TEST REPORT

Report No. :	KS2412S6131E
Applicant :	SRNE Solar Co.,Ltd
Address :	4-5F,Building13A,Taihua Wutong Industrial Park ,Gushu Development Zone ,Hangcheng Street,Baoan, Shenzhen, China PR
Manufacturer :	SRNE SOLAR CO.,LTD Dongguan Branch
Address :	Room 301, Building 5th, Fuxing Rd No.36, Chang'an Town,Dongguan City, Guangdong Province, China PR
Product Name :	Lithium Battery Energy Storage
Trademark :	N/A
Model/Type reference :	SR-SE10B
Standard :	EN IEC 61000-6-1:2019 EN IEC 61000-6-2:2019 EN IEC 61000-6-3:2021 EN IEC 61000-6-4:2019
Date of Receipt :	December 19, 2024
Date of Test Date :	December 19, 2024 to December 24, 2024
Date of issue :	January 3, 2025
**Test result : **	**Pass**

Conclusion :	The submitted sample was found to COMPLY with the standards above.	
Prepared by:	Name: Levi Zheng Title: Project Engineer	
Approved by:	Name: Sky Dong Title: EMC Supervisor	

Testing Laboratory Name... :	**KSIGN(Guangdong) Testing Co., Ltd.**
Address :	West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

TABLE OF CONTENTS Page

1. TEST SUMMARY 3

1.1. Test Standards 3
1.2. Report Version 3
1.3. Test Description 4
1.4. Test Facility 5
1.5. Measurement Uncertainty 5

2. GENERAL INFORMATION 6

2.1. General Description Of EUT 6
2.2. Accessory Equipment Information 6
2.3. Description of Test Modes 6
2.4. Measurement Instruments List 7

3. Emission Test Results (EMI) 8

3.1. Conducted disturbances from AC mains power port 8
3.2. Conducted disturbances from DC power port 9
3.3. Conducted disturbances from other wired ports 10
3.4. Radiation disturbance (30MHz-1GHz) 11
3.5. Radiation disturbance (above 1GHz) 16

4. Immunity Test Results (EMS) 21

4.1. Electrostatic discharge 22
4.2. Radio-frequency electromagnetic field 24
4.3. Fast transients 26
4.4. Surges on Input and output DC power ports 27
4.5. Radio-frequency common mode 28
4.6. Power-frequency magnetic field 29
4.7. Voltage dips and Interruptions 30

5. EUT TEST PHOTOS 31
6. PHOTOGRAPHS OF EUT CONSTRUCTIONAL 35

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:
EN IEC 61000-6-1:2019: Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments
EN IEC 61000-6-3:2021: Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for equipment in residential environments
EN IEC 61000-6-2:2019: Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for industrial environments
EN IEC 61000-6-4:2019: Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

1.2. Report Version

Revised No.	Date of issue	Description
01	January 3, 2025	Original

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

1.3. Test Description

Test Item	Standard	Requirement	Result
Conducted disturbances from AC mains power port	EN IEC 61000-6-3:2021, EN IEC 61000-6-4:2019	Table 4	N/A
Conducted disturbances from DC power port	EN IEC 61000-6-3:2021, EN IEC 61000-6-4:2019	Table 5	N/A
Conducted disturbances from other wired ports	EN IEC 61000-6-3:2021, EN IEC 61000-6-4:2019	Table 6	N/A
Radiation disturbance (30MHz-1GHz)	EN IEC 61000-6-3:2021, EN IEC 61000-6-4:2019	Table 3	Pass
Radiation disturbance (above 1GHz)	EN IEC 61000-6-3:2021, EN IEC 61000-6-4:2019	Table 3	Pass
Harmonic current emission	EN IEC 61000-6-3:2021 EN IEC 61000-3-2:2019+A1:2021	Class A	N/A
Voltage fluctuations and flicker	EN IEC 61000-6-3:2021 EN 61000-3-3:2013+A2:2021	Clause 4	N/A
Electrostatic discharge	EN IEC 61000-6-1:2019, EN IEC 61000-6-2:2019	Table 1.4	Pass
Radio-frequency electromagnetic field	EN IEC 61000-6-1:2019, EN IEC 61000-6-2:2019	Table 1.2 & 1.3	Pass
Fast transients	EN IEC 61000-6-1:2019, EN IEC 61000-6-2:2019	Table 2.3,Table 3.3,Table 4.5	Pass
Surges	EN IEC 61000-6-1:2019, EN IEC 61000-6-2:2019	Table 2.2,Table 3.2,Table 4.4	N/A
Radio-frequency common mode	EN IEC 61000-6-1:2019, EN IEC 61000-6-2:2019	Table 2.1,Table 3.1,Table 4.1	N/A
Power-frequency magnetic field	EN IEC 61000-6-1:2019, EN IEC 61000-6-2:2019	Table 1.1	Pass
Voltage dips and Interruptions	EN IEC 61000-6-1:2019, EN IEC 61000-6-2:2019	Table 4.2 & 4.3	N/A

N/A:The EUT is powered by DC.The total length of the cable which connected to LAN port for BMS and DC power port does not exceed 3 m and the cable is inside a building according to the manufacturer's functional specification.According to the relevant functions of EUT, this test items not applicable.

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

1.4. Test Facility

KSIGN(Guangdong) Testing Co., Ltd .
West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu,Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China

The test facility is recognized, certified, or accredited by the following organizations:
CNAS-Lab Code: L 13261
KSIGN(Guangdong) Testing Co., Ltd. has been assessed and proved to be in Compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.
A2LA-Lab Cert. No.: 5457.01
KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.
ISED# : 25693 CAB identifier.: CN0096
KSIGN(Guangdong) Testing Co., Ltd. has been listed by Innovation, Science and Economic Development Canada to perform electromagnetic emission measurement.
FCC-Registration No.: 294912 Designation Number: CN1328
KSIGN(Guangdong) Testing Co., Ltd. EMC Laboratory has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

1.5. Measurement Uncertainty

Test Items	Measurement Uncertainty
Conducted Emission (150k-30MHz)	± 3.34dB
RE (30-1000MHz)	± 5.7dB
RE (1-18GHz)	± 4.68dB
Flicker	± 5.7%

The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %. Otherwise required by the applicant or Product Regulations.Decision Rule in this report did not consider the uncertainty.

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

2. GENERAL INFORMATION

2.1. General Description Of EUT

Test Sample Number:	KS2412S6131E-01
Product Name:	Lithium Battery Energy Storage
Model / Type reference:	SR-SE10B
Ratings:	Battery Type: LiFePO4 Nominal voltage: DC 51.2V Rated Capacity: 205Ah Battery Energy: 10.49KWh Voltage Range: DC 44.8V-57.6V Max. Charge/Discharge Current: 200A
Highest Internal Frequency:	Above 1GHz

2.2. Accessory Equipment Information

Title	Manufacturer	Model No.	Technical Parameters	Provided by
DC Line	JINHUANYU	/	/	Laboratory
Bi-directional DC power supply	KEWELL	D1000-200-1600-350-EVS-S	Rate power:200KW,Rate Current:±350A,Vol:24V-1600V	Laboratory

2.3. Description of Test Modes

No.	Title	Description of Mode
Test Mode1	Charging	DC 57.6V/200A
Test Mode2	Discharge	DC 51.2V/200A

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

2.4. Measurement Instruments List

Radiation disturbance (30MHz-1GHz) Radiation disturbance (above 1GHz)				
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Color Signal Generator	Philips	PM5418	672926	2025-01-19
Log Periodic Antenna	Schwarzbeck	VULB 9163	1230	2025-01-29
Pre-Amplifier	Schwarzbeck	BBV 9745	9745#129	2025-01-19
Broadcast Television Signal Generator	R&S	SFE100	141038	2025-01-19
Analog Signal Generator	Agilent	8648A	3847M00445	2025-01-19
EMI Test Receiver	R&S	ESR	102525	2025-01-19
Loop Antenna	Beijin ZHINAN	ZN30900C	18050	2025-01-29
Horn Antenna	Schwarzbeck	BBHA 9120 D	2023	2025-01-21
Pre-Amplifier	EMCI	EMC051835SE	980662	2025-01-19
Spectrum Analyzer	Keysight	N9020A	MY46471971	2025-01-19

Electrostatic discharge				
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
ESD Simulator	TESEQ	NSG 437	1364	2025-01-21

Radio-frequency electromagnetic field				
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
RF Switch	JS TOYO	NS 4903	1901-214	2025-01-19
Signal Generator	Agilent	N5181A	MY50141283	2025-01-19
Power Meter	Agilent	E4419	GB40202778	2025-01-19
Power Sensor	Agilent	E9304A	MY50390009	2025-01-21
Power Sensor	Agilent	E9300A	MY41498315	2025-01-19
Transmit Antenna	Schwarzbeck	VULP 9118 E	996	2025-01-21
Transmit Antenna	Schwarzbeck	STLP 9149	652	2025-01-21
Power Amplifier	Vectawave	VBA1000-150	123821	2025-01-19
Dual Directional Coupler	Werlatone	C5597-10	118142	2025-01-19
Power Amplifier	Milmega	AS0706-50	1085571	2025-01-19

Fast transients				
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Electrical Fast Transient Burst Tester	LIONCEL	LEG-433C-05AC &CDN-4320H-200 AC	433C05AC-0231102& 4320H200AC-0230901	2025-01-19

Power-frequency magnetic field				
Test Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Until**
Test Host	EMC partner	IMU4000 F-S-D	106754-2085	2025-01-19
Capacitive coupling Clamp	EMC partner	CN-EFT1000	CN-EFT1000-1771	2025-01-19

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

3. Emission Test Results (EMI)

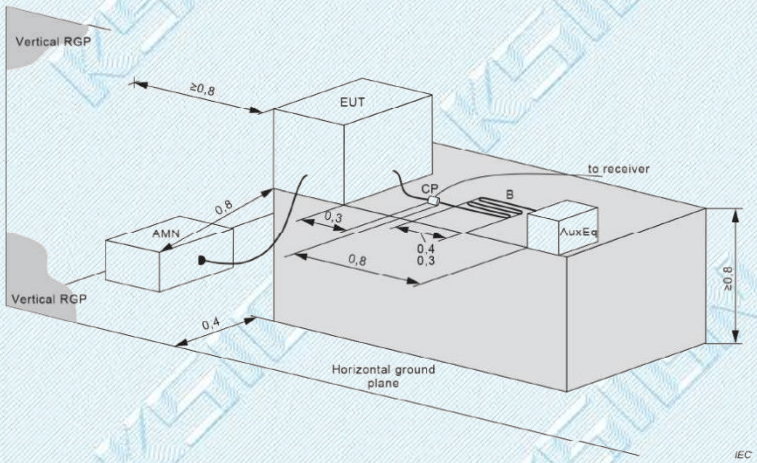
3.1. Conducted disturbances from AC mains power port

Test Requirement:	Table 4
Test Limit:	Frequency range / Limits 0,15 MHz to 0,5 MHz: 66 dB(uV) to 56 dB(uV) quasi-peak; 56 dB(uV) to 46 dB(uV) average; Limits decrease linearly with the logarithm of the frequency 0,5 MHz to 5 MHz: 56 dB(uV) quasi-peak; 46 dB(uV) average 5 MHz to 30 MHz: 60 dB(uV) quasi-peak; 50 dB(uV) average At transitional frequencies the lower limit applies.
Test Method:	CISPR 16-2-1 Clause 7
Procedure:	An initial pre-scan was performed with peak detector.Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.
Remark:	The EUT is powered by DC.

3.1.1. E.U.T. Operation:

Operating Environment:	
Temperature:	/
Humidity:	/
Atmospheric Pressure:	/
Final test mode:	/

3.1.2. Test Setup Diagram:



3.1.3. Test Data:

N/A: According to the relevant functions of EUT, this test items not applicable.

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

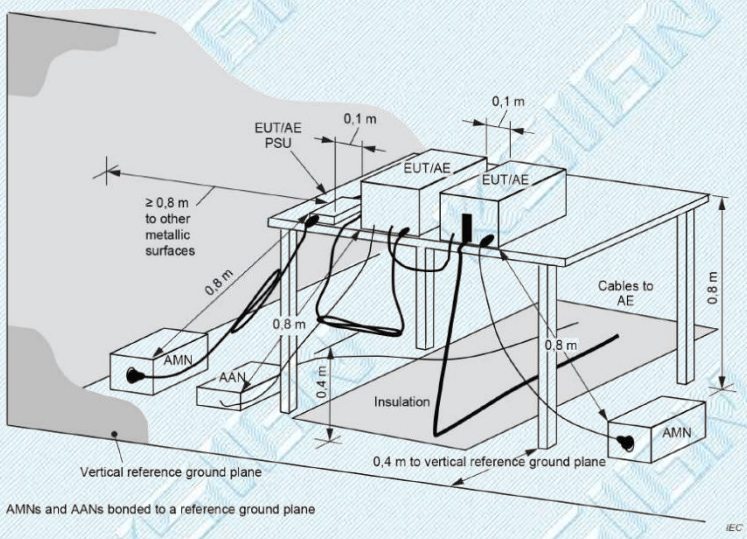
3.2. Conducted disturbances from DC power port

Test Requirement:	Table 5
Test Limit:	Frequency range: Limits 0,15 MHz to 0,5 MHz: 79 dB(uV) quasi-peak, 66 dB(uV) average 0,5 MHz to 30 MHz: 73 dB(uV) quasi-peak, 60 dB(uV) average At transitional frequencies the lower limit applies.
Test Method:	CISPR 16-2-1 Clause 7
Procedure:	An initial pre-scan was performed with peak detector.Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.
Remark:	The EUT is powered by DC.The total length of the cable which connected to LAN port for BMS and DC power port does not exceed 3 m and the cable is inside a building according to the manufacturer's functional specification.

3.2.1. E.U.T. Operation:

Operating Environment:	
Temperature:	/
Humidity:	/
Atmospheric Pressure:	/
Final test mode:	/

3.2.2. Test Setup Diagram:



3.2.3. Test Data:

N/A:According to the relevant functions of EUT, this test items not applicable.

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

3.3. Conducted disturbances from other wired ports

Test Requirement:	Table 6
Test Limit:	Frequency range: 0,15 MHz to 0,5 MHz — Limits: 84 dB(uV) to 74 dB(uV) quasi-peak; 74 dB(uV) to 64 dB(uV) average; 40 dB(uA) to 30 dB(uA) quasi-peak; 30 dB(uA) to 20 dB(uA) average; Limits decrease linearly with the logarithm of the frequency Frequency range: 0,5 MHz to 30 MHz — Limits: 74 dB(uV) quasi-peak; 64 dB(uV) average; 30 dB(uA) quasi-peak; 20 dB(uA) average The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150 Ω to the telecommunication port under test (conversion factor is 20 log10 150 / I = 44 dB).
Test Method:	CISPR 32
Procedure:	An initial pre-scan was performed with peak detector.Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.
Remark:	The EUT is powered by DC.The total length of the cable which connected to LAN port for BMS and DC power port does not exceed 3 m and the cable is inside a building according to the manufacturer's functional specification.

3.3.1. E.U.T. Operation:

Operating Environment:	
Temperature:	/
Humidity:	/
Atmospheric Pressure:	/
Final test mode:	/

3.3.2. Test Data:

N/A:According to the relevant functions of EUT, this test items not applicable.

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

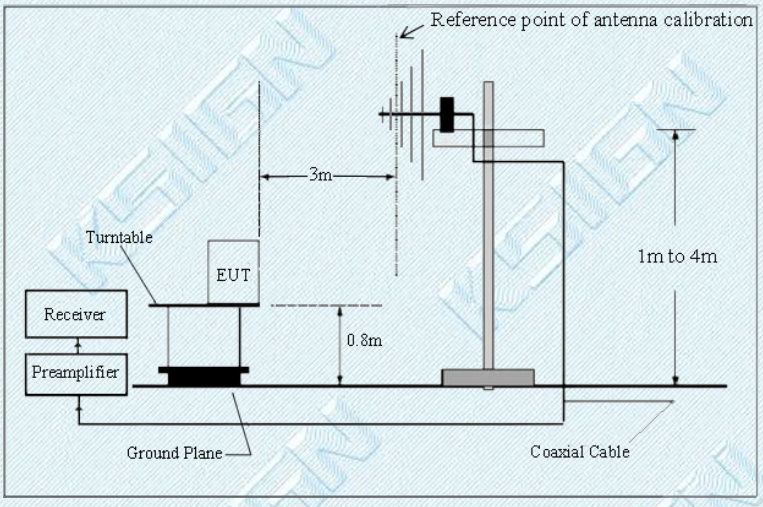
3.4. Radiation disturbance (30MHz-1GHz)

Test Requirement:	Table 3
Test Limit:	Frequency range / Limits at 10m / Limits at 3m 30 MHz to 230 MHz / 30 dB(uV/m) quasi-peak / 40 dB(uV/m) quasi-peak 230 MHz to 1 000 MHz / 37 dB(uV/m) quasi-peak / 47 dB(uV/m) quasi-peak At transitional frequencies the lower limit applies.
Test Method:	CISPR 16-2-3 Clause 7.3
Procedure:	An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities. Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

3.4.1. E.U.T. Operation:

Operating Environment:	
Temperature:	23.6 °C
Humidity:	43.1 %
Atmospheric Pressure:	101.5 kPa
Final test mode:	Test Mode1, Test Mode2

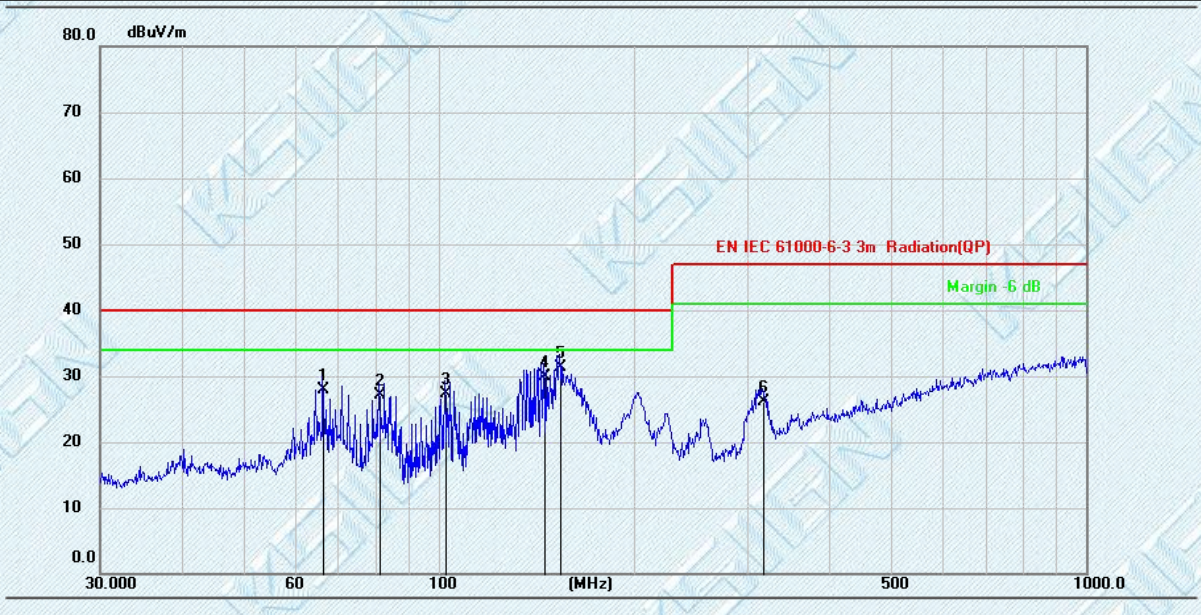
3.4.2. Test Setup Diagram:



Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

3.4.3. Test Data:

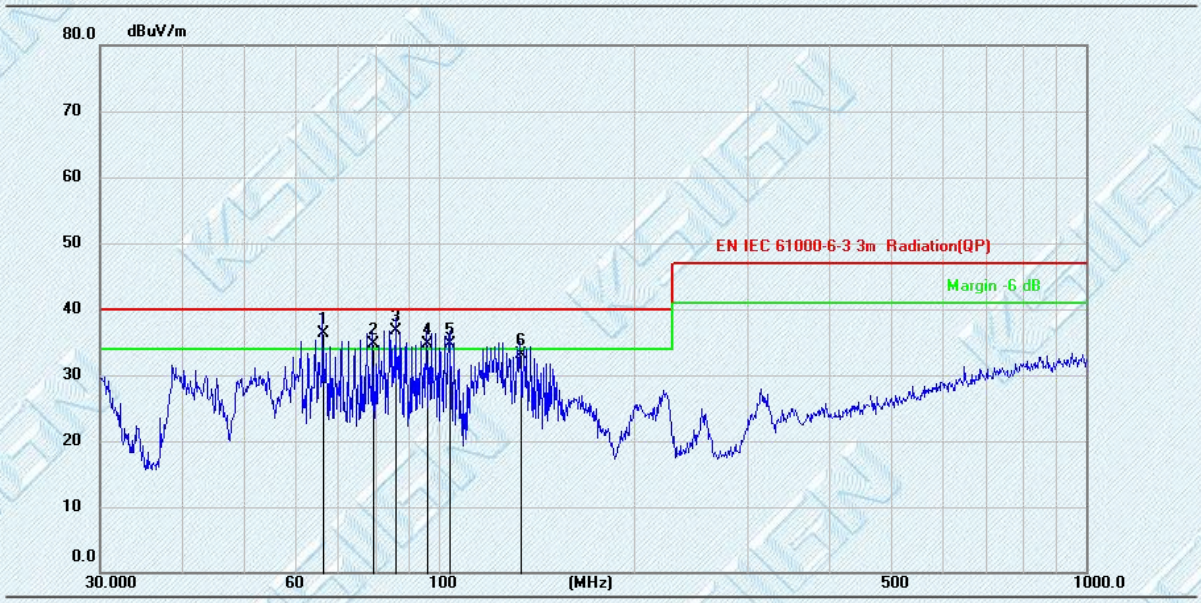
Test Mode1 / Polarization: Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1		66.1732	38.73	-10.90	27.83	40.00	-12.17	QP
2		81.0694	40.40	-13.33	27.07	40.00	-12.93	QP
3		102.6112	39.22	-11.90	27.32	40.00	-12.68	QP
4		145.6566	43.86	-13.98	29.88	40.00	-10.12	QP
5	*	153.9543	45.46	-14.08	31.38	40.00	-8.62	QP
6		316.2560	33.57	-7.44	26.13	47.00	-20.87	QP

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

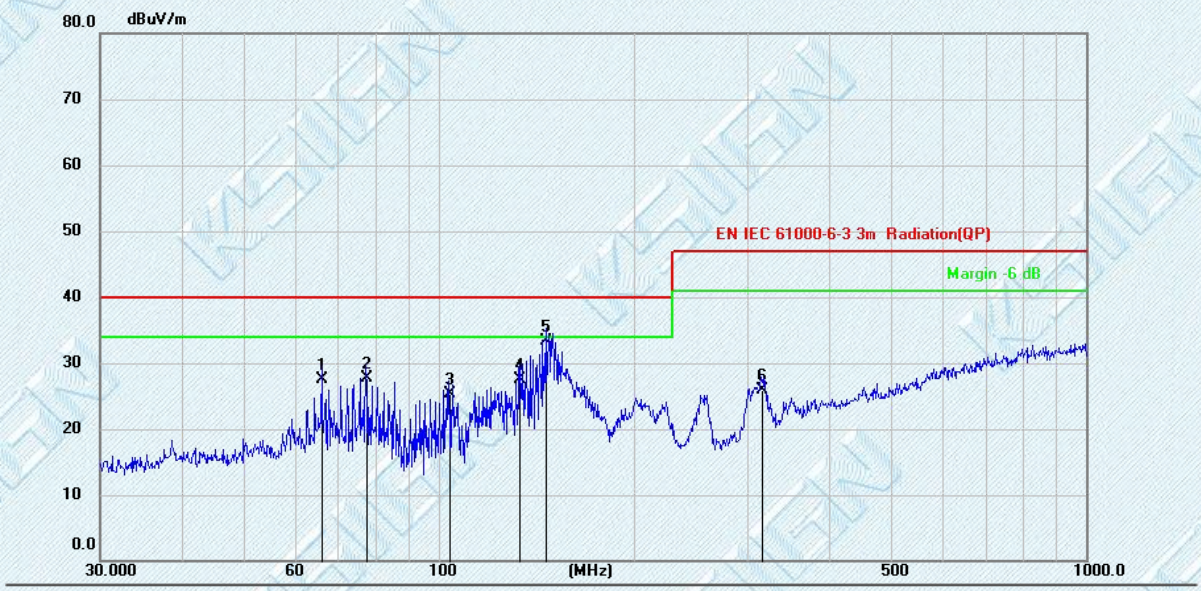
Test Mode1 / Polarization: Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1	!	66.1500	47.21	-10.89	36.32	40.00	-3.68	QP
2	!	79.4094	48.96	-14.32	34.64	40.00	-5.36	QP
3	*	85.9886	50.41	-13.71	36.70	40.00	-3.30	QP
4	!	95.8966	47.05	-12.40	34.65	40.00	-5.35	QP
5	!	104.1701	46.41	-11.72	34.69	40.00	-5.31	QP
6		133.9471	46.96	-13.92	33.04	40.00	-6.96	QP

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

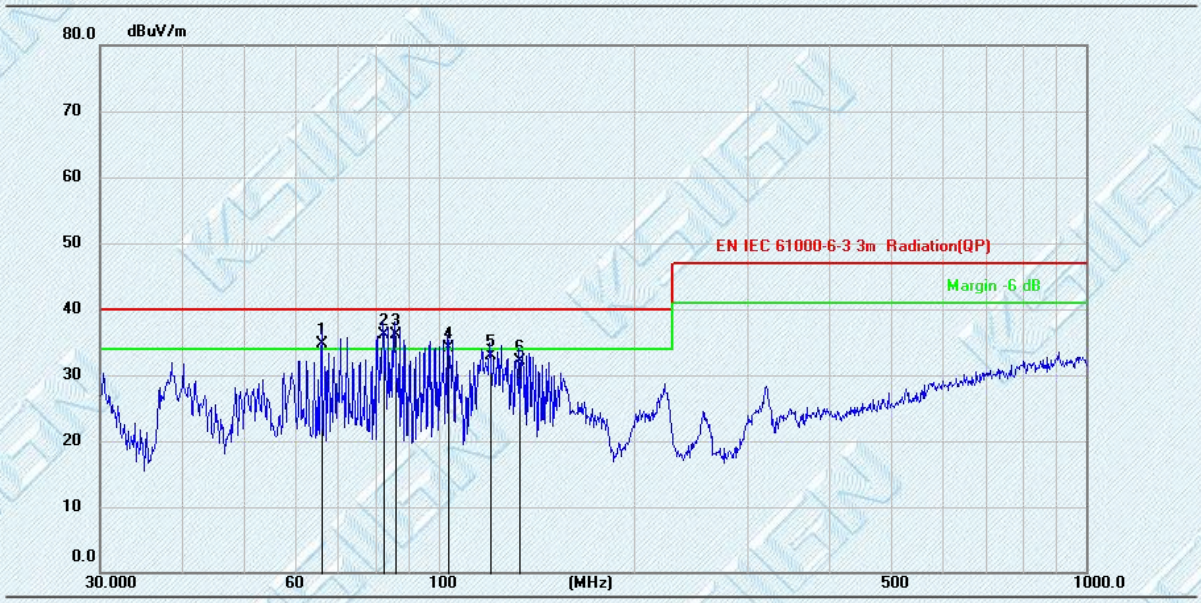
Test Mode2 / Polarization: Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1		65.9416	38.32	-10.79	27.53	40.00	-12.47	QP
2		77.4840	41.96	-14.21	27.75	40.00	-12.25	QP
3		103.8783	37.08	-11.75	25.33	40.00	-14.67	QP
4		133.5719	41.51	-13.96	27.55	40.00	-12.45	QP
5	*	146.7332	47.14	-13.82	33.32	40.00	-6.68	QP
6		315.1490	33.33	-7.48	25.85	47.00	-21.15	QP

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

Test Mode2 / Polarization: Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1	!	65.8722	45.41	-10.76	34.65	40.00	-5.35	QP
2	!	82.3011	49.45	-13.38	36.07	40.00	-3.93	QP
3	*	85.6577	49.86	-13.74	36.12	40.00	-3.88	QP
4	!	103.7326	45.86	-11.77	34.09	40.00	-5.91	QP
5		120.1923	45.77	-12.90	32.87	40.00	-7.13	QP
6		133.3847	46.13	-13.98	32.15	40.00	-7.85	QP

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

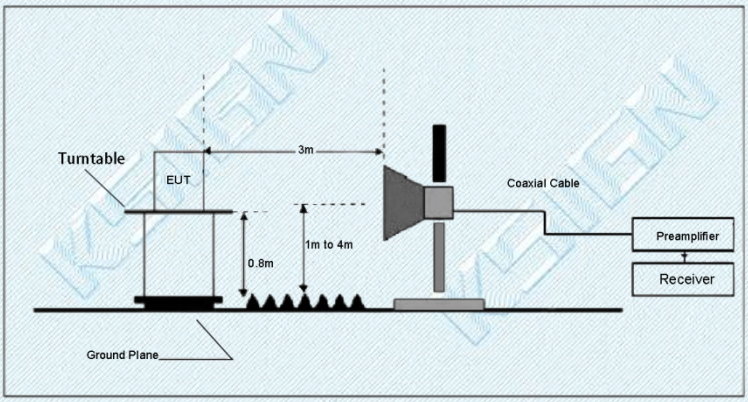
3.5. Radiation disturbance (above 1GHz)

Test Requirement:	Table 3
Test Limit:	Frequency range: Limits 1 GHz to 3 GHz: 70 dB(uV/m) peak at 3 m; 50 dB(uV/m) average at 3 m 3 GHz to 6 GHz: 74 dB(uV/m) peak at 3 m; 54 dB(uV/m) average at 3 m At transitional frequencies the lower limit applies.
Test Method:	CISPR 16-2-3 Clause 7.6
Procedure:	An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by horn antenna with 2 orthogonal polarities. Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

3.5.1. E.U.T. Operation:

Operating Environment:	
Temperature:	24.1 °C
Humidity:	43.1 %
Atmospheric Pressure:	101.5 kPa
Final test mode:	Test Mode1

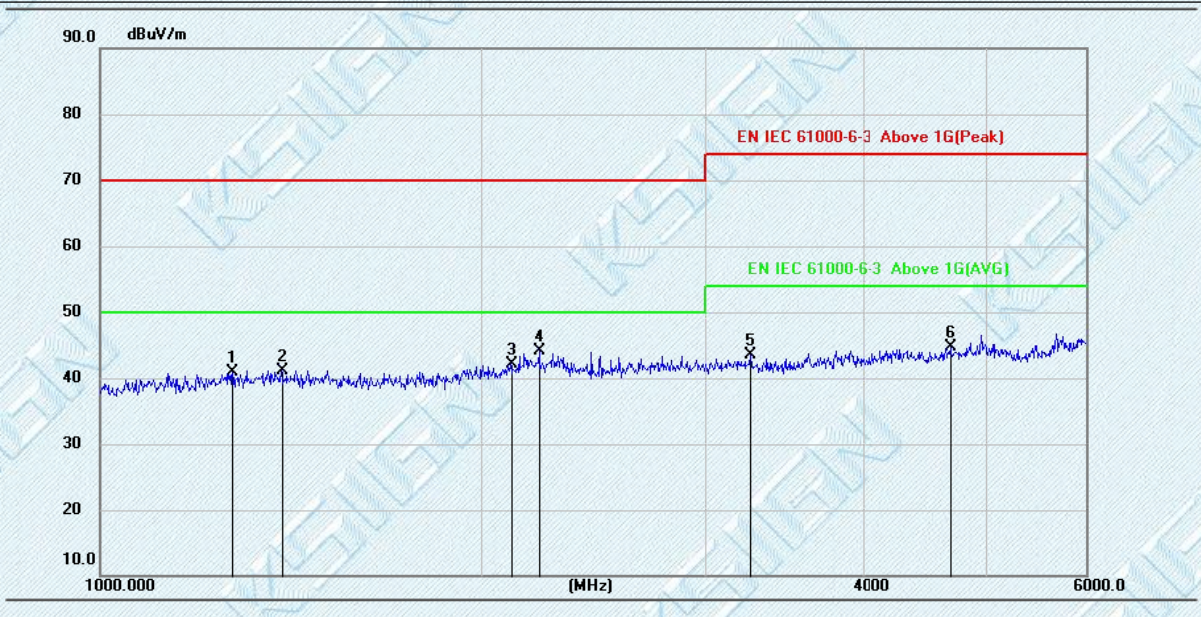
3.5.2. Test Setup Diagram:



Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

3.5.3. Test Data:

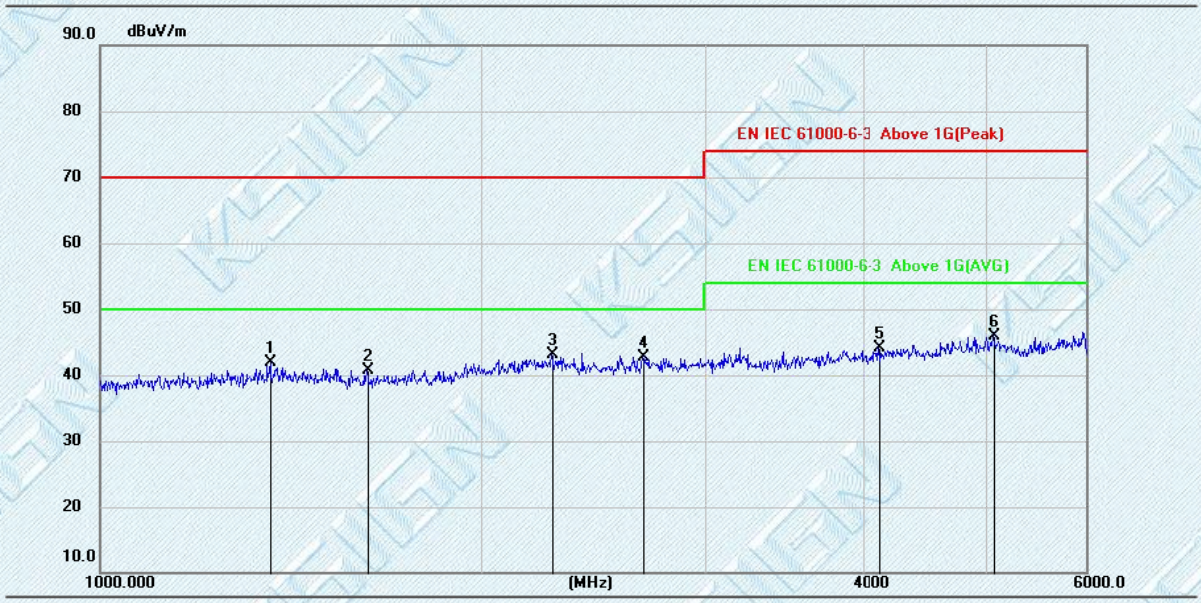
Test Mode1 / Polarization: Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1		1271.676	42.24	-1.42	40.82	70.00	-29.18	peak
2		1388.495	42.52	-1.32	41.20	70.00	-28.80	peak
3		2108.798	41.63	0.55	42.18	70.00	-27.82	peak
4	*	2221.385	42.68	1.42	44.10	70.00	-25.90	peak
5		3260.731	42.23	1.26	43.49	74.00	-30.51	peak
6		4692.862	40.91	3.86	44.77	74.00	-29.23	peak

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

Test Mode1 / Polarization: Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1		1361.500	42.90	-1.07	41.83	70.00	-28.17	peak
2		1626.500	42.42	-1.65	40.77	70.00	-29.23	peak
3	*	2273.500	41.76	1.25	43.01	70.00	-26.99	peak
4		2682.500	41.56	1.17	42.73	70.00	-27.27	peak
5		4120.000	41.43	2.67	44.10	74.00	-29.90	peak
6		5070.500	41.35	4.58	45.93	74.00	-28.07	peak

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

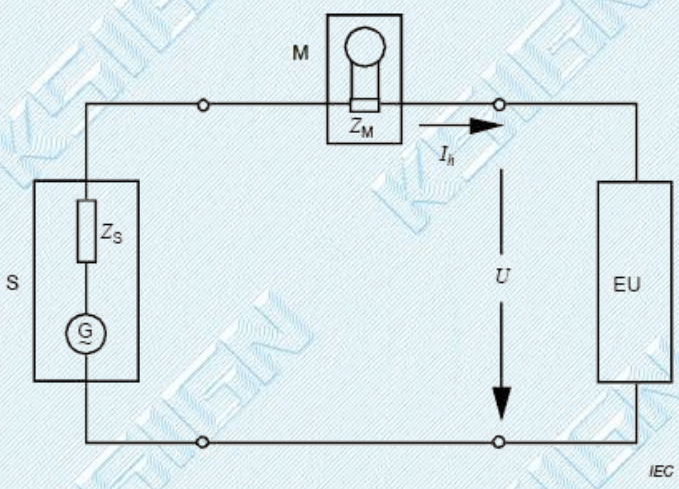
3.6. Harmonic current emission

Test Requirement:	EN IEC 61000-3-2:2019+A1:2021:Class A
Test Limit:	N/A
Test Method:	EN IEC 61000-6-3:2021
Remark:	The EUT is powered by DC.

3.6.1. E.U.T. Operation:

Operating Environment:	
Temperature:	/
Humidity:	/
Atmospheric Pressure:	/
Final test mode:	/

3.6.2. Test Setup Diagram:



3.6.3. Test Data:

N/A: According to the relevant functions of EUT, this test items not applicable.

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

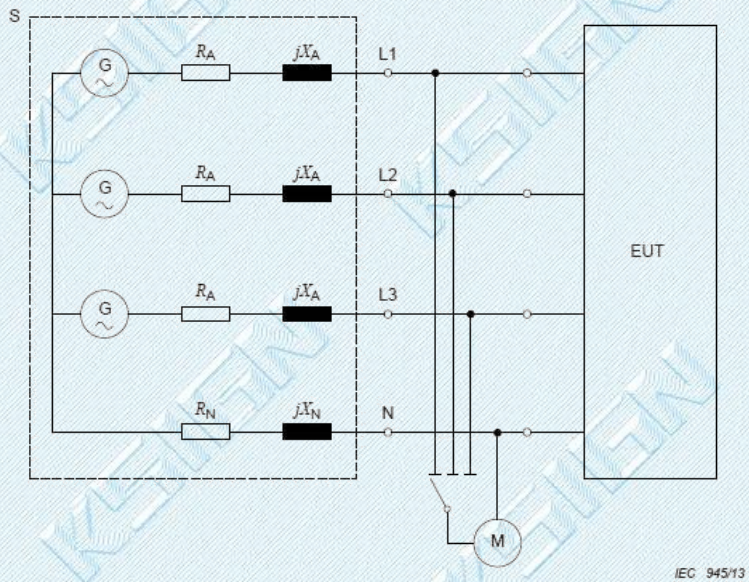
3.7. Voltage fluctuations and flicker

Test Requirement:	EN 61000-3-3:2013+A2:2021:Clause 4
Test Limit:	N/A
Test Method:	EN IEC 61000-6-3:2021
Remark:	The EUT is powered by DC.

3.7.1. E.U.T. Operation:

Operating Environment:	
Temperature:	/
Humidity:	/
Atmospheric Pressure:	/
Final test mode:	/

3.7.2. Test Setup Diagram:



3.7.3. Test Data:

N/A: According to the relevant functions of EUT, this test items not applicable.

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

4. Immunity Test Results (EMS)

Performance criteria A

The EUT shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. If the performance level is not specified by the manufacturer, this may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

Performance criteria B

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

Performance criteria C

Temporary loss of function is allowed during the test, provided the function is self-recoverable or can be restored by the operation of the controls.

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

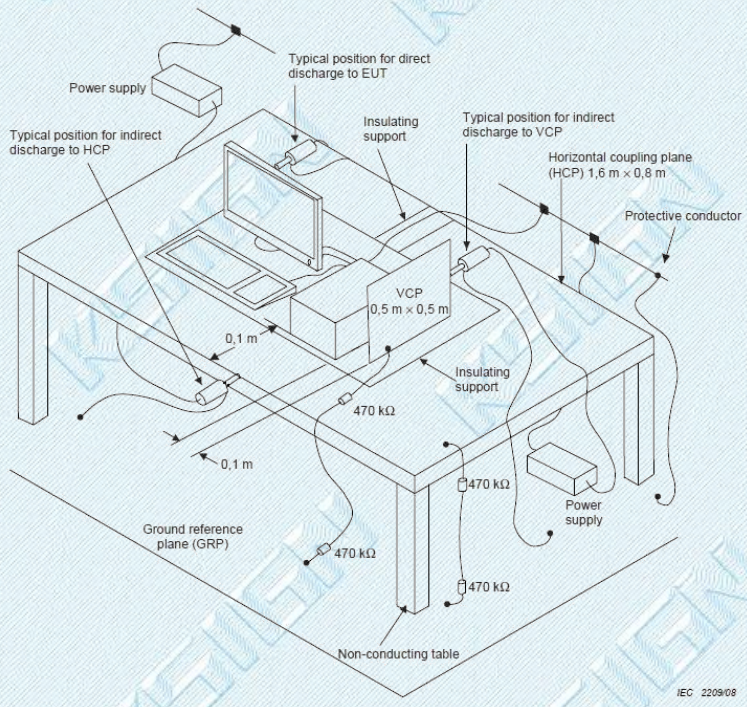
4.1. Electrostatic discharge

Test Requirement:	Table 1.4
Test Method:	EN 61000-4-2: 2009
Procedure:	Discharge Impedance: 330 Ω / 150 pF Discharge Voltage: Air Discharge: 8 kV; Contact Discharge:4 kV; VCP/HCP: 4 kV. Polarity: Positive & Negative Number of Discharge: Minimum 10 times at each test point Discharge Mode: Single Discharge Discharge Period: 1 second minimum
Performance Criteria:	B

4.1.1. E.U.T. Operation:

Operating Environment:	
Temperature:	24.3 °C
Humidity:	45.6 %
Atmospheric Pressure:	101.6 kPa
Final test mode:	Test Mode1, Test Mode2

4.1.2. Test Setup Diagram:



Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

4.1.3. Test Data:

Discharge type	Volt (kV)	Polarity	Test Point	Result/ Observations
Air discharge	8	+	1	A
Air discharge	8	-	1	A
Contact discharge	4	+	2	A
Contact discharge	4	-	2	A
Horizontal Coupling	4	+	3	A
Horizontal Coupling	4	-	3	A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A

Test Point: 1. All insulated enclosure and seams.
2. All accessible metal parts of the enclosure.
3. All side.
A: No degradation in the performance of the EUT was observed.

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

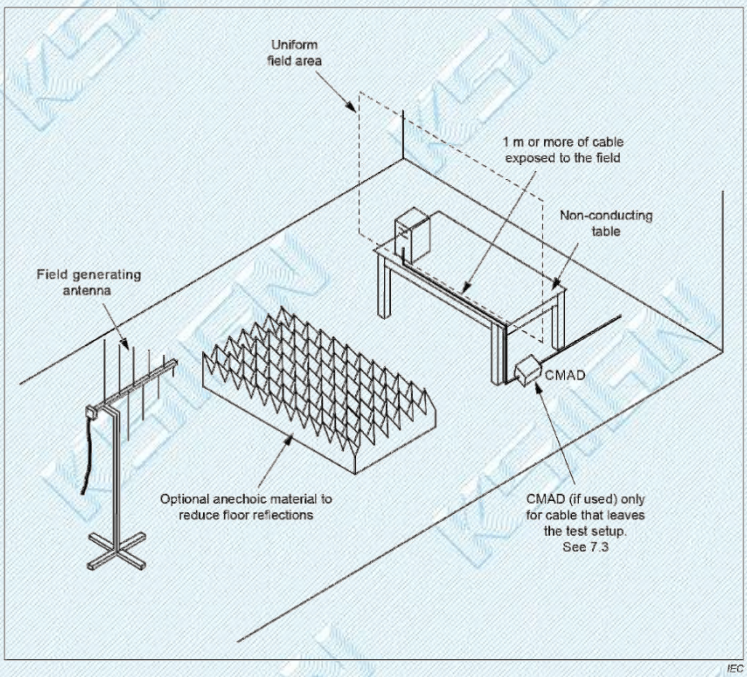
4.2. Radio-frequency electromagnetic field

Test Requirement:	Table 1.2 & 1.3
Test Method:	EN IEC 61000-4-3:2020
Procedure:	Antenna Polarisation: Vertical and Horizontal Modulation: 1kHz,80% Amp. Mod,1% increment Frequency Range: 80MHz to 1GHz, 1.4GHz to 6GHz
Performance Criteria:	A

4.2.1. E.U.T. Operation:

Operating Environment:	
Temperature:	24.8 °C
Humidity:	45.1 %
Atmospheric Pressure:	101.6 kPa
Final test mode:	Test Mode1, Test Mode2

4.2.2. Test Setup Diagram:



Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

4.2.3. Test Data:

Frequency	Field Strength (V/m)	EUT face	Dwell time	Result/ Observations
80MHz-1GHz	3&10	Front	2s	A
80MHz-1GHz	3&10	Back	2s	A
80MHz-1GHz	3&10	Left	2s	A
80MHz-1GHz	3&10	Right	2s	A
80MHz-1GHz	3&10	Top	2s	A
80MHz-1GHz	3&10	Bottom	2s	A
1.4GHz-6GHz	3	Front	2s	A
1.4GHz-6GHz	3	Back	2s	A
1.4GHz-6GHz	3	Left	2s	A
1.4GHz-6GHz	3	Right	2s	A
1.4GHz-6GHz	3	Top	2s	A
1.4GHz-6GHz	3	Bottom	2s	A

A: No degradation in the performance of the EUT was observed.

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

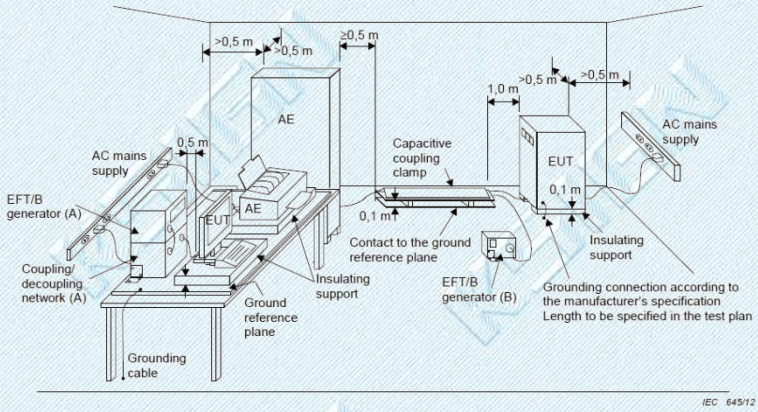
4.3. Fast transients

Test Requirement:	Table 2.3,Table 3.3,Table 4.5
Test Method:	EN 61000-4-4:2012
Procedure:	Repetition Frequency: 5kHz or 100kHz Burst Period: 300ms Test Duration: 2 minute per level & polarity AC power port:Test Level: 1kV&2kV DC power port:Test Level: 0.5kV&1kV Signal/contorl ports:Test Level: 0.5kV&1kV
Performance Criteria:	B
Remark:	The EUT is powered by DC.The total length of the cable which connected to LAN port for BMS does not exceed 3 m according to the manufacturer's functional specification.

4.3.1. E.U.T. Operation:

Operating Environment:	
Temperature:	24.4 °C
Humidity:	44.3 %
Atmospheric Pressure:	101.7 kPa
Final test mode:	Test Mode1, Test Mode2

4.3.2. Test Setup Diagram:



4.3.3. Test Data:

Port	Volt (kV)	Polarity	CDN/ Clamp	Result/ Observations
AC power port	1&2	+	CDN	N/A
AC power port	1&2	-	CDN	N/A
DC power port	0.5&1	+	CDN	A
DC power port	0.5&1	-	CDN	A
Signal/contorl ports	0.5&1	+	Clamp	N/A
Signal/contorl ports	0.5&1	-	Clamp	N/A

A: No degradation in the performance of the EUT was observed.
N/A:According to the relevant functions of EUT, this test items not applicable.

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

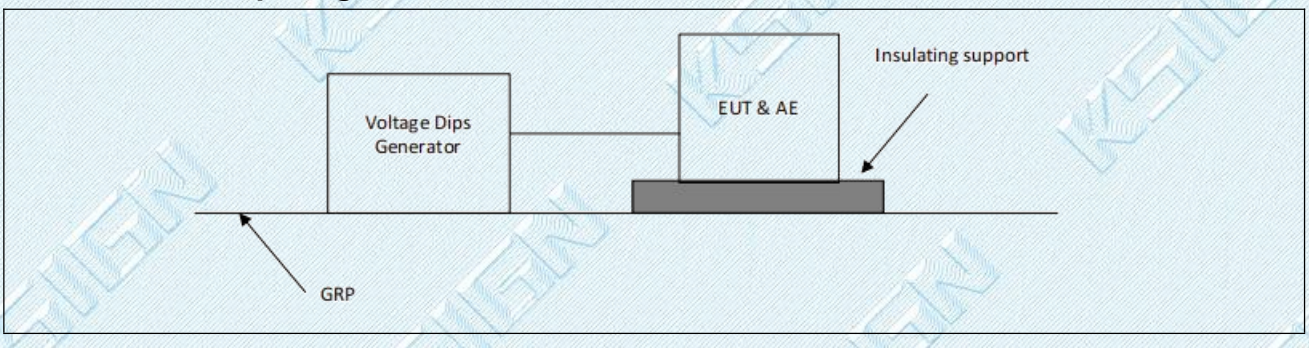
4.4. Surges

Test Requirement:	Table 2.2,Table 3.2,Table 4.4
Test Method:	EN 61000-4-5:2014+A1:2017
Procedure:	Interval: 60s between each surge No. of surges: 5 positive, 5 negative
Performance Criteria:	B
Remark:	The EUT is powered by DC.The total length of the cable which connected to LAN port for BMS and DC power port does not exceed 3 m and the cable is inside a building according to the manufacturer's functional specification.

4.4.1. E.U.T. Operation:

Operating Environment:	
Temperature:	/
Humidity:	/
Atmospheric Pressure:	/
Final test mode:	/

4.4.2. Test Setup Diagram:



4.4.3. Test Data:

N/A:According to the relevant functions of EUT, this test items not applicable.

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

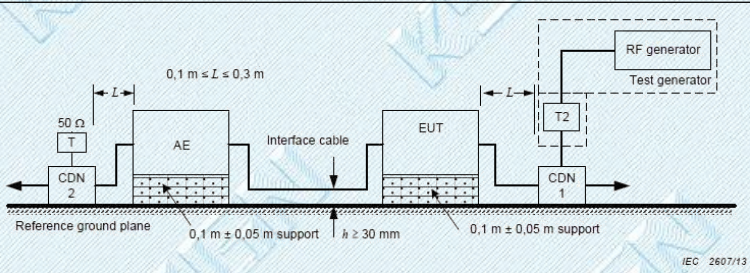
4.5. Radio-frequency common mode

Test Requirement:	Table 2.1,Table 3.1,Table 4.1
Test Method:	EN 61000-4-6:2014
Procedure:	Frequency Range: 0.15MHz to 80MHz Modulation: 80%, 1kHz Amplitude Modulation Step Size 1%
Performance Criteria:	A
Remark:	The EUT is powered by DC.The total length of the cable which connected to LAN port for BMS and DC power port does not exceed 3 m and the cable is inside a building according to the manufacturer's functional specification.

4.5.1. E.U.T. Operation:

Operating Environment:	
Temperature:	/
Humidity:	/
Atmospheric Pressure:	/
Final test mode:	/

4.5.2. Test Setup Diagram:



4.5.3. Test Data:

N/A:According to the relevant functions of EUT, this test items not applicable.

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

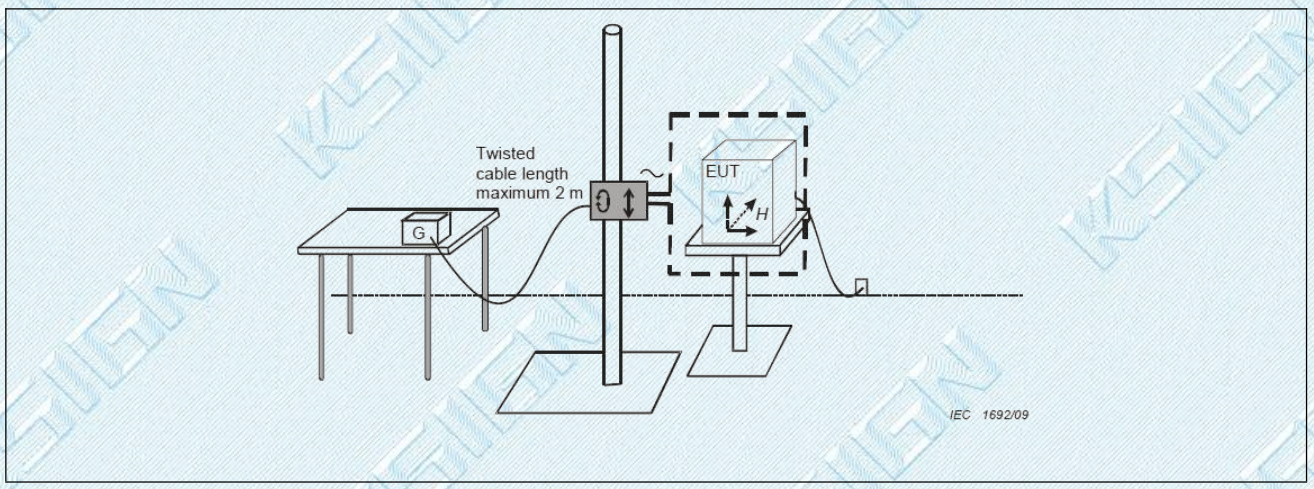
4.6. Power-frequency magnetic field

Test Requirement:	Table 1.1
Test Method:	EN 61000-4-8:2010
Procedure:	Test Frequency: 50Hz Test Level: 3A/m&30A/m
Performance Criteria:	A

4.6.1. E.U.T. Operation:

Operating Environment:	
Temperature:	24.5 °C
Humidity:	44.5 %
Atmospheric Pressure:	101.6 kPa
Final test mode:	Test Mode1, Test Mode2

4.6.2. Test Setup Diagram:



4.6.3. Test Data:

Frequency	Strength (A/m)	Axial	Magnetic Field Type	Result/ Observations
50Hz	3&30	X	Continuous filed	A
50Hz	3&30	Y	Continuous filed	A
50Hz	3&30	Z	Continuous filed	A

A: No degradation in the performance of the EUT was observed.

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

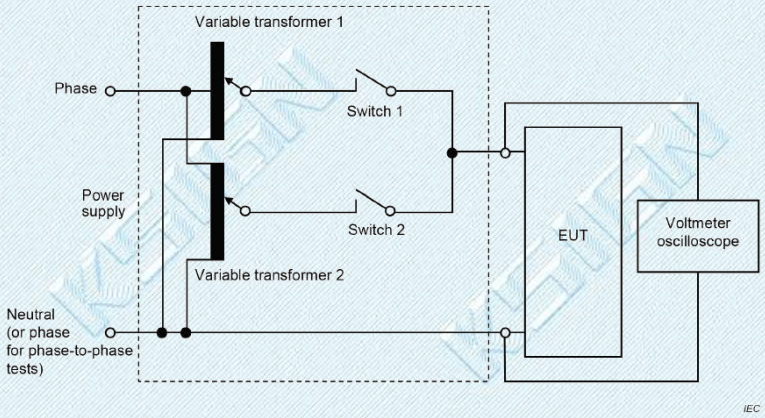
4.7. Voltage dips and Interruptions

Test Requirement:	Table 4.2 & 4.3
Test Method:	EN IEC 61000-4-11:2020
Procedure:	0% of UT (Supply Voltage) for 0.5 Cycle:B; 0% of UT for 1 Cycle:B; 0% of UT for 250 Cycles:C; 40% of UT for 10 Cycles:C; 70% of UT for 25 Cycles:C; No. of Dips / Interruptions: 3 per Level Time between dropout 10s
Performance Criteria:	B,C
Remark:	The EUT is powered by DC.

4.7.1. E.U.T. Operation:

Operating Environment:	
Temperature:	/
Humidity:	/
Atmospheric Pressure:	/
Final test mode:	/

4.7.2. Test Setup Diagram:



4.7.3. Test Data:

N/A:According to the relevant functions of EUT, this test items not applicable.

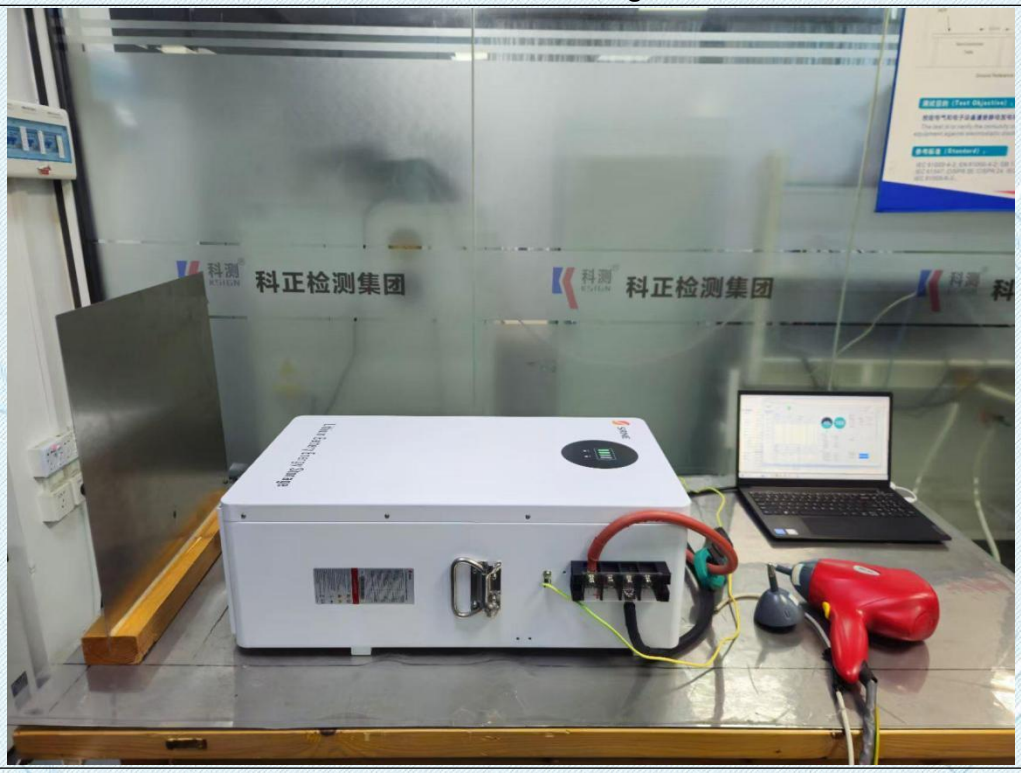
Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

5. EUT TEST PHOTOS

Radiation disturbance (30MHz-1GHz)


Radiation disturbance (above 1GHz)


Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

Electrostatic discharge


Radio-frequency electromagnetic field


Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com



Fast transients on Input and output DC power ports



Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

Power-frequency magnetic field


Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

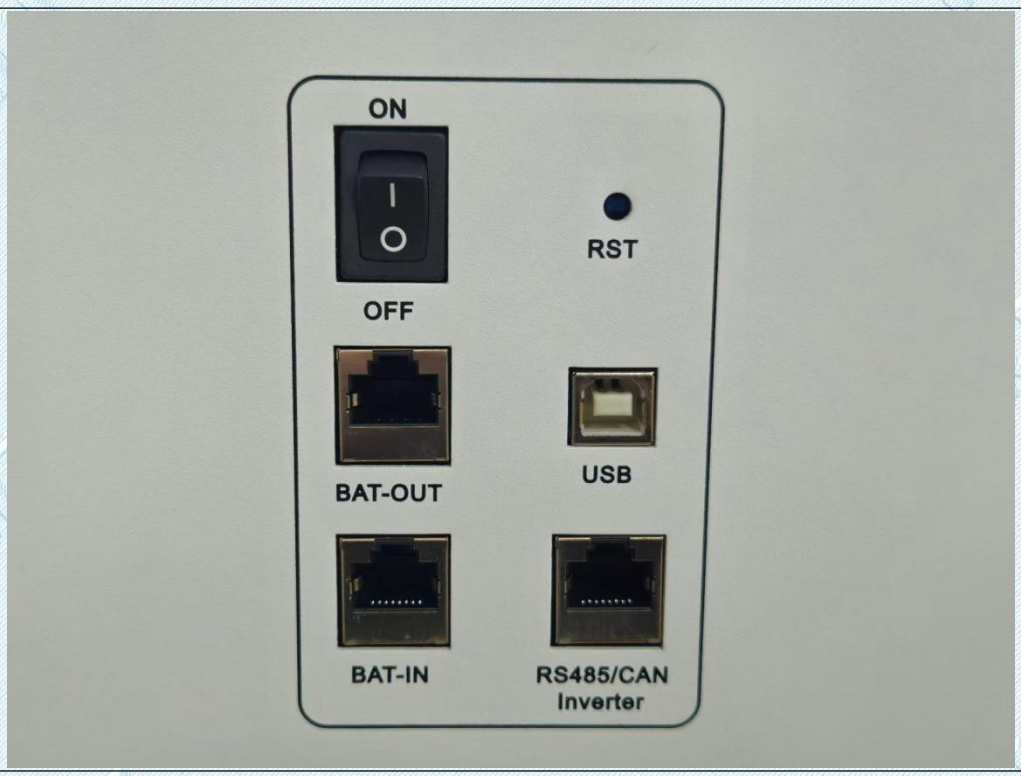
6. PHOTOGRAPHS OF EUT CONSTRUCTIONAL

External

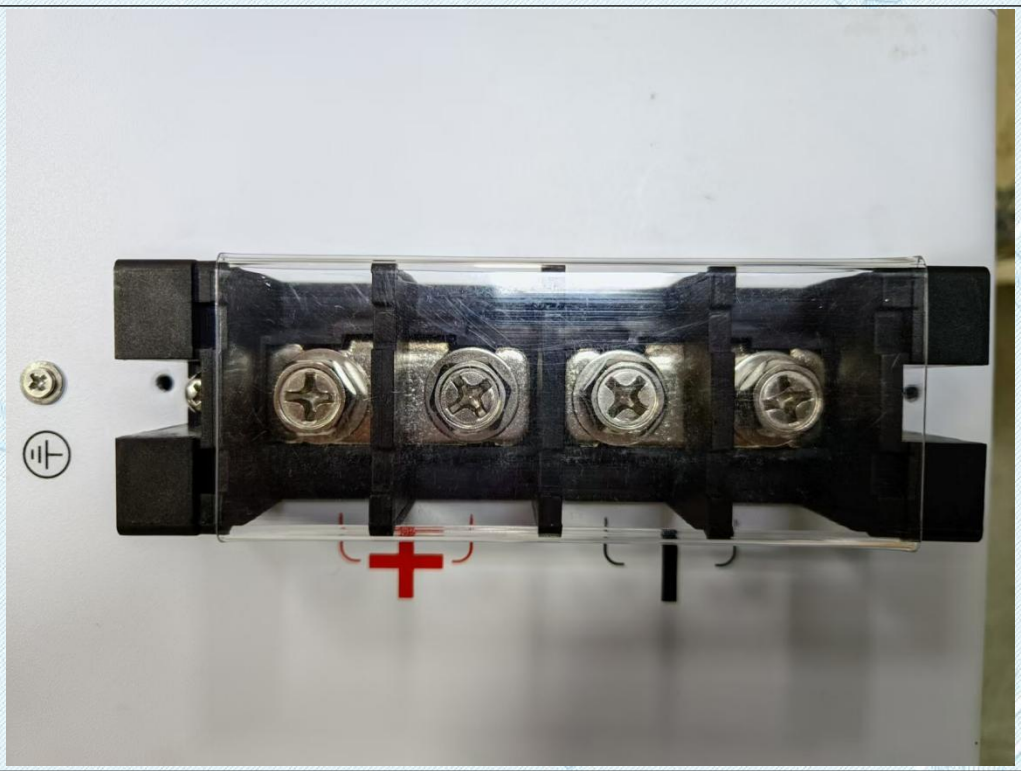



Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com





Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com



--THE END--

Add: West Side of 1/F., Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu, Shatou, Shajing, Bao'an District, Shenzhen, Guangdong, China
Tel: +(86) 0755-2985 2678 Fax: +(86) 0755-2985 2397 E-mail: info@gdksign.cn Web: www.gdksign.com

Important Notice

1. The results are valid only for the samples submitted.
2. The report is invalid without the "APPROVED Seal" and the "Riding Seam Seal".
3. This report is invalid without the signature of the main inspector, reviewer, or approver.
4. The testing report cannot be partially copied without the written consent of our laboratory.
5. If the report is not stamped with the "CMA" logo, it indicates that the report does not have any social certification effect in China.
6. Product information, customer information, and sample sources are all provided by the client, and we are not responsible for their authenticity.
7. The inspection basis or inspection items marked with "★" are not within the scope of CNAS,CMA and A2LA accreditation in this laboratory.
8. Reports that are transferred, copied, stolen, impersonated, altered, or tampered with in any media form without authorization are invalid.
9. If you have any objections to this report, you can appeal to our unit within 15 days after receiving the report. Failure to do so will not be accepted.
10. For situations where compliance decision needs to be made based on test result, such as when there are no relevant decision rules required by the regulations, standards, or technical specifications used, or when there are no relevant customer requirements, the report issued by our laboratory refer to ILAC-G8:09-2019 and CNAS-GL015:2022 using simple acceptance decision rules.

Laboratory: **KSIGN(Guangdong) Testing Co., Ltd.**

Address: **First Floor West Side, Building C, Zone A, Fuyuan New Factory, Jiujiu Industrial Park, Minzhu Village, Shatou Community, Shajing Street, Bao'an District, Shenzhen City, Guangdong Province, P. R. China. 518104**

Tel.: **+(86) 0755-29852678**

Fax.: **+(86) 0755-29852397**

E-mail: **info@gdksign.cn**

Web: **www.gdksign.com**