



EMC Test Report

Report No. : TBR-C-202311-0041-2

Applicant : Shenzhen Juyi science and trade Co., LTD

Equipment Under Test (EUT)

EUT Name : Lithium active balance board

Model No. : EK-C4S5A

Series Model No. : EK-C3S5A, EK-C5S5A, EK-C6S5A, EK-C7S5A, EK-C8S5A,
EK-C10S5A, EK-C12S5A, EK-C14S5A, EK-C16S5A,
EK-C21S5A

Brand Name : enerkey

Receipt Date : 2023-11-07

Test Date : 2023-11-07 to 2023-11-17

Issue Date : 2023-11-17

Standards : EN IEC 61000-6-3:2021
EN IEC 61000-6-1:2019

Conclusions : **PASS**

In the configuration tested, the EUT complied with the standards specified above
The EUT technically complies with the 2014/30/EU Directive requirements

Test/Witness Engineer :

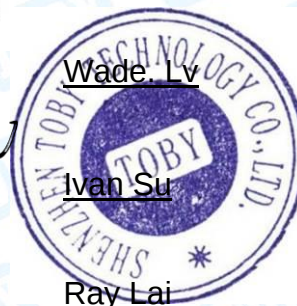
Wade Lv

Engineer Supervisor :

IVAN SU

Engineer Manager :

Ray Lai



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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Revision History

Report No.	Version	Description	Issued Date
TBR-C-202311-0041-2	Rev.01	Initial issue of report	2023-11-17



1. General Information

1.1. Client Information

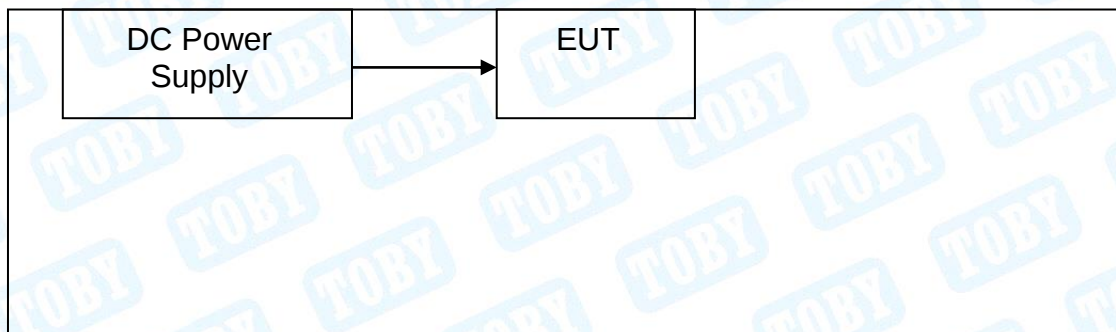
Applicant	:	Shenzhen Juyi science and trade Co., LTD
Address	:	Xinyuan Business 308, No.23, Shuidun Street, Nanzhuang, Gongming Town, Guangming District, Shenzhen, China
Manufacturer	:	Shenzhen Juyi science and trade Co., LTD
Address	:	Xinyuan Business 308, No.23, Shuidun Street, Nanzhuang, Gongming Town, Guangming District, Shenzhen, China

1.2. General Description of Product

EUT Name	:	Lithium active balance board
Model(s)	:	EK-C4S5A, EK-C3S5A, EK-C5S5A, EK-C6S5A, EK-C7S5A, EK-C8S5A, EK-C10S5A, EK-C12S5A, EK-C14S5A, EK-C16S5A, EK-C21S5A
Model Difference	:	All these models are identical in the same PCB, layout and electrical circuit, the only difference is different selling areas, name differences.
F_x	:	<108MHz
Power supply	:	Input: DC 16.8V
Remark: F_x: Highest fundamental frequency generated or used within the EUT or highest frequency at which it operates.		



1.3. Block Diagram Showing The Configuration of System Tested



1.4. Description of Support Units

Equipment Information				
Name	Model	S/N	Manufacturer	Used “√”
---	---	---	---	---
---	---	---	---	---
Cable Information				
Number	Shielded Type	Ferrite Core	Length	Note
---	---	---	---	---
Note: N/A.				



1.5. Description of Operating Mode

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Working Mode

The EUT system operated these modes were found to be the worst case during the pre-scanning test as Following:

For EMI Test	
Final Test Mode	Description
Mode 1	Working Mode
For EMS Test	
Final Test Mode	Description
Mode 1	Working Mode



1.6. Performance Criterion

Criterion A: The equipment shall continue 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 equipment is used as intended.

Criterion B: After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended.

Criterion C: Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.

1.7. Measurement Uncertainty

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

Test	Parameters	Expanded Uncertainty (U_{Lab})	Expanded Uncertainty (U_{Cispr})
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	± 3.50 dB ± 3.10 dB	± 4.0 dB ± 3.6 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	± 4.60 dB	N/A
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	± 4.50 dB	± 5.2 dB
Radiated Emission	Level Accuracy: Above 1000MHz	± 4.20 dB	N/A
Mains Harmonic	Voltage	$\pm 3.11\%$	N/A
Voltage Fluctuations & Flicker	Voltage	$\pm 3.25\%$	N/A



1.8. Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351.Designation Number: CN1223.

IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A. CAB identifier: CN0056.



2. TEST Results Summary

EMISSION		
Description of test items	Standards	Results
Conducted disturbance at mains terminals	EN IEC 61000-6-3:2021	N/A
Radiated Disturbance	EN IEC 61000-6-3:2021	Pass
Harmonic current emissions	EN IEC 61000-3-2:2019/A1:2021	N/A
Voltage fluctuation and flicker	EN 61000-3-3:2013/A2:2021	N/A
IMMUNITY		
Description of test items	Standards	Results
Electrostatic Discharge (ESD)	EN 61000-4-2:2009	Pass
Radio-frequency, Continuous radiated disturbance	EN IEC 61000-4-3:2020	Pass
EFT/B Immunity	EN 61000-4-4:2012	N/A
Surge Immunity	EN 61000-4-5:2014/A1:2017	N/A
Conducted RF Immunity	EN 61000-4-6:2014	N/A
Power frequency magnetic field	EN 61000-4-8:2010	N/A
Voltage dips, >95% reduction	EN IEC 61000-4-11:2020	N/A
Voltage dips, 30% reduction		
Voltage interruptions		
Note: N/A is an abbreviation for Not Applicable.		



3. Test Software

Test Item	Test Software	Manufacturer	Version No.
Conducted Emission	EZ-EMC	EZ	CDI-03A2
Radiation Emission	TS+(J32-RE)	Tonsced	3.0.0.4
Radiation Immunity	TS+(J32-RS)	Tonsced	3.0.0.5
Harmonic Current	CTS4	CI	4.24.0
Voltage Fluctuation and Flicker	CTS4	CI	4.24.0
Conducted Immunity	IEC/EN 61000-6-4 Application	FRANKONIA	1.1.1
Electrical Fast Transient	lec.control	Nemtest	5.1.1.0
Surge	lec.control	Nemtest	5.1.1.0
Voltage Dip and Interruption	lec.control	Nemtest	5.1.1.0



4. Test Equipment Used

Radiation Emission Test (A Site)					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Rohde & Schwarz	FSV40-N	102197	Jun. 20, 2023	Jun. 19, 2024
EMI Test Receiver	Rohde & Schwarz	ESPI	100010/007	Jun. 20, 2023	Jun. 19, 2024
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Feb. 27, 2022	Feb.26, 2024
Horn Antenna	ETS-LINDGREN	3117	00143207	Feb. 26, 2022	Feb.25, 2024
Horn Antenna	SCHWARZBECK	BBHA 9170	1118	Feb. 26, 2022	Feb.25, 2024
Loop Antenna	SCHWARZBECK	FMZB 1519 B	1519B-059	Jun. 26, 2022	Jun.25, 2024
Pre-amplifier	SONOMA	310N	185903	Feb. 23, 2023	Feb.22, 2024
Pre-amplifier	HP	8449B	3008A00849	Feb. 23, 2023	Feb.22, 2024
HF Amplifier	Tonscend	TAP0184050	AP21C806129	Aug. 30, 2023	Aug. 29, 2024
Discharge Immunity Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
ESD Tester	TESEQ	NSG437	304	Jun. 21, 2023	Jun. 20, 2024
Radiated Immunity Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Gestockte Log.-Per.-Breitband-antenna Stacked Log.-Per.-Broadband	SCHWARZBECK	STLP 9129	162	N/A	N/A
Electric field probe	Narda	EP 601	811ZX01000	Feb. 24, 2023	Feb.23, 2024
Signal Generator	Agilent	N5181A	MY50141953	Aug. 30, 2023	Aug. 29, 2024
EPM Series Power Meter	KEYSIGHT	N1914A	MY61180020	Jun. 20, 2023	Jun. 19, 2024
Power Sensor	KEYSIGHT	E9301A	MY61130007	Jun. 20, 2023	Jun. 19, 2024
Power Sensor	KEYSIGHT	E9301A	MY61130011	Jun. 20, 2023	Jun. 19, 2024
Radio Frequency Switch	Tonscend	JS0806s	21E8060428	N/A	N/A
Microwave Power amplifier	Micotop	MPA-80-100 0-250	MPA2105144	Jun. 20, 2023	Jun. 19, 2024
Microwave Power amplifier	Micotop	MPA-1000-6 000-100	MPA2105150	Jun. 20, 2023	Jun. 19, 2024



5. Conducted Emission Test

5.1. Test Standard and Limit

5.1.1. Test Standard

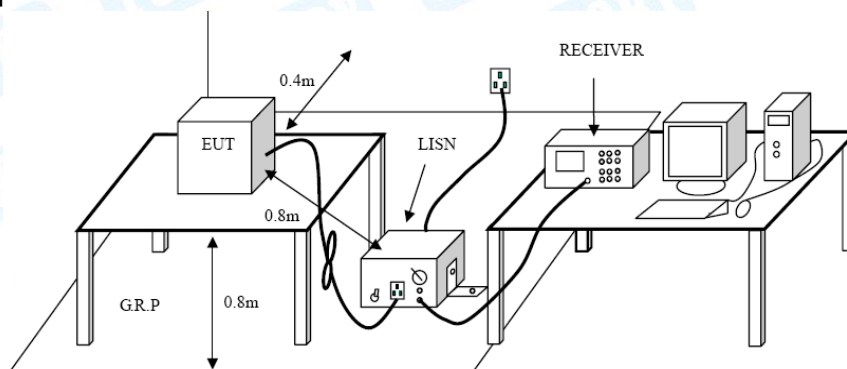
EN IEC 61000-6-3:2021

5.1.2. Test Limit

Conducted Disturbance Test Limit for AC mains Port		
Frequency (MHz)	Maximum RF Line Voltage (dB μ V)	
	Quasi-peak Level	Average Level
0.15~0.5	66 ~ 56 *	56 ~ 46 *
0.50~5	56	46
5~30	60	50

NOTE 1: The lower limit shall apply at the transition frequencies.
NOTE 2: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

5.2. Test Setup



5.3. Test Procedure

The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.



5.4.Deviation from Test Standard

No deviation

5.5.Test Data

Not Applicable.



6. Radiated Emission Test

6.1. Test Standard and Limit

6.1.1. Test Standard

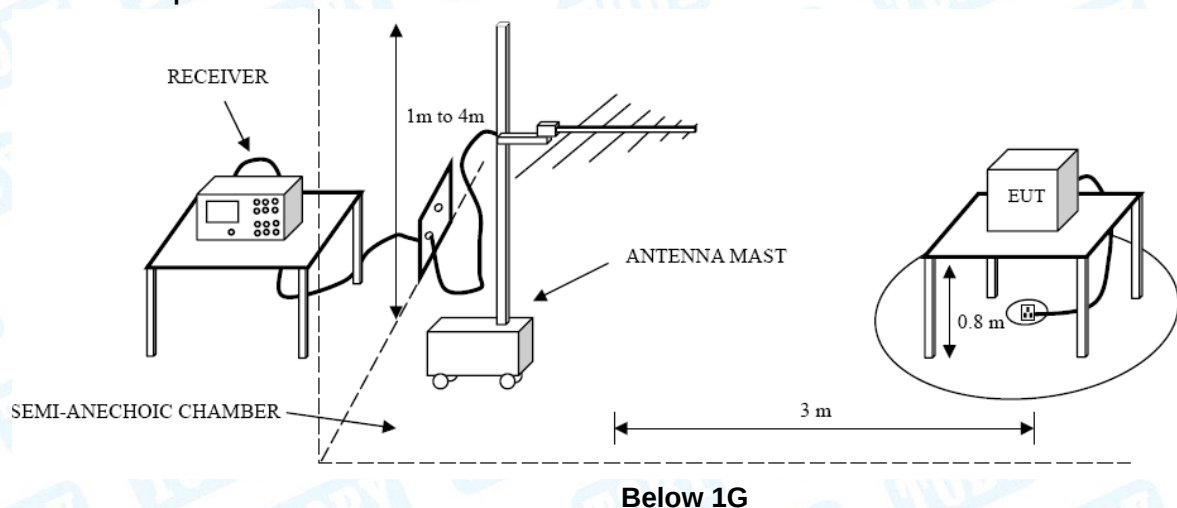
EN IEC 61000-6-3:2021

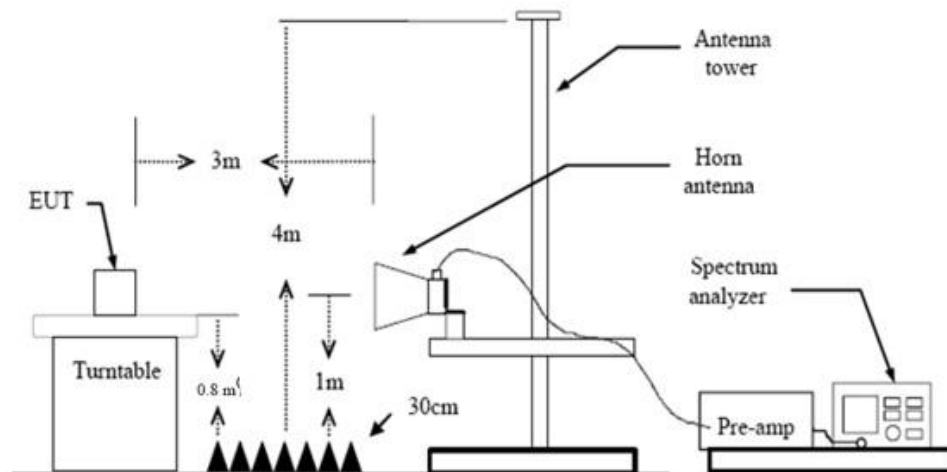
6.1.2. Test Limit

Radiated Disturbance Test Limit

Radiated Disturbance Test Limit-Below 1G		
Frequency (MHz)	Limit (dBμV/m)	
	Quasi-peak Level	
30~230	40	
230~1000	47	
Remark: 1. The lower limit shall apply at the transition frequency. 2. The test distance is 3m.		
Radiated Disturbance Test Limit-Above 1G		
Frequency (GHz)	Limit (dBμV/m)	
	Peak Level	Average Level
1~3	70	50
3~16	74	54
if the highest internal frequency of the EUT is less than 108 MHz, the measurement shall only be made up to 1GHz.		
if the highest internal frequency of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2GHz.		
if the highest internal frequency of the EUT is between 500MHz and 1GHz, the measurement shall only be made up to 5GHz.		
if the highest internal frequency of the EUT is above 1GHz, the measurement shall be made up to 6GHz.		

6.2. Test Setup





Above 1G

6.3. Test Procedure

The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3m. The table was rotated 360 degrees to determine the position of the highest radiation.

The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

The initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range.

If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.

6.4. Deviation from Test Standard

No deviation

6.5. Test Data

Please refer to the Attachment A.



7. Harmonic Current Emission Test

7.1. Test Standard and Limit

7.1.1. Test Standard

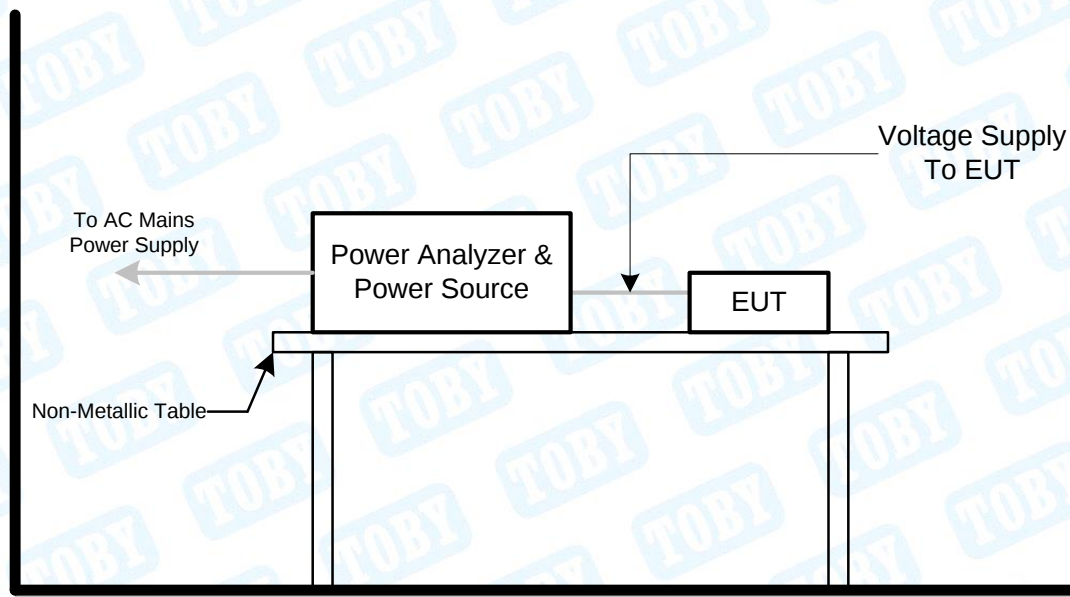
EN IEC 61000-3-2:2019/A1:2021

7.1.2. Limits

Harmonic Current Test Limit (Class A)

Limits for Class A equipment				Limits for Class D equipment		
Odd Harmonics		Even Harmonics		Harmonic Order (n)	Maximum Permissible Harmonic Current per watt (mA/W)	Maximum Permissible Harmonic Current A
Harmonic Order (n)	Maximum permissible harmonic Current (A)	Harmonic Order (n)	Maximum permissible harmonic Current (A)			
3	2.30	2	1.08	3	3.4	2.30
5	1.14	4	0.43	5	1.9	1.14
7	0.77	6	0.30	7	1.0	0.77
9	0.40	$8 \leq n \leq 40$	$0.23 \times 8/n$	9	0.5	0.40
11	0.33			11	0.35	0.33
13	0.21			$15 \leq n \leq 39$ (odd harmonics only)	3.85/n	$0.15 \times 15/n$
$15 \leq n \leq 39$	$0.15 \times 15/n$					

7.2. Test Setup



7.3. 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 normal operating conditions.

The classification of EUT is according to section 5 of EN 61000-3-2: 2006. 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.

7.4. Deviation from Test Standard

No deviation

7.5. Test Data

Not Applicable.



8. Voltage Fluctuation and Flicker Test

8.1. Test Standard and Limit

8.1.1. Test Standard

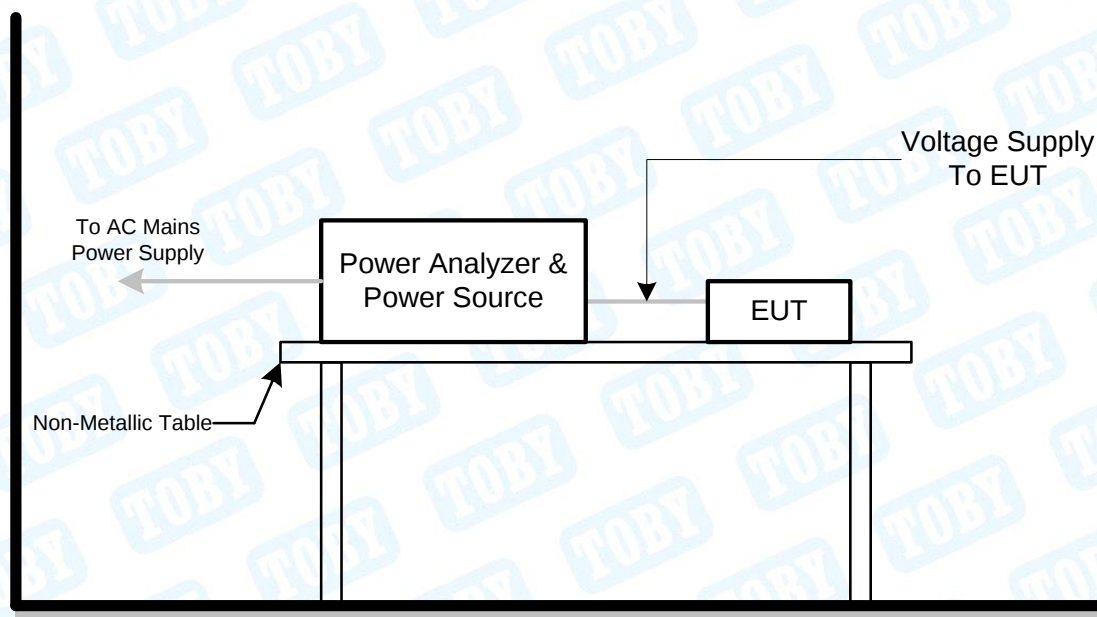
EN 61000-3-3:2013/A2:2021

8.1.2. Limit

Voltage Fluctuation and Flicker Test Limit

Test Items	Limits
Pst	1.0
dc	3.3%
dmax	4.0%
dt	Not exceed 3.3% for 500ms

8.2. Test Setup



8.3. Test Procedure

8.3.1. Harmonic Current Test

Test was performed according to the procedures specified in Clause 5.0 of IEC555-2 and/or Sub-clause 6.2 of IEC/EN 61000-3-2 depend on which standard adopted for compliance measurement.

8.3.2. Fluctuation and Flickers Test:

Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in Clause 5.0/6.0 of IEC555-3 and/or Clause 6.0/4.0 of IEC/EN 61000-3-3



depend on which standard adopted for compliance measurement.

All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.

For the actual test configuration, please refer to the related Item –Block Diagram of system tested (please refer to 1.3).

8.4.Deviation from Test Standard

No deviation

8.5. Test Data

Not Applicable.



9. Electrostatic Discharge Immunity Test

9.1. Test Requirements

9.1.1. Test Standard

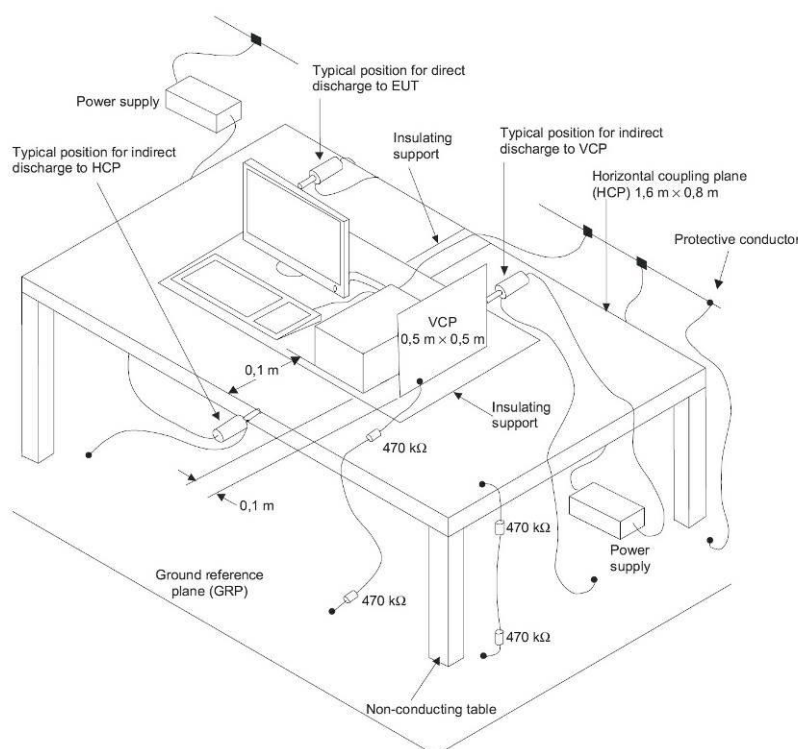
EN IEC 61000-6-1:2019 (EN 61000-4-2:2009)

9.1.2. Test Level

Discharge Impedance:	330 ohm/ 150pF
Discharge Voltage:	Air Discharge: 2kV/4kV/8kV(Direct) Contact Discharge: 2kV/4kV (Direct /Indirect)
Polarity:	Positive& Negative
Number of Discharge:	Air Discharge: min.20 times at each test point Contact Discharge: min.200 times in total
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

9.1.3. Performance criterion: **B**

9.2. Test Setup



9.3. Test Procedure

9.3.1. Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

9.3.2. Contact Discharge:

All the procedure shall be same as air discharge. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

9.3.3. Indirect discharge for horizontal coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

9.3.4. Indirect discharge for vertical coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

9.4. Deviation from Test Standard

No deviation

9.5. Test Data

Please refer to the Attachment B.



10. Radiated Electromagnetic Field Immunity Test

10.1. Test Requirements

10.1.1. Test Standard

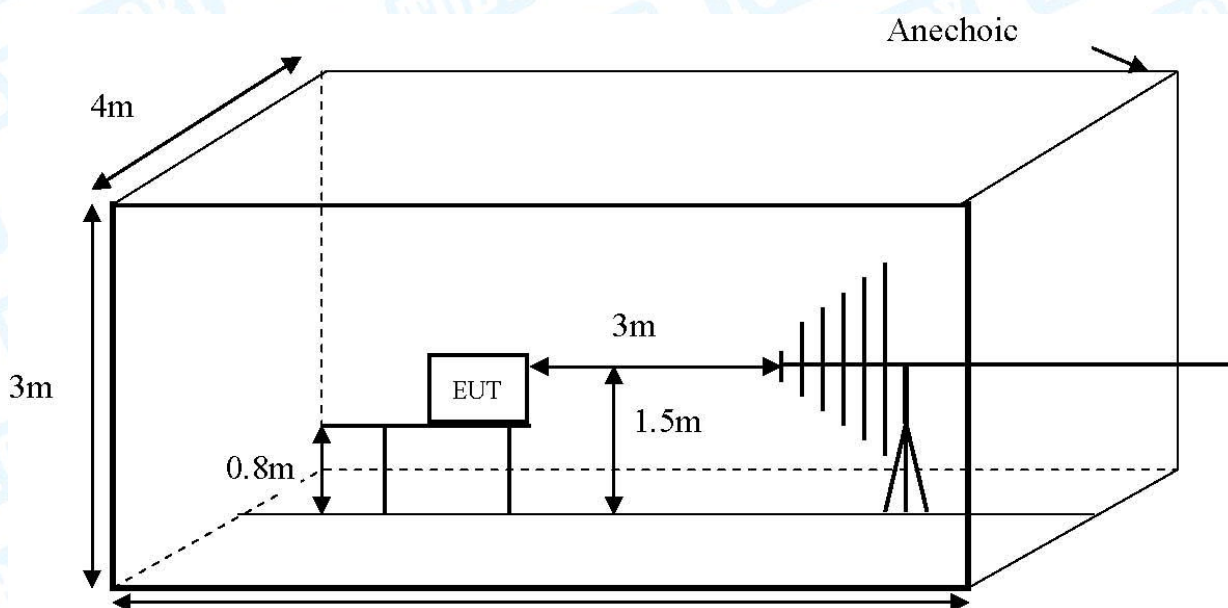
EN IEC 61000-6-1:2019 (EN IEC 61000-4-3:2020)

10.1.2. Level

Test Specification		
80-1000MHz 3 V/m 80 % AM (1kHz)	1400-2000MHz 3 V/m 80 % AM (1kHz)	2000-2700MHz 1 V/m 80 % AM (1kHz)

10.1.3. Performance criterion: A

10.2. Test Setup



10.3. Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.

In order to judge the EUT performance, a camera is used to monitor its screen.

All the scanning conditions are as following:



Condition of Test	Remark		
	3V/m	3V/m	1V/m
Fielded strength	3V/m	3V/m	1V/m
Radiated signal	Modulated	Modulated	Modulated
Scanning frequency	80-1000MHz	1400-2000MHz	2000-2700MHz
Dwell time	3 Sec.	3 Sec.	3 Sec.

10.4. Deviation from Test Standard

No deviation

10.5. Test Data

Please refer to the Attachment C.



11. Electrical Fast Transient/Burst Test

11.1. Test Requirements

11.1.1. Test Standard

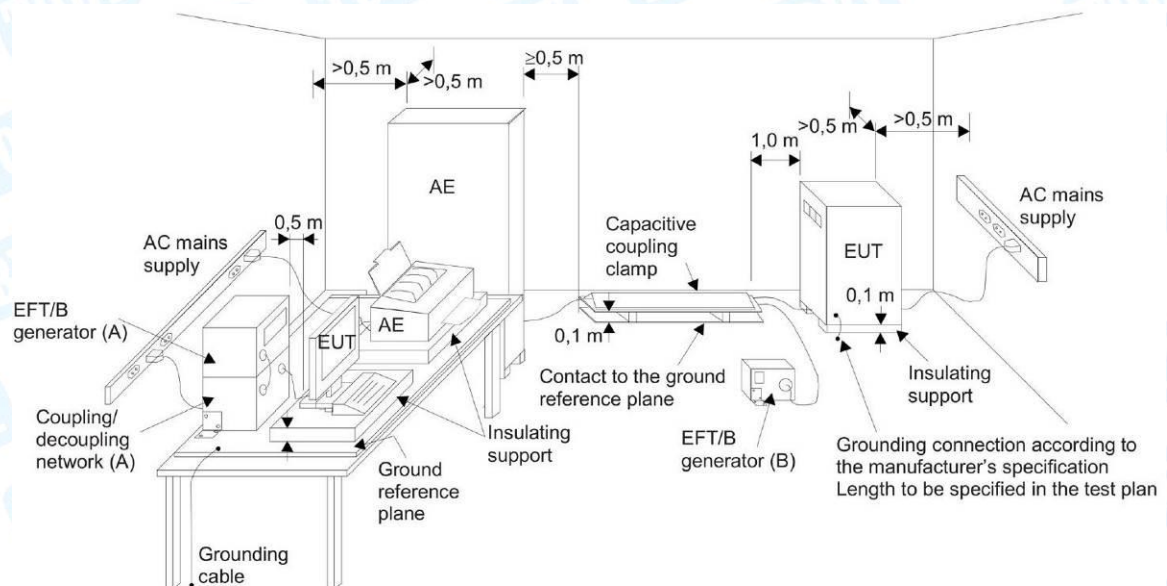
EN IEC 61000-6-1:2019 (EN 61000-4-4:2012)

11.1.2. Level

	On Switching Adapter Lines	On I/O (Input/Output) Signal data and DC Port
Test Voltage:	1 kV	0.5 kV
Polarity:	Positive&Negative	
Impulse Wave Shape:	5/50ns	
Burst Duration:	15ms	
Burst Period:	300ms	
Test Duration:	Not less than 1 min	

11.1.3. Performance criterion: B

11.2. Test Setup



11.3. Test Procedure

11.3.1. For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 1minute.



11.3.2. For signal lines and control lines ports:

A coupling clamp is use to couple the EFT interference signal to the signal and control lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 1 minute.

11.3.3. For DC input and DC output power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 1 minute.

11.4. Deviation from Test Standard

No deviation

11.5. Test Data

Not Applicable.



12. Surge Immunity Test

12.1. Test Requirements

12.1.1. Test Standard

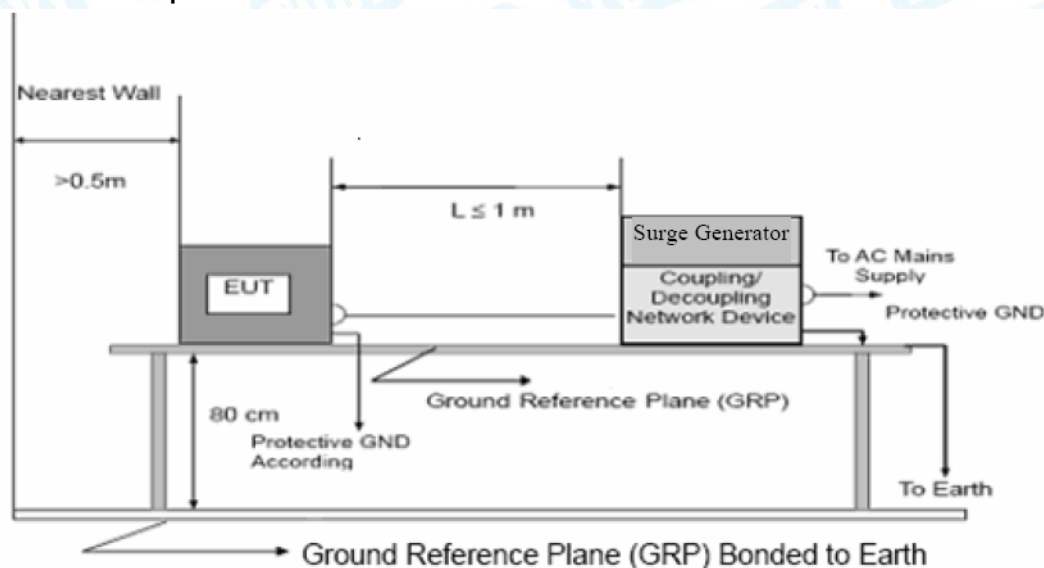
EN IEC 61000-6-1:2019 (EN 61000-4-5: 2014/A1:2017)

12.1.2. Level

Basic Standard:	EN 61000-4-5
Wave-Shape:	Combination Wave 1.2/50us Open Circuit Voltage 8/20us Short Circuit Current
Test Voltage	Power Line:0.5kV,1kV,2kV
Surge Input/Output:	L1-L2, L1-PE, L2-PE
Generator Source:	2 ohm between networks
Impedance:	12ohm between network and ground
Polarity:	Positive/Negative
Phase Angle:	0/90/180/270
Pulse Repetition Rate:	1 time/min.(maximum)
Number of Tests:	5 positive and 5 negative at selected points

12.1.3. Performance criterion: B

12.2. Test Setup



12.3. Test Procedure

- 12.3.1. Set up the EUT and test generator as shown on Section 11.1.2.
- 12.3.2. For line to line coupling mode, provide a 1.0 KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 12.3.3. At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 12.3.4. Different phase angles are done individually.
- 12.3.5. Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

12.4. Deviation from Test Standard

No deviation

12.5. Test Data

Not Applicable.



13. Conducted Immunity Test

13.1. Test Requirements

13.1.1. Test Standard

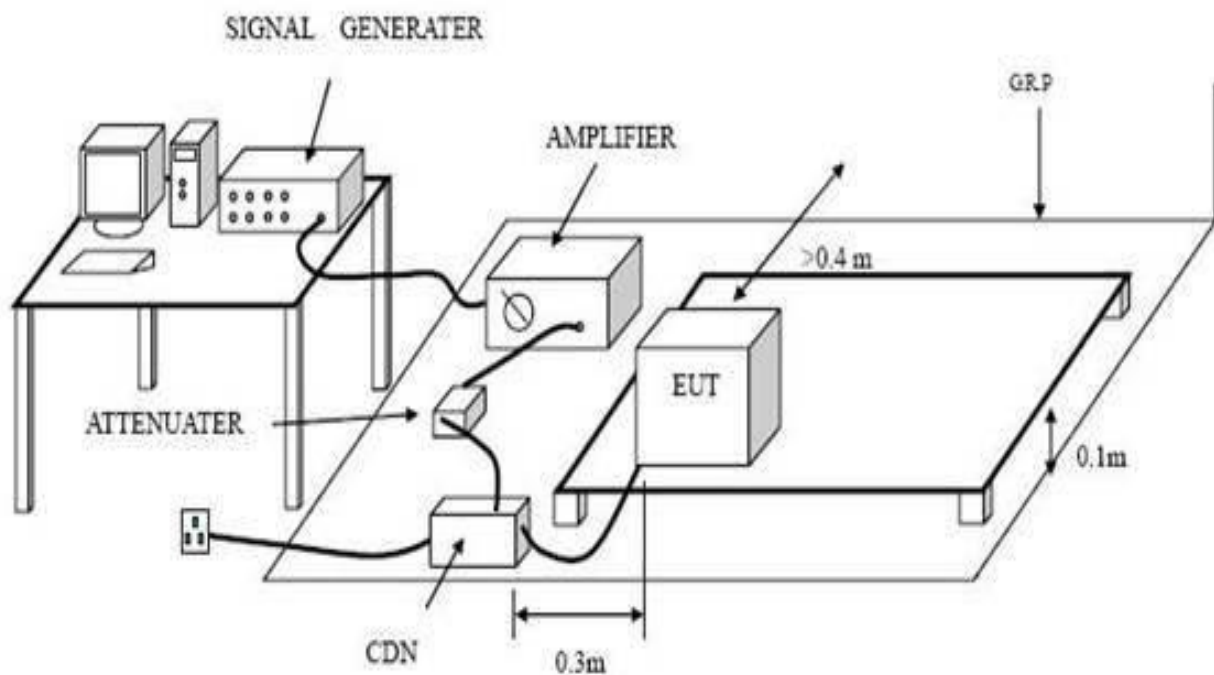
EN IEC 61000-6-1:2019 (EN 61000-4-6:2014)

13.1.2. Level

Port	Test Specification
Input/Output AC power port	0.15MHz~80MHz 3V(r.m.s.) (unmodulated)
Signal Port	
Input/Output DC Port	

13.1.3. Performance criterion: A

13.2. Test Setup



13.3. Test Procedure

13.3.1. Set up the EUT, CDN and test generators.

13.3.2. Let the EUT work in test mode and test it.

13.3.3. The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m



from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).

13.3.4. The disturbance signal description below is injected to EUT through CDN.

13.3.5. The EUT operates within its operational mode(s) under intended climatic conditions after power on.

13.3.6. The frequency range is swept from 0.150MHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.

13.3.7. The rate of sweep shall not exceed $1.5 \cdot 10^{-3}$ decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.

13.3.8. Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

13.4. Deviation from Test Standard

No deviation

13.5. Test Data

Not Applicable.



14. Voltage Dips and Interruptions Immunity Test

14.1. Test Requirements

14.1.1. Test Standard

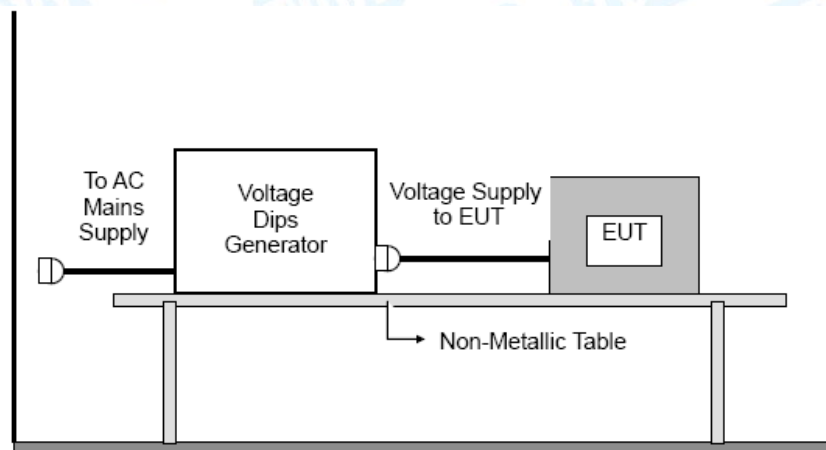
EN IEC 61000-6-1:2019 (EN IEC 61000-4-11:2020)

14.1.2. Level

Basic Standard:	EN IEC 61000-4-11
Required Performance:	B(For 100%, 0.5 cycle Voltage Dips) B(For 100%, 1 cycle Voltage Dips) C(For 30%, 25/30 cycle at 50/60Hz Voltage Dips) C(For 100%, 250/300 cycle at 50/60Hz Voltage Interruptions)
Test Duration Time:	Minimum three test events in sequence
Interval Between Event:	Minimum ten seconds
Phase Angle:	0°/45°/90°/135°/180°/225°/270°/315°/360°
Test Cycle:	3 times

14.1.3. Performance criterion: B&C

14.2. Test Setup



14.3. Test Procedure

Set up the EUT and test generator as shown above. The EUT is tested for each selected combination of test level and duration with a sequence of three dips/interruptions with intervals of 10s minimum.

14.4. Deviation from Test Standard

No deviation

14.5. Test Data

Not Applicable.



15. Photographs-- Constructional Details

Photo 1 Appearance of EUT

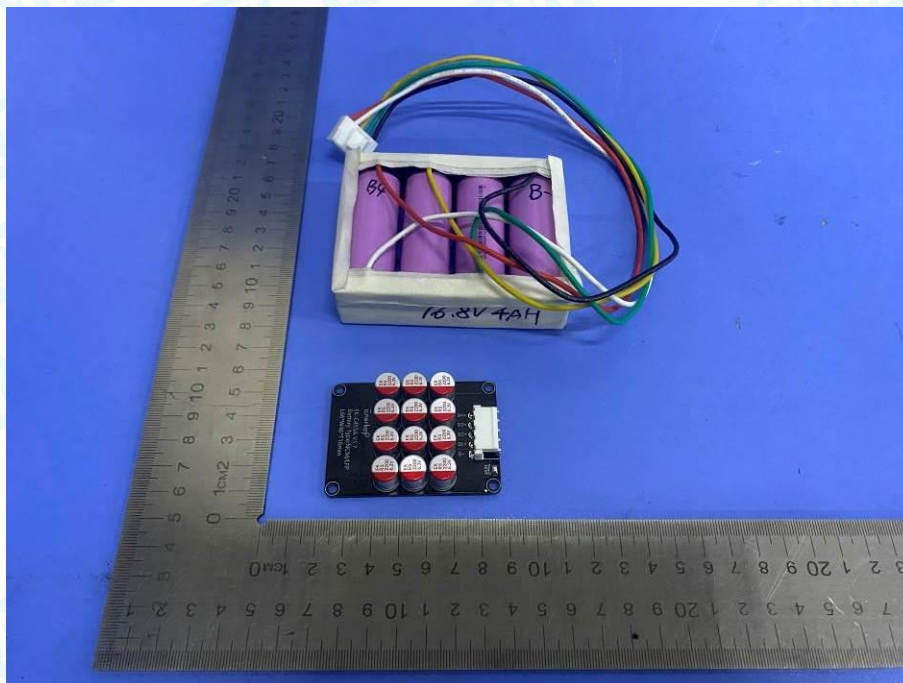


Photo 2 Appearance of PCB

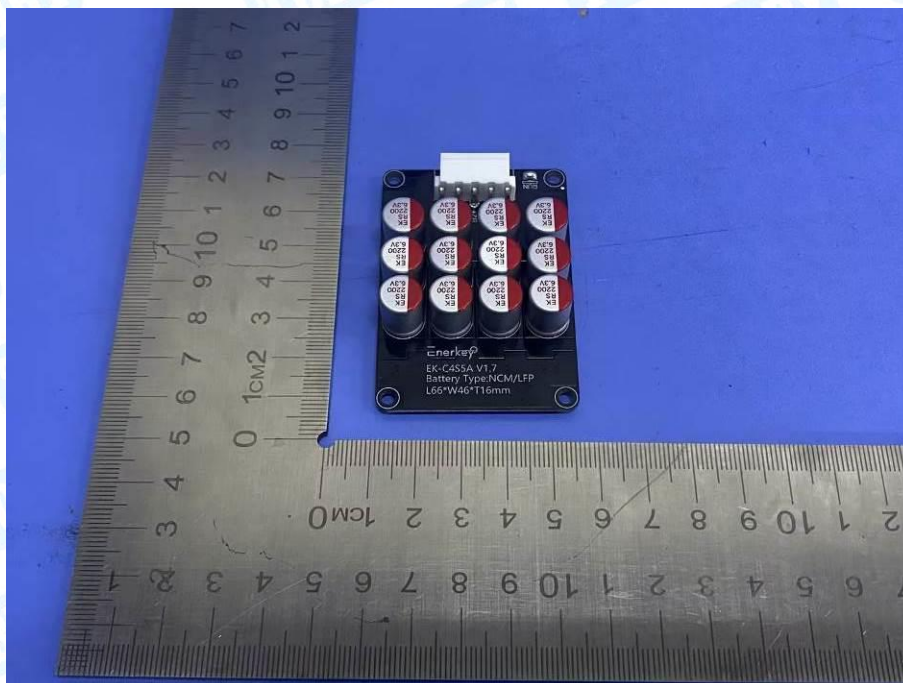
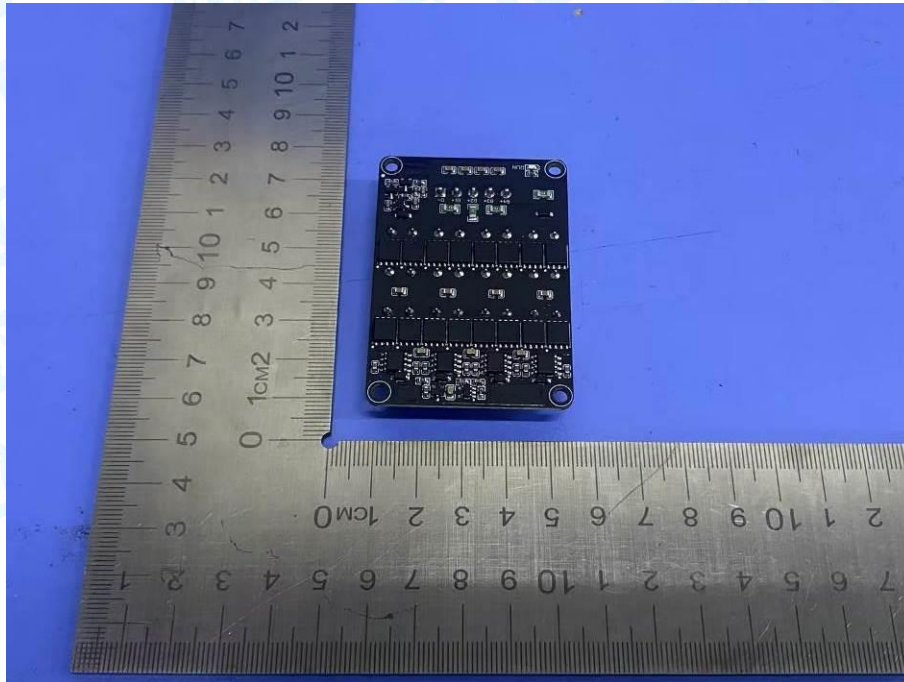


Photo 3 Appearance of PCB

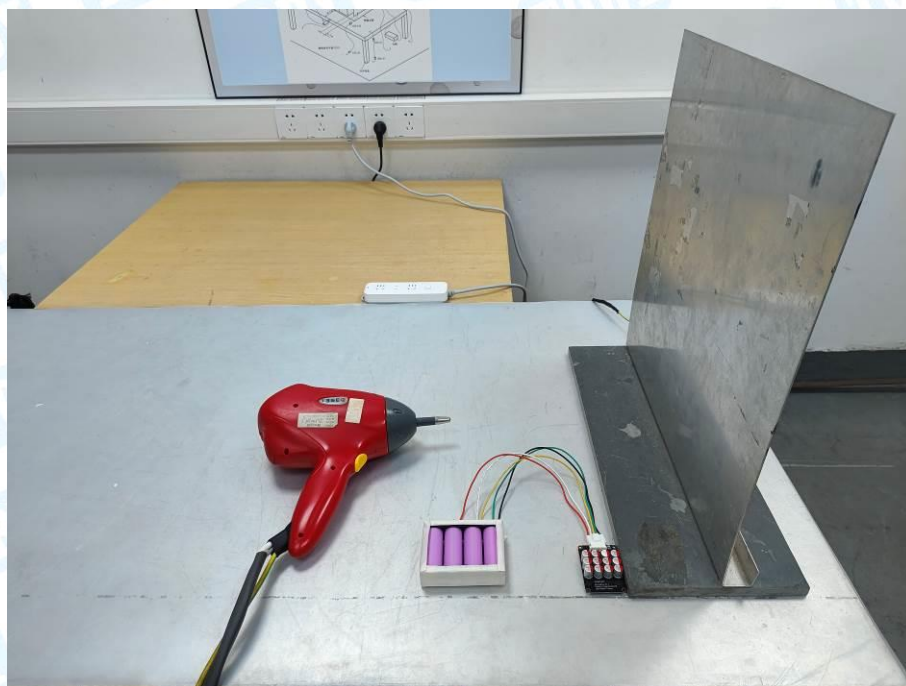


16. Photographs-- Test Setup

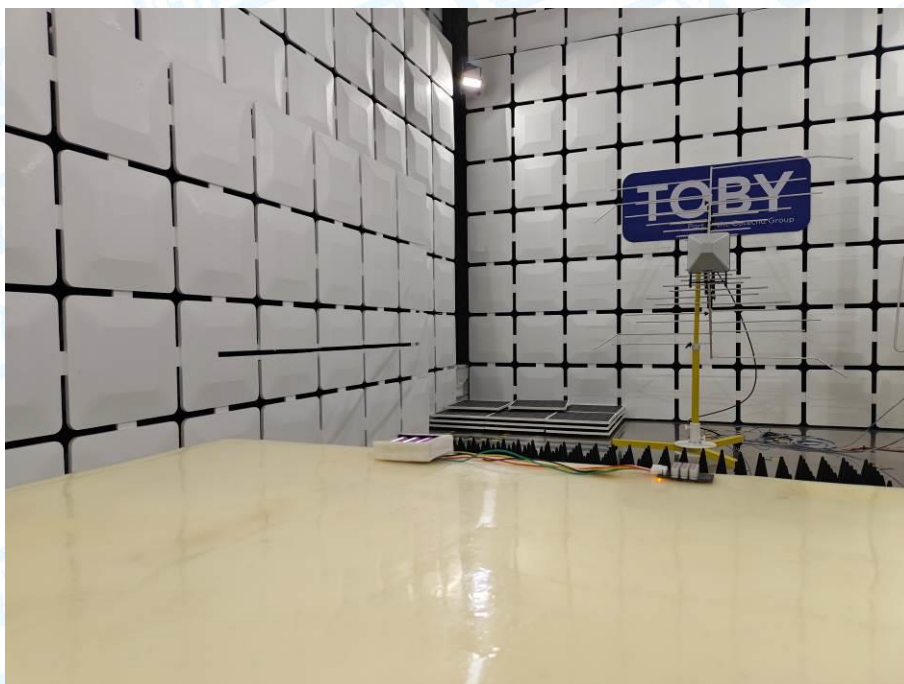
Radiated Emission Test Setup



Electrostatic Discharge Test Setup

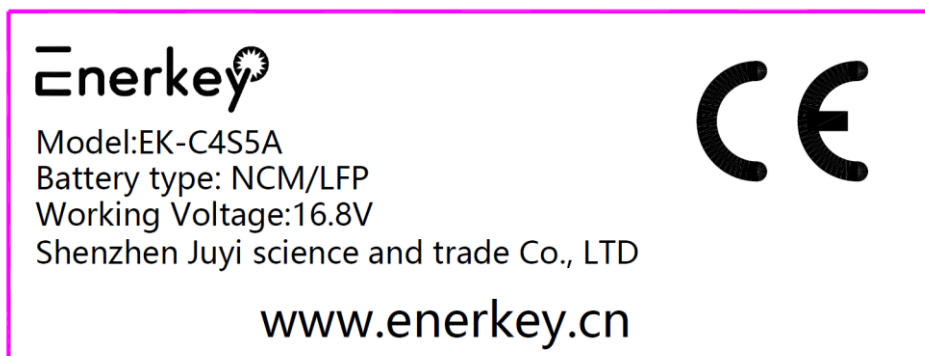


Radiated Electromagnetic Field Immunity Test Setup

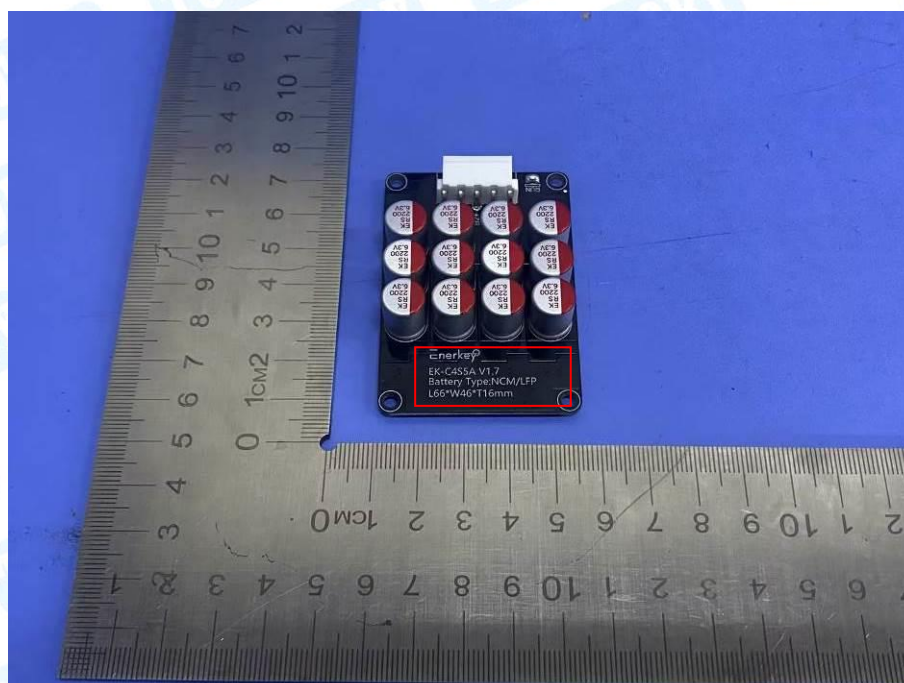


17. Appendix-- Label and Location

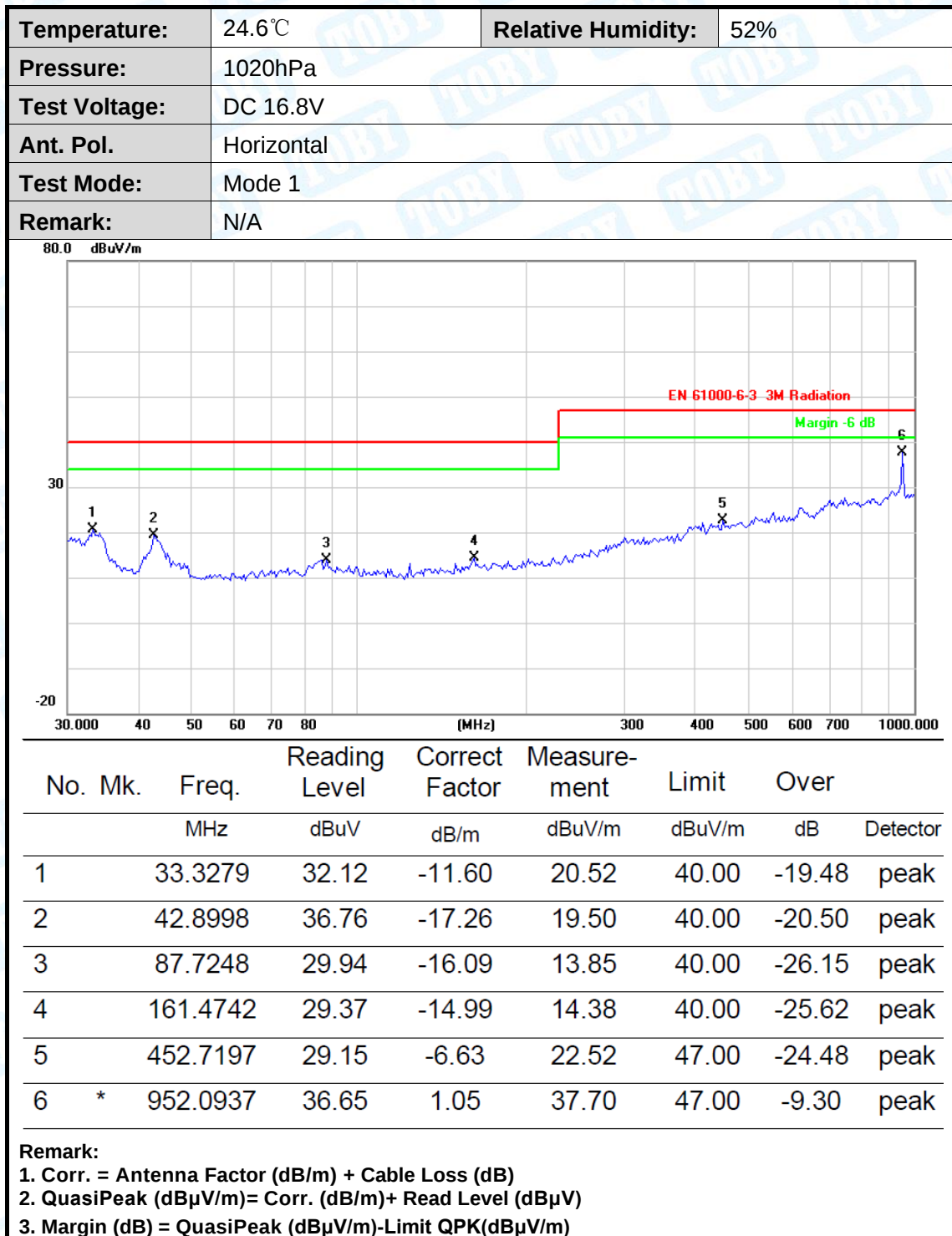
CE Label

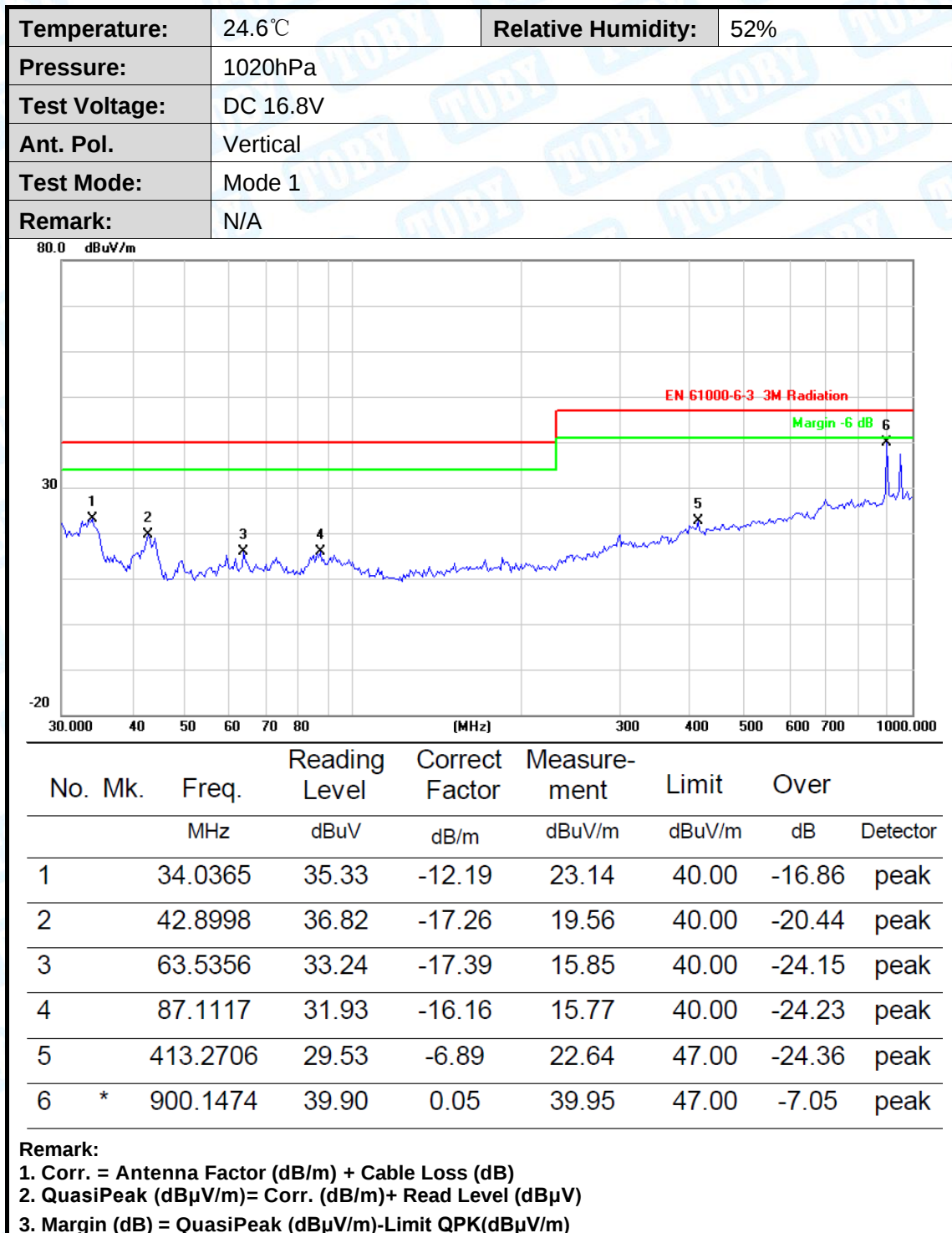


Label Location



Attachment A--Radiated Emission Test Data (Below 1G)





Attachment B--Electrostatic Discharge Test Data

Temperature:	23.7°C										Humidity:				49%			
Pressure(hpa):	1020																	
Power supply:	DC 16.8V										Test Mode:				Mode 1			
Location	Test Level(kV) and Result																Criteria	Result
	Air Discharge								Contact Discharge									
	2		4		8		15		2		4		6		8			
	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-		
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	B	/
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	B	/
/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	B	/
Test Level(kV) and Result																		
Location	HCP								VCP								Criteria	Result
	2		4		6		8		2		4		6		8			
	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-		
Front	/	/	A	A	/	/	/	/	/	/	A	A	/	/	/	/	B	PASS
Back	/	/	A	A	/	/	/	/	/	/	A	A	/	/	/	/	B	PASS
Left	/	/	A	A	/	/	/	/	/	/	A	A	/	/	/	/	B	PASS
Right	/	/	A	A	/	/	/	/	/	/	A	A	/	/	/	/	B	PASS
Note: "/" Representative the test not applicable																		
Criteria A: There was no change operated with initial operating during the test.																		
Criteria B: The EUT function loss during the test, but self-recoverable after the test.																		
Criteria C: The system shut down during the test.																		



Test Location Photos	
	VCP
HCP	

- 1) Criteria A: The apparatus shall continue to operate as intended during the test.
- 2) Criteria B: The apparatus shall continue to operate as intended after the test.
- 3) Criteria C: The system shut down during the test, Provide 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.



Attachment C--RF Field Strength Susceptibility Test Data

Temperature	: 23.9℃	Humidity	: 50%				
Pressure(hpa)	: 1020						
Power supply	: DC 16.8V	Test Mode	: Mode 1				
Required Performance Criteria: A							
Position	Frequency Range 1		Frequency Range 2		Frequency Range 3		Result
	80~1000MHz		1400~2000MHz		2000~2700MHz		
	Horizontal	Vertical	Horizontal	Vertical	Horizontal	Vertical	
Front	A	A	A	A	A	A	PASS
Right	A	A	A	A	A	A	
Rear	A	A	A	A	A	A	
Left	A	A	A	A	A	A	
Remark:							
1) Criteria A: There was no change operated with initial operating during the test. 2) Criteria B: The EUT function loss during the test, but self-recoverable after the test. 3) Criteria C: The system shut down during the test.							

-----END OF THE REPORT-----

