ment			Height	Degree	
			dBuV	dB	dBuV/m	dB/m	dB	cm	degree	Comment
1		43.8119	35.02	-17.27	17.75	40.00	-22.25	peak		
2	*	70.0903	38.67	-19.99	18.68	40.00	-21.32	peak		
3		84.9995	34.18	-21.96	12.22	40.00	-27.78	peak		
4		113.3163	31.70	-20.18	11.52	43.50	-31.98	peak		
5		396.2415	26.94	-14.76	12.18	46.00	-33.82	peak		
6		932.2715	26.89	-4.65	22.24	46.00	-23.76	peak		



## 8 PHOTOGRAPHS OF EUT









## FCC SUPPLIER'S DECLARATION OF CONFORMITY

**Certificate Number:** HTT202211080F

**Applicant:** Shenzhen Ylcgo Electronics Co., Ltd

**Applicant Address:** Room 825, 8th Floor, Aihua Building, No. 2038,  
Shennan Middle Road, Fuqiang Community,  
Huaqiang North Street, Futian District, Shenzhen

**Manufacturer:** Shenzhen Ylcgo Electronics Co., Ltd

**Manufacturer Address:** Room 825, 8th Floor, Aihua Building, No. 2038,  
Shennan Middle Road, Fuqiang Community,  
Huaqiang North Street, Futian District, Shenzhen

**Product Name:** Portable anti-theft detector

**Model No.:** AK470

**Trade Mark:** N/A

**Applicable standards:** FCC CFR Title 47 Part 15 Subpart B:2019

The products comply with the FCC regulations and the electromagnetic compatibility evaluation requirements.

The test result has been evaluated by Shenzhen HTT Technology Co., Ltd laboratory and showed in the test report

**The test report number:** HTT202211080FR

It is understood that each unit marketed is identical to the device as tested, and any changes to the device that could adversely affect the emission characteristics will require retest.

The following responsible party designated in FCC §2.909 is responsible for this declaration:



**Authorised Signatory:**

*Kevin Yang*

Kevin Yang/Senior Manager



**Date:** Nov.07,2022



# 检测报告

## TEST REPORT

产品名称 NAME OF SAMPLE	便携式防窃听窃拍探测器
产品型号 TYPE	AK470
委托单位 CLIENT	深圳市易利创电子有限公司
委托单位地址 CLIENT ADDRESS	深圳市福田区华强北街道福强社区深南中路2038号 爱华大厦8层825室
检测类别 TEST SORT	委托检测
检验项目 TEST ITEM	详见检测报告
接收样品日期 Date of receipt of test item	2022.10.27
检测时间 Date of test	2022.10.27-2022.11.01
报告编号 Report No.	HTT202210099AR

深圳市环通检测技术有限公司  
Shenzhen HTT Technology Co., Ltd.

深圳市环通检测技术有限公司Shenzhen HTT Technology Co., Ltd.

电话TEL: 0755-23595200 传真FAX: 0755-23595201 热线Hotline: 400-6655-351 邮箱Mail: info@httprc.com

地址Address: 广东省深圳市宝安区西乡街道南昌社区航城大道华丰国际机器人产业园B栋一层

1F, Building B, Huafeng International Robotics Industrial Park, Hangcheng Road, Nanchang Community, Xixiang Street,  
Bao'an District, Shenzhen, Guangdong, China



## 检测报告

报告编号: HTT202210099AR

样品名称: 便携式防窃听窃拍探测器

型号: AK470

商标: /

数量: 1个

申请人: 深圳市易利创电子有限公司

申请人地址: 广东省东莞市常平镇元江元村  
东新西路80号

制造商: 深圳市易利创电子有限公司

制造商地址: 广东省东莞市常平镇元江元村  
东新西路80号

生产商: 深圳市易利创电子有限公司

生产商地址: 广东省东莞市常平镇元江元村  
东新西路80号

试验项目依据委托方要求: (1.6.2) 输入电流; (2.2) SELV电路; (4.2) 机械强度;  
(4.3.1) 棱缘和拐角; (5.2) 抗电强度。

试验依据标准: GB4943.1-2011《信息技术设备 安全 第1部分: 通用要求》

所检项目试验结论: 合格

检测: 高宣

签名:

高宣

审核: 沈敦响

签名:

沈敦响

批准: 杨杰

签名:

杨杰

日期: 2022 年 11 月 01 日

深圳市环通检测技术有限公司

检测专用章  
(盖章)

日期: 2022 年 11 月 01 日

备注: /

## 样品描述及说明

1.样品为Class III 类的便携式防窃听窃拍探测器。

2.本次申请的产品AK470为基本型。

3.产品型号描述:

产品名	主型号	规格/参数
便携式防窃听窃拍 探测器	AK470	输入：5V=== 0.5A
附加型号	/	
附加型号差异说明：本次申请的产品为单一型号，故不存在型号之间的差异。		

4.产品功能描述、产品组成描述:

产品为便携式防窃听窃拍探测器。

一般评述:

“(见附表)” 指本报告的附加表格。

本报告出现的试验结果仅与试验样品有关, 对更改之后的样品概不负责。

除非全部复制, 否则无实验室书面批准本报告不得部分复制。

在决定测试结论时, 已经考虑了测试的测量不确定度。

可能的试验情况判定:

- 试验情况不适用本试验产品     N/A
- 试验样品满足要求                P(Pass)
- 试验样品不满足要求               F(Fail)

GB4943.1-2011			
条款	试验要求	试验结果	结论
1.6	电源接口		P
1.6.1	交流配电系统		N/A
1.6.2	输入电流	(见附表1.6.2)	P
1.6.3	手持式设备的电压限值		N/A
1.6.4	中线		N/A
2	危险的防护		P
2.1	电击和能量危险的防护	III类设备, 没有触电危险	N/A
2.1.1	操作人员接触区的防护		N/A
2.1.1.1	接触带电零部件		N/A
	目测检查		N/A
	用试验指(图2A)的试验		N/A
	用试验针(图2B)的试验		N/A
	用试验探头(图2C)的试验		N/A
2.1.1.2	电池仓		N/A
2.1.1.3	ELV配线的可触及性		N/A
	工作电压(V); 最小绝缘穿透距离(mm)		—
2.1.1.4	带危险电压电路配线的可触及性		N/A
2.1.1.5	能量危险	(见附表2.1.1.5)	N/A
2.1.1.6	手动控制		N/A
2.1.1.7	设备内电容器的放电		N/A
	时间常数(s); 测得的电压(V)		—
2.1.1.9	信息技术设备中的音频放大器		—
2.1.2	维修人员接触区内的防护		N/A
2.1.3	受限制接触区的保护		N/A
2.2	SELV电路	(见附表2.2)	P
2.2.1	一般要求		P
2.2.2	正常工作条件下的电压(V)		P
2.2.3	故障条件下的电压(V)		N/A
2.2.4	SELV电路与其他电路的连接		N/A
2.4	限流电路		N/A
2.4.1	基本要求		N/A
2.4.2	限值		N/A
	频率(Hz)		—
	测得的电流(mA)		—
	测得的电压(V)		—
	测得的电容( $\mu$ F)		—
2.4.3	限流电路与其他电路的连接		N/A

GB4943.1-2011			
条款	试验要求	试验结果	结论
2.5	受限制电源		N/A
	a) 内在限制输出		N/A
2.6	接地和连接保护措施		N/A
2.6.1	保护接地		N/A
2.6.2	功能接地		N/A
2.6.3.4	接地导体及其连接的电阻		N/A
	电阻( $\Omega$ ), 试验电流(A), 试验时间(min)	(见附表2.6.3.4)	N/A
4	结构要求		P
4.1	稳定性		N/A
	设备质量(kg)		N/A
	10°角		N/A
	任意方向施力试验:作用力(N)		N/A
4.2	机械强度		P
4.2.1	基本要求		P
4.2.2	10N恒定作用力试验	施加在相关部件上, 无危险	P
4.2.3	30N恒定作用力试验		N/A
4.2.4	250N恒定作用力试验	施加在相关部件上, 无危险	P
4.2.7	应力消除试验		N/A
4.3	结构设计		P
4.3.1	棱缘和拐角	棱缘和拐角均充分倒圆和磨光	P
5	电气要求和模拟异常条件		P
5.1	接触电流和保护导体电流		N/A
5.1.1	基本要求		N/A
5.1.2	受试设备(EUT)的连接方法		N/A
5.1.2.1	与交流电网电源的单独连接		N/A
5.1.2.2	与交流电网电源的多路冗余连接		N/A
5.1.2.3	与交流电网电源的多路同时连接		N/A
5.1.3	试验电路		N/A
5.1.4	测量仪器的使用		N/A
5.1.5	测量程序		N/A
5.1.6	试验测量值		N/A
	试验电压(V)		---
	测得的电流值(mA)		---
	允许的最大接触电流值(mA)		---
	测得的保护导体电流值(mA)		---
	允许的最大保护导体电流(mA)		---
5.1.7	接触电流超过3.5mA的设备		N/A



GB4943.1-2011			
条款	试验要求	试验结果	结论
5.1.7.1	基本要求		N/A
5.1.7.2	与电源的多路同时连接		N/A
5.2	抗电强度		P
5.2.1	基本要求	(见附表5.2)	P
5.2.2	试验程序	(见附表5.2)	P
A	附录A, 耐热和防火试验		N/A
A.2	总质量不超过18kg的移动式设备防火防护外壳和安装在防火防护外壳内的材料和元器件的可燃烧性试验(见4.7.3.2和4.7.3.4)		N/A
A.2.1	样品, 材料		N/A
	厚度(mm)		N/A
A.2.6	合格判据		N/A
	样品1燃烧时间(s)		N/A
	样品2燃烧时间(s)		N/A
	样品3燃烧时间(s)		N/A
A.2.7	符合GB/T5169.5中的第5章和第9章的替换试验		
	样品1燃烧时间(s)		—
	样品2燃烧时间(s)		—
	样品3燃烧时间(s)		—

GB4943.1-2011			
条款	试验要求	试验结果	结论

1.6.2	表: 电气数据(在正常条件下)					P
熔断器 #	额定电流 (A)	电压 (V)	电流 (A)	功率 (W)	熔断器电流 (A)	条件/状态
/	0.5	5.0	0.24	1.2	--	正常充电工作状态

2.1.1.5	能量危险 输出功率				N/A
电压 (rated) (V)	电流 (rated) (A)	电压 (max.) (V)	电流 (max.) (A)	VA (max.) (VA)	
--	--	--	--	--	

2.1.1.7	设备内电容器的放电			N/A
峰值电压 (V)	时间 (s)	测得电压	限值	
--	--	--	--	

2.2	SELV电路			P
测量部位		最大电压 (正常工作)		电压限制元件
		电压V (peak)	电压V (dc)	
输入端			5.0Vdc	--
电压限制元件故障	测量部位	最大电压		
		电压V (peak)	电压V (dc)	
--	--	--	--	--

2.4.2	限流电路				N/A
测量部位	频率Hz	限值mA	电压V	电流mA	电容量 $\mu F$
--	--	--	--	--	--

2.5	受限制电源				N/A
元件	最大电压	最大电流	电流限值	最大VA	VA限值
--	--	--	--	--	--

5.2	表: 抗电强度试验			P
试验电压施加部位:		试验电压 (V)	击穿	是/否
输入端到外壳金属锡箔		500Vrms		否
附加信息				

样品照片



图1 整体图

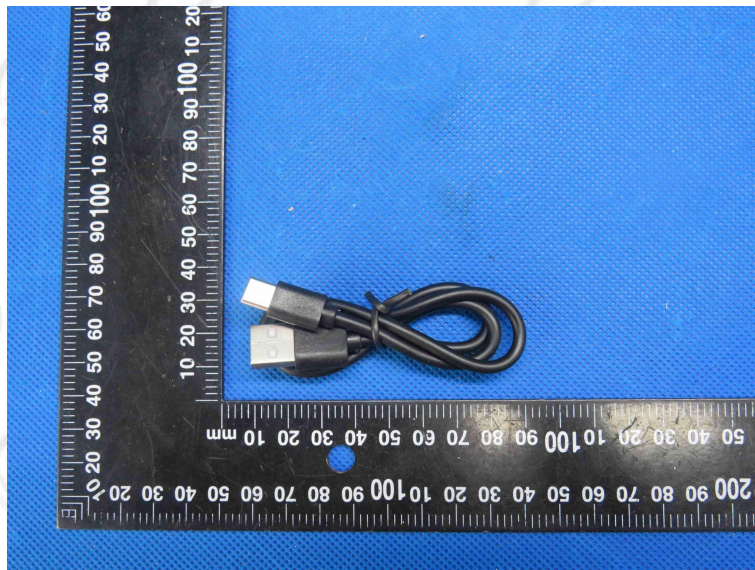


图2 配件图



样品照片



图3 端口图



图4 端口图



样品照片

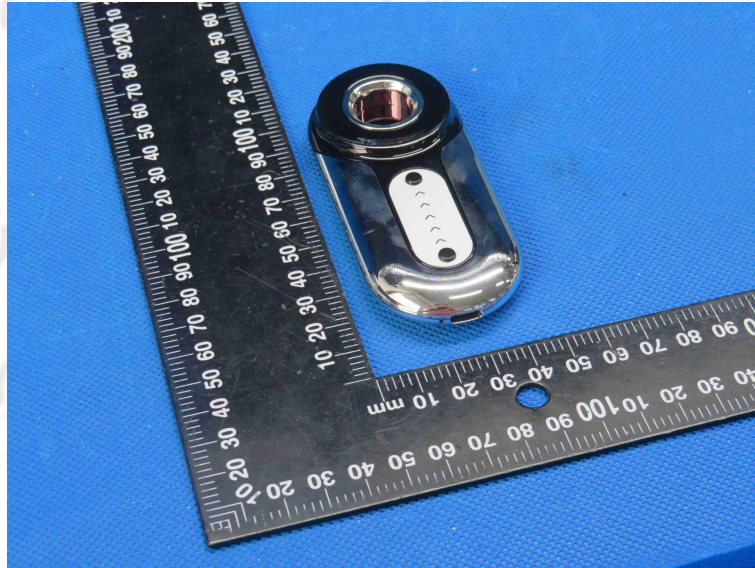


图5 端口图

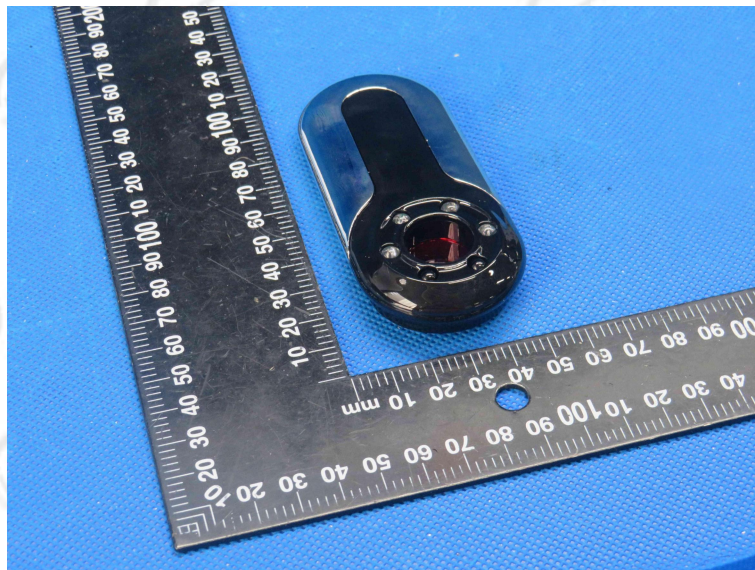


图6 端口图

\*\*\*\*\*报告结束\*\*\*\*\*  
\*\*\*\*\*END OF REPORT\*\*\*\*\*

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