
EMC Test Report

Report No.: AGC00742201001EE01

PRODUCT DESIGNATION : Smart Following Shooting Gimbal

BRAND NAME : KAANSKY

MODEL NAME : GK01

APPLICANT : SHENZHEN KAANSKY TECHNOLOGY CO., LTD

DATE OF ISSUE : Oct. 22, 2020

STANDARD(S) : EN 55032:2015
EN61000-3-2:2019
EN61000-3-3:2013/A1:2019
EN 55035:2017

REPORT VERSION : V1.0

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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Oct. 22, 2020	Valid	Initial release

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TABLE OF CONTENTS

1 VERIFICATION OF CONFORMITY.....	5
2 SYSTEM DESCRIPTION.....	6
3 MEASUREMENT UNCERTAINTY	6
4 PRODUCT INFORMATION	7
5 SUPPORT EQUIPMENT	8
6 TEST FACILITY	9
7 TEST EQUIPMENT LIST.....	9
8 TESTSUMMARY LSIT.....	9
9 EN 55032 LINE CONDUCTED EMISSION TEST.....	12
9.1 LIMITS OF LINE CONDUCTED EMISSION TEST	12
9.2 BLOCK DIAGRAM OF TEST SETUP.....	12
9.3 PROCEDURE OF LINE CONDUCTED EMISSION TEST	13
9.4 TEST RESULT OF LINE CONDUCTED EMISSION TEST	14
10 EN 55032 RADIATED EMISSION TEST.....	15
10.1 LIMITS OF RADIATED DISTURBANCES.....	16
10.2 BLOCK DIAGRAM OF TEST SETUP.....	16
10.3 PROCEDURE OF RADIATED EMISSION TEST	17
10.4 TEST RESULT OF RADIATED EMISSION TEST	18
11 EN 61000-3-2 POWER HARMONICS TEST.....	20
11.1 BLOCK DIAGRAM OF TEST SETUP	20
11.2 RESULT	20
12 EN 61000-3-3 VOLTAGE FLUCTUATION / FLICKER TEST	21
12.1 BLOCK DIAGRAM OF TEST SETUP.....	21
12.2 RESULT.....	22
13 EN 61000-4-2 ESD IMMUNITY TEST	23
13.1 BLOCK DIAGRAM OF TEST SETUP.....	23
13.2 TEST PROCEDURE	24
13.3 PERFORMANCE & RESULT	24

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14 EN 61000-4-3 RS IMMUNITY TEST.....	25
14.1 BLOCK DIAGRAM OF TEST SETUP.....	25
14.2 TEST PROCEDURE	26
14.3 PERFORMANCE & RESULT	26
15 EN 61000-4-4 EFT IMMUNITY TEST.....	27
15.1 BLOCK DIAGRAM OF TEST SETUP.....	27
15.2 TEST PROCEDURE	28
15.3 PERFORMANCE & RESULT	28
16 EN 61000-4-5 SURGE IMMUNITY TEST.....	29
16.1 BLOCK DIAGRAM OF TEST SETUP.....	29
16.2 TEST PROCEDURE	30
16.3 PERFORMANCE & RESULT	30
17 EN 61000-4-6 CS IMMUNITY TEST.....	31
17.1 BLOCK DIAGRAM OF TEST SETUP.....	31
17.2 TEST PROCEDURE	32
17.3 PERFORMANCE & RESULT	32
18 EN 61000-4-11 DIPS IMMUNITY TEST	33
18.1 BLOCK DIAGRAM OF TEST SETUP.....	33
18.2 TEST PROCEDURE	34
18.3 INTERPRETATION	34
APPENDIX A:PHOTOGRAPHS OF TEST SETUP	35
APPENDIX B: PHOTOGRAPHS OF EUT	39

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1 VERIFICATION OF CONFORMITY

Applicant	SHENZHEN KAANSKY TECHNOLOGY CO., LTD
Address	Unit2502, Building3B, Cloud Park, No.2018 Xuegang Road, Bantian, Longgang District, Shenzhen
Manufacturer	SHENZHEN KAANSKY TECHNOLOGY CO., LTD
Address	Unit2502, Building3B, Cloud Park, No.2018 Xuegang Road, Bantian, Longgang District, Shenzhen
Factory	SHENZHEN KAANSKY TECHNOLOGY CO., LTD
Address	Unit2502, Building3B, Cloud Park, No.2018 Xuegang Road, Bantian, Longgang District, Shenzhen
Product Designation	Smart Following Shooting Gimbal
Brand Name	KAANSKY
Test Model	GK01
Date of test	Oct. 16, 2020 to Oct. 22, 2020
Deviation	None any deviation from the test method.
Condition of Test Sample	Normal
Test Result	Pass

The above equipment was tested by Attestation of Global Compliance (Shenzhen) Co., Ltd. for compliance with the requirements set forth in the Technical Standards mentioned above. This said equipment in the configuration described in this report shows the maximum emission levels emanating from equipment and the level of the immunity endurance of the equipment are within the compliance requirements.

The test results of this report relate only to the tested sample identified in this report.

Prepared By

*Faler. Yang*Faler Yang(Yang Feiyue)
Project Engineer

Oct. 22, 2020

Reviewed By

*Erik. Yang*Erik Yang(Yang Jianmin)
Reviewer

Oct. 22, 2020

Approved By

*Forrest Lei*Forrest Lei(Lei Yonggang)
Authorized Officer

Oct. 22, 2020

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2 SYSTEM DESCRIPTION

TEST MODE DESCRIPTION		
NO.	TEST MODE DESCRIPTION	WORST
1	Working with Adapter	V
2	Working with Battery	--
Note: 1.V means EMI worst mode. 2.Only worst mode data recorded in the test report.		

3 MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the “Guide to the Expression of Uncertainty in measurement” (GUM) published by ISO.

- Uncertainty of Conducted Emission, $U_c = \pm 3.6\text{dB}$
- Uncertainty of Radiated Emission, $U_c = \pm 4.5\text{dB}$

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4 PRODUCT INFORMATION

Housing Type	Plastic and metal
EUT Input Rating	DC5V by Adapter
EUT Output Rating	DC5V 2.1A Total

I/O Port Information (☒ Applicable ☐ Not Applicable)

I/O Port of EUT			
I/O Port Type	Number	Cable Description	Tested With
Micro-B	1	1.0m Unshielded	1
USB	2	--	2

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5 SUPPORT EQUIPMENT

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
Adapter	Ruijing	STC-A51A-A	--	--	--
Phone	--	--	--	--	

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6 TEST FACILITY

Location	Hechang Five Road East No.8,Zhongkai Ave., New District of Port, Huizhou City, Guangdong Province, China 516006
-----------------	---

7 TEST EQUIPMENT LIST

TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
EMI Test Receiver	KEYSIGHT	N9038A	MY54130082	Apr.16,2020	Apr.15,2021
TWO-LINE V-Network	Rohde&Schwarz	ENV216	101404	Sep.19,2020	Sep.18,2021
Test software	Tonscend	JS32-CE (Ver. 2.5)	N/A	N/A	N/A

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
EMI Test Receiver	Rohde&Schwarz	ESU 8	100471	Sep.19,2020	Sep.18,2021
Log Periodic Antenna	Schwarzbeck	VULB 9163	9163-603	Sep.19,2020	Sep.18,2021
3m Semi-anechoic Chamber	TDK	966	201244UH0077	Sep.29,2020	Sep.28,2021
Preamplifier	Schwarzbeck	BBV9743	9743-0071	Apr.16,2020	Apr.15,2021
Antenna	Schwarzbeck	9120D-1122	201244UH0067	Sep.20,2020	Sep.19,2021
Test software	Tonscend	JS32-RE (Ver. 2.5)	N/A	N/A	N/A

TEST EQUIPMENT OF ESD TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
ESD Generator	TESEQ	NSG438	1240	Sep. 24, 2020	Sep. 23, 2021

TEST EQUIPMENT OF POWER HARMONICS / VOLTAGE FLUCTUATION / FLICKER

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
3kVA AC Power Source	TESEQ	NSG1007	1303A00031	Sep.24,2020	Sep.23,2021
Harmonic/Flicker Test System	TESEQ	CCN 1000-1	1303A00031	Sep.25,2020	Sep.24,2021
Harmonic/Flicker test software	TESEQ	Win2100v4	/	N/A	N/A

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TEST EQUIPMENT OF SURGE/EFT/DIPSTEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
EFT&SURGE Tester	TESEQ	NSG3040	1993	Sep.19,2020	Sep.18,2021
EFT Coupling Clamp	TESEQ	NSG3040	2163	Sep.19,2020	Sep.18,2021

TEST EQUIPMENT OF RS IMMUNITY TEST

Description	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Transmitting Antenna	Schwarzbeck	VULP9118 E-921	D69250	Sep.25,2020	Sep.24,2021
Amplifier (80-1000MHz)	MILMEGA	80RF1000-175	1055332	Sep.25,2020	Sep.24,2021
Signal Generator	Agilent	N5181B	MY53050432	Sep.19,2020	Sep.18,2021
Directional Coupler	Werlatone	C5597-10	99814	Sep.25,2020	Sep.24,2021
Anechoic chamber	TDK	844	201244UH0078	Sep.19,2020	Sep.18,2021
Power Meter	Agilent	N1914A	MY53060011	Sep.25,2020	Sep.24,2021
Power Sensor	Agilent	E9304A	MY53100010	Sep.25,2020	Sep.24,2021

TEST EQUIPMENT OF CS IMMUNITY TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Signal Generator	TESEQ	NSG4070	39709	Apr.16,2020	Apr.15,2021
CDN	TESEQ	CDN M016	34643	Sep.25,2020	Sep.24,2021
Power Amplifier	TESEQ	CBA 230M-080	T44255	Sep.25,2020	Sep.24,2021
Directional Couple	werlatone	C5086-10	99841	Sep.25,2020	Sep.24,2021
Power Sensor	Agilent	E9304A	MY53100008	Sep.25,2020	Sep.24,2021
Power Meter	Agilent	N1914A	MY53060011	Sep.25,2020	Sep.24,2021

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8 TESTSUMMARY LSIT

Test item	Test Requirement	Test Method	Class/Severity	Result
CONDUCTED EMISSION	EN 55032	EN 55032	Class B	Pass
RADIATED EMISSION	EN 55032	EN 55032	Class B	Pass
Harmonic current emission	EN 61000-3-2	EN 61000-3-2	Class A	N/A
Voltage fluctuations & flicker	EN 61000-3-3	EN 61000-3-3	§5 of EN 61000-3-3	Pass
Electrostatic Discharge Immunity	EN 55035	EN 61000-4-2	± 8.0 kV (Air Discharge) ± 4.0 kV (Contact Discharge) ± 4.0 kV (Indirect Discharge)	Pass
Radiated RF Electromagnetic	EN 55035	EN 61000-4-3	3V/m with 80% AM. 1kHz Modulation.	Pass
Electrical fast transient/burst Immunity	EN 55035	EN 61000-4-4	+/- 1kV for Power Supply Lines	Pass
SURGE IMMUNITY	EN 55035	EN 61000-4-5	+/- 1kV (Line to Line) +/- 2kV (Line to Ground)	Pass
Immunity to Conducted Disturbances Induced by RF fields	EN 55035	EN 61000-4-6	3V(0.15MHz-10MHz) 3V-1V(10MHz-30MHz) 1V(30MHz-80MHz) with 80% AM. 1 kHz Modulation	Pass
Power frequency magnetic field	EN 55035	EN 61000-4-8	1A/m 50Hz or 60Hz	N/A
Voltage dips and short interruptions immunity	EN 55035	EN 61000-4-11	0degrees	Pass

Note : N/A means not applicable.

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9 EN 55032 LINE CONDUCTED EMISSION TEST

9.1 LIMITS OF LINE CONDUCTED EMISSION TEST

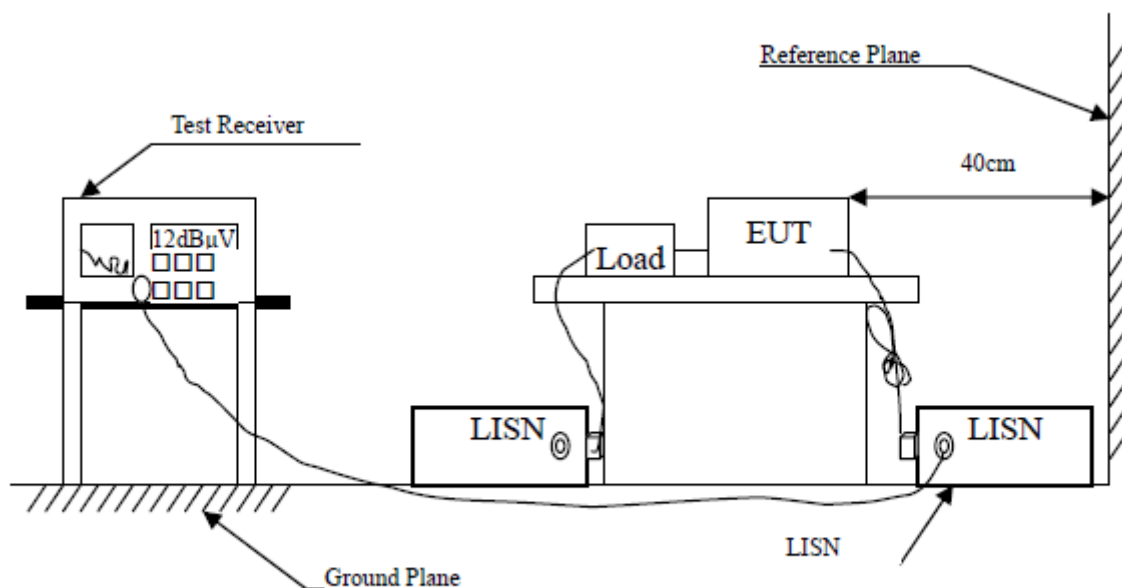
AT AC MAINS POWER PORT

Frequency	Maximum RF Line Voltage	
	Q.P.(dBuV)	Average(dBuV)
150kHz-500kHz	66-56	56-46
500kHz-5MHz	56	46
5MHz-30MHz	60	50

Note:

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

9.2 BLOCK DIAGRAM OF TEST SETUP



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9.3 PROCEDURE OF LINE CONDUCTED EMISSION TEST

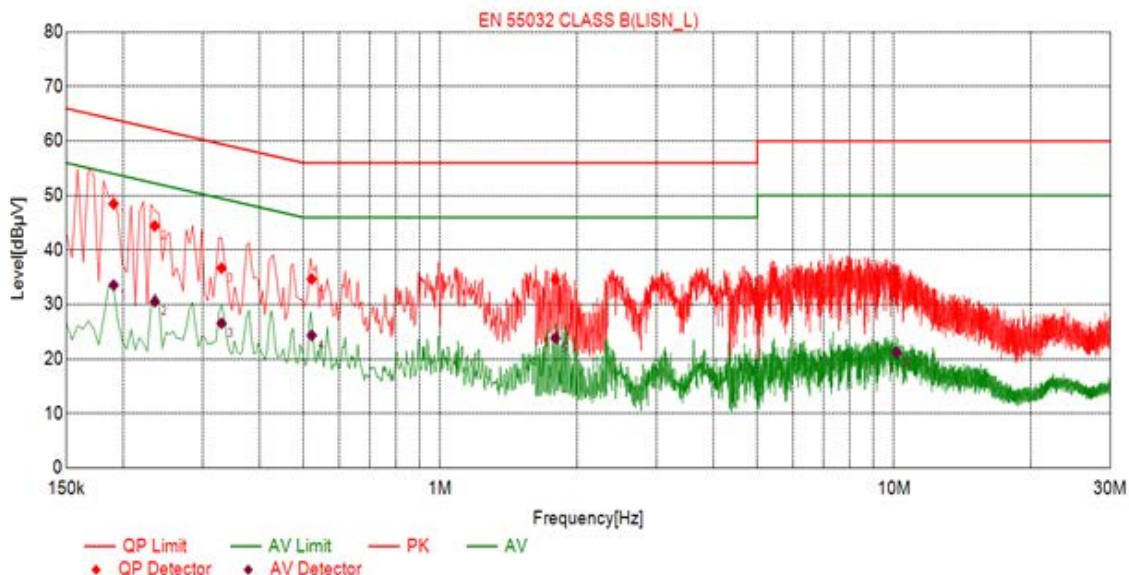
- (1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per EN55032 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 10cm non-conductive covering to insulate the EUT from the ground plane.
- (2) Support equipment, if needed, was placed as per EN55032.
- (3) All I/O cables were positioned to simulate typical actual usage as per EN55032.
- (4) The EUT received DC5V from adapter which received AC 230V 50Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- (5) All support equipments received power from a second LISN supplying power of AC230V and 110V/50Hz, if any.
- (6) The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- (7) Analyzer / Receiver scanned from 150kHz to 30MHz for emissions in each of the test modes.
- (8) During the above scans, the emissions were maximized by cable manipulation.
- (9) A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions.
- (10) 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. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.

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9.4 TEST RESULT OF LINE CONDUCTED EMISSION TEST

LINE CONDUCTED EMISSION TEST-L



NO.	Freq. [MHz]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]
1	0.1909	48.47	64.00	15.53	33.57	54.00	20.43
2	0.2351	44.44	62.27	17.83	30.54	52.27	21.73
3	0.3300	36.70	59.45	22.75	26.57	49.45	22.88
4	0.5215	34.68	56.00	21.32	24.35	46.00	21.65
5	1.7948	34.57	56.00	21.43	23.83	46.00	22.17
6	10.1392	33.30	60.00	26.70	21.18	50.00	28.82

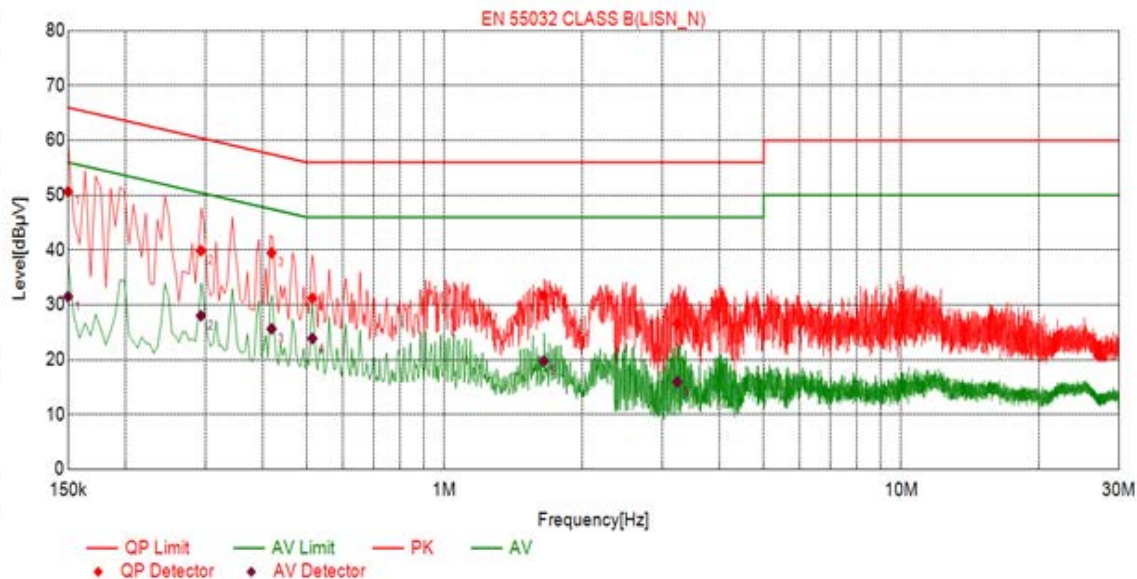
RESULT: PASS

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LINE CONDUCTED EMISSION TEST-N



NO.	Freq. [MHz]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]
1	0.1500	50.65	66.00	15.35	31.51	56.00	24.49
2	0.2932	39.90	60.43	20.53	28.04	50.43	22.39
3	0.4186	39.48	57.48	18.00	25.63	47.48	21.85
4	0.5140	31.25	56.00	24.75	23.88	46.00	22.12
5	1.6494	31.73	56.00	24.27	19.77	46.00	26.23
6	3.2350	26.57	56.00	29.43	15.95	46.00	30.05

RESULT: PASS

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10 EN 55032 RADIATED EMISSION TEST

10.1 LIMITS OF RADIATED DISTURBANCES

Limits for radiated disturbance 30M to1 GHz at a measurement distance of 3 m

Frequency range (MHz)	Quasi peak limits(dBuV/m), for Class B ITE, at 3m measurement distance
30 - 230	40
230 - 1000	47

Limits for radiated disturbance above 1 GHz at a measurement distance of 3 m

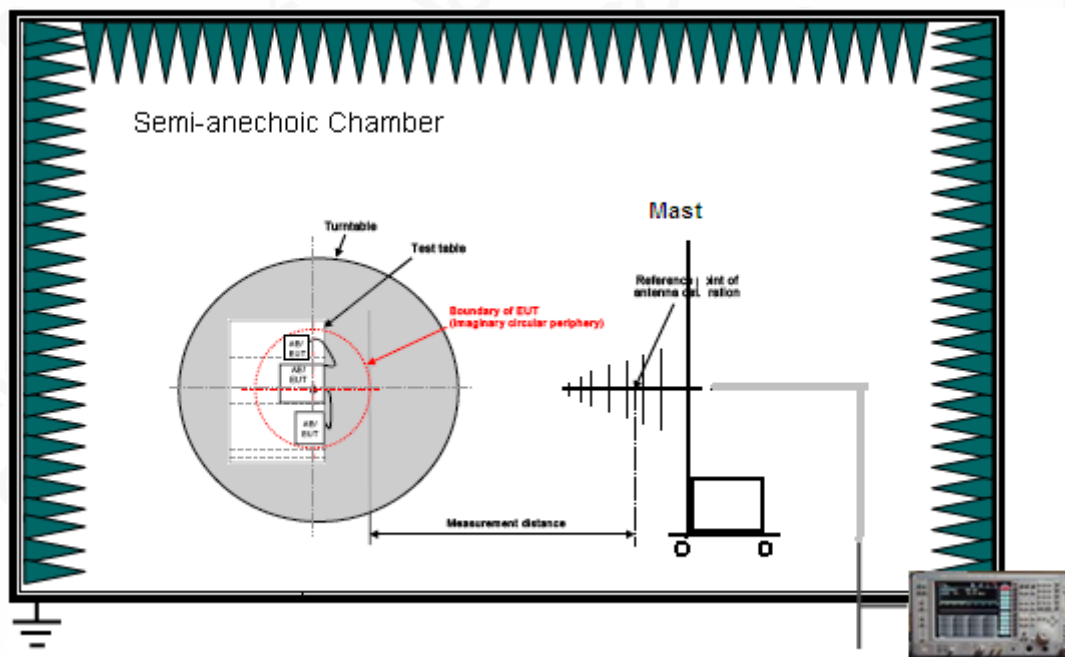
Frequency range (MHz)	Limits (dBuV/m), Class B ITE	
	Peak	Average
1000-3000	70	50
3000-6000	74	54

Notes:

1. The lower limit shall apply at the transition frequency.
2. Additional provisions may be required for cases where interference occurs.

10.2 BLOCK DIAGRAM OF TEST SETUP

System Diagram of Connections between EUT and Simulators



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10.3 PROCEDURE OF RADIATED EMISSION TEST

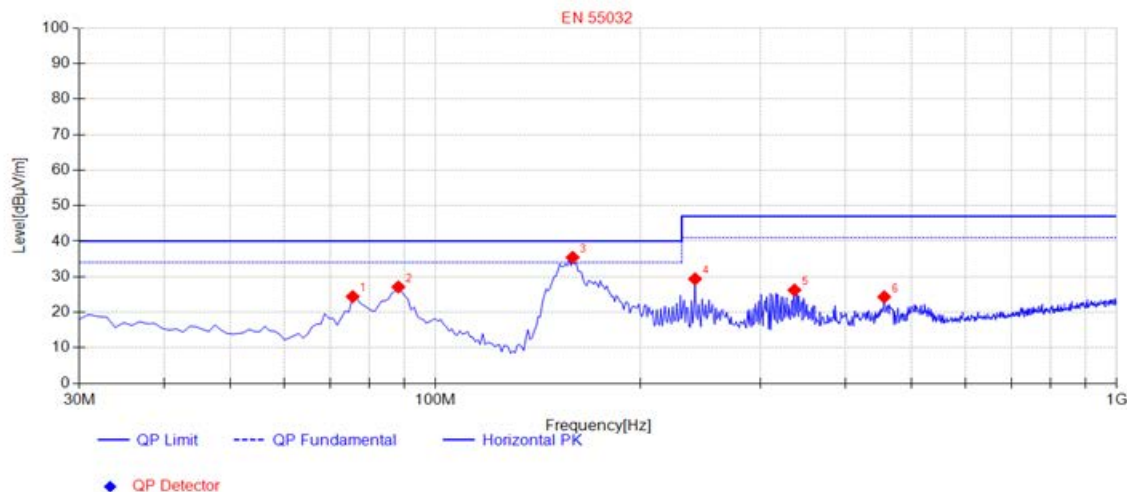
- (1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per EN 55032 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 10cm non-conductive covering to insulate the EUT from the ground plane.
- (2) Support equipment, if needed, was placed as per EN 55032.
- (3) All I/O cables were positioned to simulate typical actual usage as per EN 55032.
- (4) The EUT received DC5V power from adapter which received AC230V/50Hz power from socket under the turntable.
- (5) The antenna was placed at 3 meter away from the EUT as stated in EN 55032. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.
- (6) 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.
- (7) The test mode(s) were scanned during the test:
- (8) 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 Q.P./Peak reading is presented.

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10.4 TEST RESULT OF RADIATED EMISSION TEST

Radiated Emission Test at 3m Distance-Horizontal



NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	75.5900	24.41	-18.97	40.00	15.59	200	200	Horizontal
2	88.2000	27.12	-16.91	40.00	12.88	200	3	Horizontal
3	159.0100	35.44	-17.86	40.00	4.56	200	52	Horizontal
4	240.4900	29.38	-14.25	47.00	17.62	100	299	Horizontal
5	336.5200	26.25	-12.07	47.00	20.75	100	65	Horizontal
6	455.8300	24.32	-10.21	47.00	22.68	200	91	Horizontal

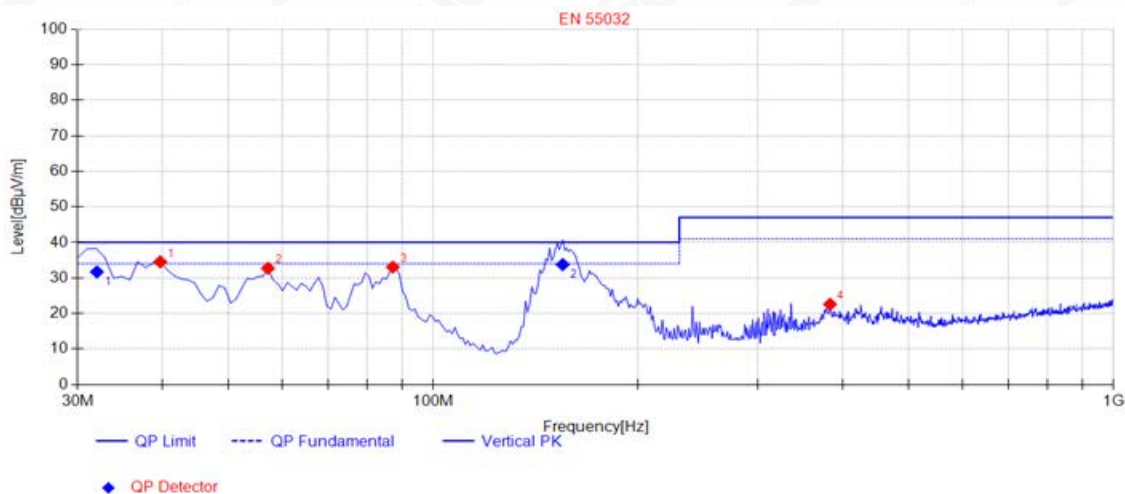
RESULT: PASS

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Radiated Emission Test at 3m Distance-Vertical



PK Data List

NO.	Freq. [MHz]	Level [dBμV/m]	Factor [dB]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	39.7000	34.53	-13.63	40.00	5.47	100	350	Vertical
2	57.1600	32.72	-13.64	40.00	7.28	100	122	Vertical
3	87.2300	33.05	-17.22	40.00	6.95	100	360	Vertical
4	383.0800	22.60	-11.37	47.00	24.40	100	360	Vertical

QP Data List

NO.	Freq. [MHz]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	32.0352	-15.68	31.69	40.00	8.31	108	283	Vertical
2	154.9883	-18.03	33.75	40.00	6.25	106	120.9	Vertical

RESULT: PASS

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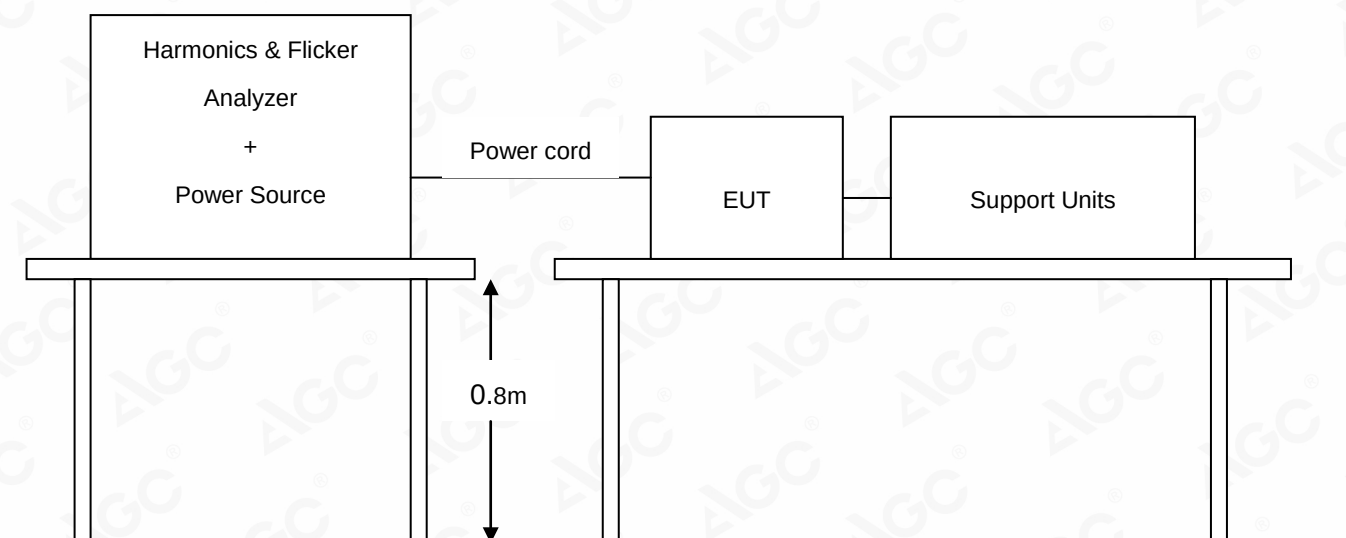


11 EN 61000-3-2 POWER HARMONICS TEST

POWER HARMONICS MEASUREMENT

Port	AC mains
Basic Standard	EN 61000-3-2
Limits	☒ CLASS A ; ☐ CLASS B; ☐ CLASS C; ☐ CLASS D
Temperature	25°C
Humidity	55% RH

11.1 BLOCK DIAGRAM OF TEST SETUP



11.2 RESULT

Note: Owing to the power of EUT is less than 75W, so test is not applicable.

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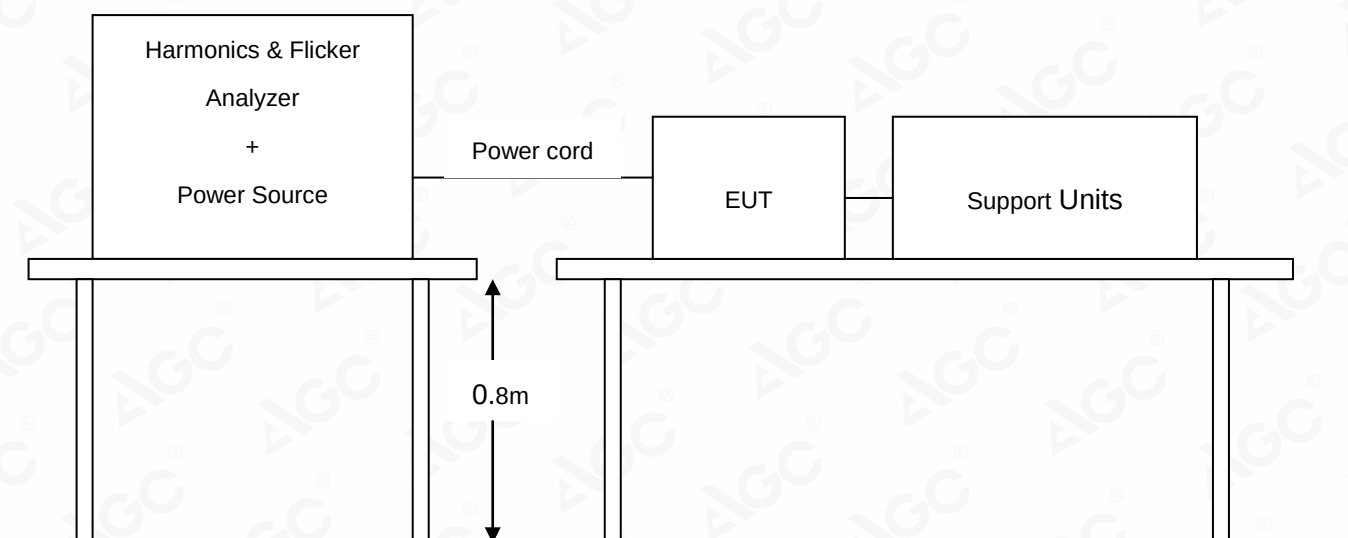


12 EN 61000-3-3 VOLTAGE FLUCTUATION / FLICKER TEST

VOLTAGE FLUCTUATION/FLICKER MEASUREMENT

Port	AC mains
Basic Standard	EN 61000-3-3
Limits	§5 of EN 61000-3-3
Temperature	25°C
Humidity	55% RH

12.1 BLOCK DIAGRAM OF TEST SETUP



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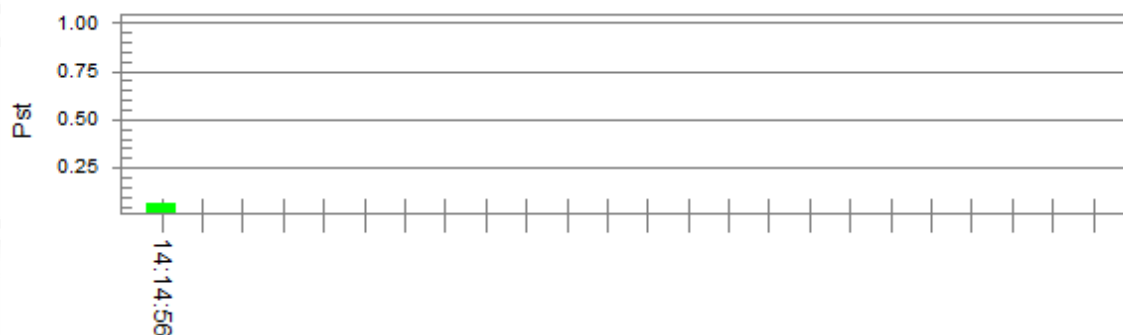


12.2 RESULT

Flicker Test Summary per EN/IEC61000-3-3 (Run time)

Pst_i and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt): 231.04

Highest dt (%):	0.00	Test limit (%):	N/A	N/A
Time(mS) >dt:	0.0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	0.00	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650	Pass

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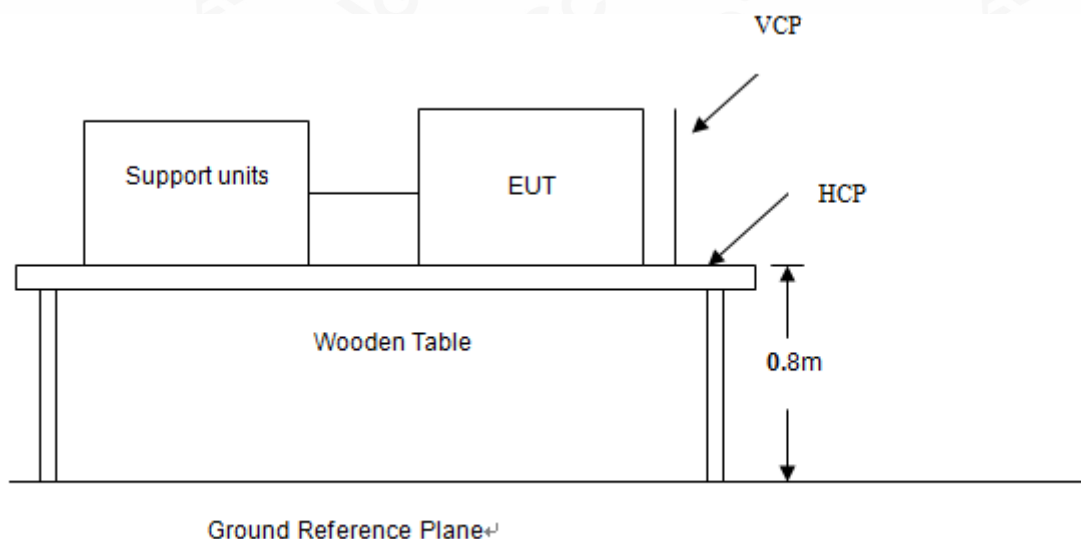
13 EN 61000-4-2 ESD IMMUNITY TEST

ELECTROSTATIC DISCHARGE (ESD) IMMUNITY TEST

Port	Enclosure
Basic Standard	EN 61000-4-2
Test Level	± 8.0 kV (Air Discharge) ± 4.0 kV (Contact Discharge) ± 4.0 kV (Indirect Discharge)
Standard require	B
Temperature	23.6°C
Humidity	58.3% RH

13.1 BLOCK DIAGRAM OF TEST SETUP

(The 470 k ohm resistors are installed per standard requirement)



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13.2 TEST PROCEDURE

The test procedure shall be in accordance with EN 61000-4-2. Electrostatic discharges shall be applied only to points and surfaces of the EUT which are expected to be touched during normal operation, including user access operations specified in the user manual, for example cleaning or adding consumables when the EUT is powered. The application of discharges to the contacts of open connectors is not required.

The number of test points is EUT dependent. Sub clause 8.3.1 and Clause A.5 of EN 61000-4-2 shall be taken into consideration when selecting test points, paying particular attention to keyboards, dialling pads, power switches, mice, drive slots, card slots, the areas around communication ports, etc.

When applying direct discharges to a portable or handheld battery-powered EUT with a display screen, it may not be possible to observe the screen for a given EUT orientation. If observation of the screen is necessary during this test, the EUT may be mounted vertically using non-metallic supports.

Note: As per the A2 to EN 61000-4-2, a bleed resistor cable is connected between the EUT and HCP during the test. The electrostatic discharges were applied as follows:

Voltage	Coupling	Test Performance	Result
±4kV	Contact Discharge	No function loss	A
±4kV	Indirect Discharge HCP (Front)	No function loss	A
±4kV	Indirect Discharge HCP (Left)	No function loss	A
±4kV	Indirect Discharge HCP (Back)	No function loss	A
±4kV	Indirect Discharge HCP (Right)	No function loss	A
±4kV	Indirect Discharge VCP (Front)	No function loss	A
±4kV	Indirect Discharge VCP (Left)	No function loss	A
±4kV	Indirect Discharge VCP (Back)	No function loss	A
±4kV	Indirect Discharge VCP (Right)	No function loss	A
±8kV	Air Discharge	No function loss	A

13.3 PERFORMANCE & RESULT

Criteria A:	The apparatus continues to operate as intended. 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. In some cases the performance level may be replaced by a permissible loss of performance.
Criteria B:	The apparatus continues 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 apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
Criteria C:	Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

☒ **PASS**
☐ **FAIL**

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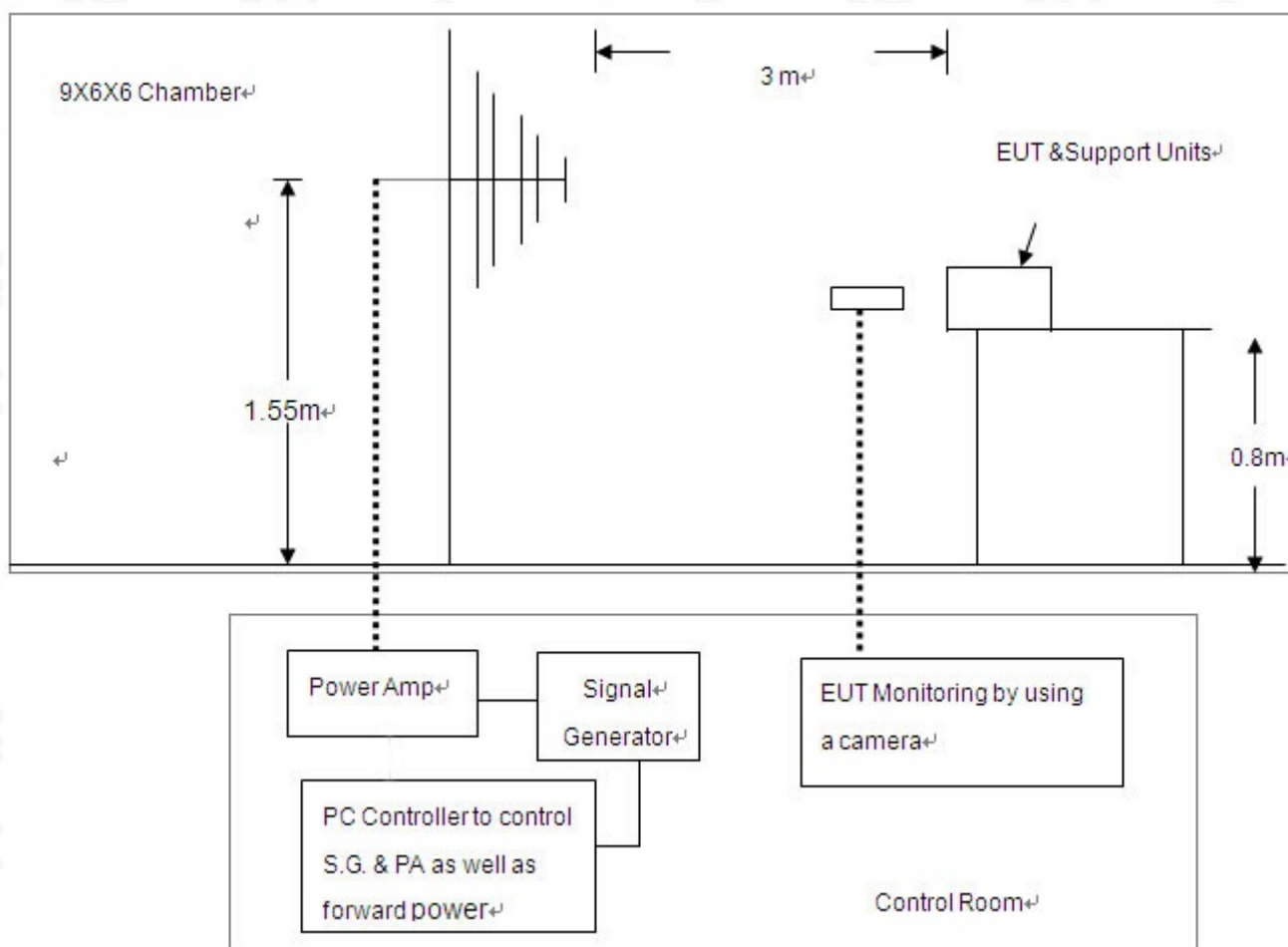


14 EN 61000-4-3 RS IMMUNITY TEST

RADIATED ELECTROMAGNETIC FIELD IMMUNITY TEST

Port	Enclosure
Basic Standard	EN 61000-4-3
Test Level:	3V/m with 80% AM. 1kHz Modulation.
Standard require	A
Temperature	23.4°C
Humidity	58.0% RH

14.1 BLOCK DIAGRAM OF TEST SETUP



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14.2 TEST PROCEDURE

The EUT was located at the edge of supporting table keep 3 meter away from transmitting antenna, it just the calibrated square area of field uniformity. The support units were located outside of the uniformity area, but the cable(s) connected with EUT were exposed to the calibrated field as per EN 61000-4-3.

EUT worked with resistance load, and make sure EUT worked normally.

Setting the testing parameters of RS test software per EN 61000-4-3.

Performing the test at each side of with specified level (3V/m) at 1% steps and test frequency from 80MHz to 1000MHz

Recording the test result in following table.

EN 61000-4-3 Final test conditions:

Test level: 3V/m

Steps: 1 % of fundamental

Dwell Time: 1 sec

Range (MHz)	Field	Modulation	Polarity	Position	Test Performance	Result
80-1000	3V/m	AM	H/V	Front	No function loss	A
80-1000	3V/m	AM	H/V	Left	No function loss	A
80-1000	3V/m	AM	H/V	Back	No function loss	A
80-1000	3V/m	AM	H/V	Right	No function loss	A
1800,2600,3500,5000	3V/m	AM	H/V	Front	No function loss	A
1800,2600,3500,5000	3V/m	AM	H/V	Left	No function loss	A
1800,2600,3500,5000	3V/m	AM	H/V	Back	No function loss	A
1800,2600,3500,5000	3V/m	AM	H/V	Right	No function loss	A

Frequency (± 1 %) for Spot test.

14.3 PERFORMANCE & RESULT

Criteria A:	The apparatus continues to operate as intended. 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. In some cases the performance level may be replaced by a permissible loss of performance.
Criteria B:	The apparatus continues 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 apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
Criteria C:	Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

☒ **PASS**
☐ **FAIL**

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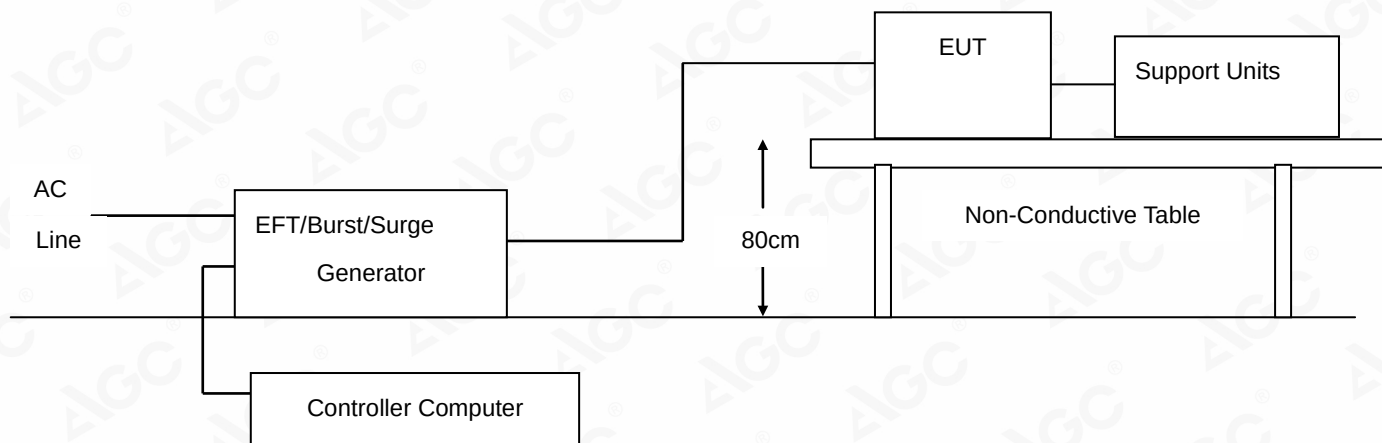


15 EN 61000-4-4 EFT IMMUNITY TEST

ELECTRICAL FAST TRANSIENTS/BURST IMMUNITY TEST

Port	On Power Supply Lines
Basic Standard	EN 61000-4-4
Test Level	+/- 1kV for Power Supply Lines
Standard require	B
Temperature	23.6°C
Humidity	57.8% RH

15.1 BLOCK DIAGRAM OF TEST SETUP



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15.2 TEST PROCEDURE

The EUT and support units were located on a wooden table 0.8m away from ground reference plane.
A 1.0 meter long power cord was attached to EUT during the test.
The length of communication cable between communication port and clamp was keeping within 1 meter.
EUT worked with resistance load, and make sure EUT worked normally.
Related peripherals work during the test.
Recording the test result as shown in following table.

Test conditions:

Impulse Frequency: 5kHz

Tr/Th: 5/50ns

Burst Duration: 15ms

Burst Period: 300ms

Inject Line	Voltage kV	Inject Method	Test Performance	Result
L+N	+/- 1	Direct	No function loss	A

15.3 PERFORMANCE & RESULT

Criteria A:	The apparatus continues to operate as intended. 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. In some cases the performance level may be replaced by a permissible loss of performance.
Criteria B:	The apparatus continues 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 apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
Criteria C:	Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

☒ PASS ☐ FAIL
--

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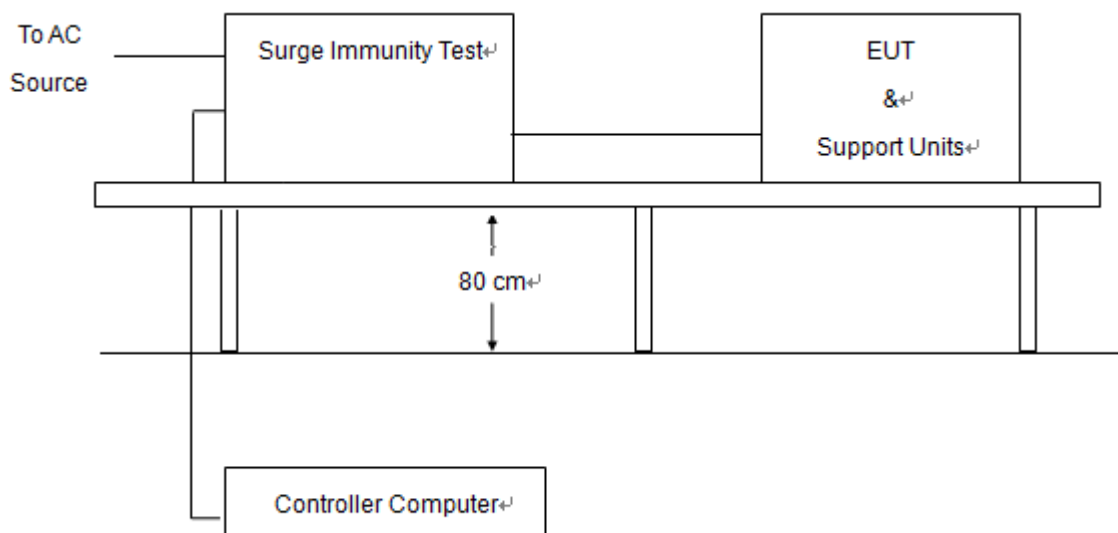


16 EN 61000-4-5 SURGE IMMUNITY TEST

SURGE IMMUNITY TEST

Port	On Power Supply Lines
Basic Standard	EN 61000-4-5
Requirements	+/- 1kV (Line to Line)
Standard require	B
Temperature	23.6°C
Humidity	57.8% RH

16.1 BLOCK DIAGRAM OF TEST SETUP



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16.2 TEST PROCEDURE

The EUT and support units were located on a wooden table 0.8 m away from ground floor.

EUT worked with resistance load, and make sure EUT worked normally.

Recording the test result as shown in following table.

Test conditions:

Voltage Waveform	1.2/50 μ s
Current Waveform	8/20 μ s
Polarity	Positive/Negative
Phase angle	90°, 270°
Number of Test	5

Coupling Line	Voltage (kV)	Polarity	Coupling Method	Test Performance	Result
L1-N	1	Positive	Capacitive	No function loss	A
L1-N	1	Negative	Capacitive	No function loss	A

16.3 PERFORMANCE & RESULT

Criteria A:	The apparatus continues to operate as intended. 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. In some cases the performance level may be replaced by a permissible loss of performance.
Criteria B:	The apparatus continues 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 apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
Criteria C:	Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

☒ PASS ☐ FAIL
--

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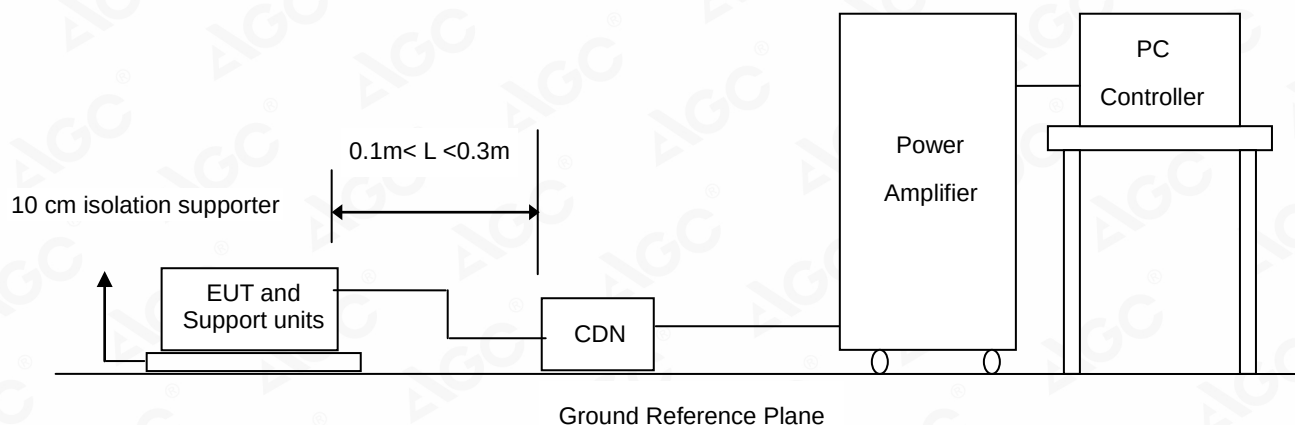
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17 EN 61000-4-6 CS IMMUNITY TEST

Port	On Power Supply Lines
Basic Standard	EN 61000-4-6
Requirements	3V(0.15MHz-10MHz) 3V-1V(10MHz-30MHz) 1V(30MHz-80MHz) with 80% AM. 1 kHz Modulation
Standard require	A
Temperature	23.5°C
Humidity	57.6% RH

17.1 BLOCK DIAGRAM OF TEST SETUP



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17.2 TEST PROCEDURE

The EUT and support units were located at a ground reference plane with the interposition of a 0.1 m thickness insulating support and the CDN was located on GRP directly.

EUT worked with resistance load, and make sure EUT worked normally.

Related peripherals work during the test.

Setting the testing parameters of CS test software per EN 61000-4-6.

Recording the test result in following table.

Test conditions:

Frequency Range	0.15MHz-80MHz
Frequency Step	1% of fundamental
Dwell Time	3 sec

Range (MHz)	Strength	Modulation	Result
0.15-10	3V	AM	A
10-30	3V-1V	AM	A
30-80	1V	AM	A

17.3 PERFORMANCE & RESULT

Criteria A:	The apparatus continues to operate as intended. 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. In some cases the performance level may be replaced by a permissible loss of performance.
Criteria B:	The apparatus continues 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 apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
Criteria C:	Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

☒ PASS ☐ FAIL
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18 EN 61000-4-11 DIPS IMMUNITY TEST

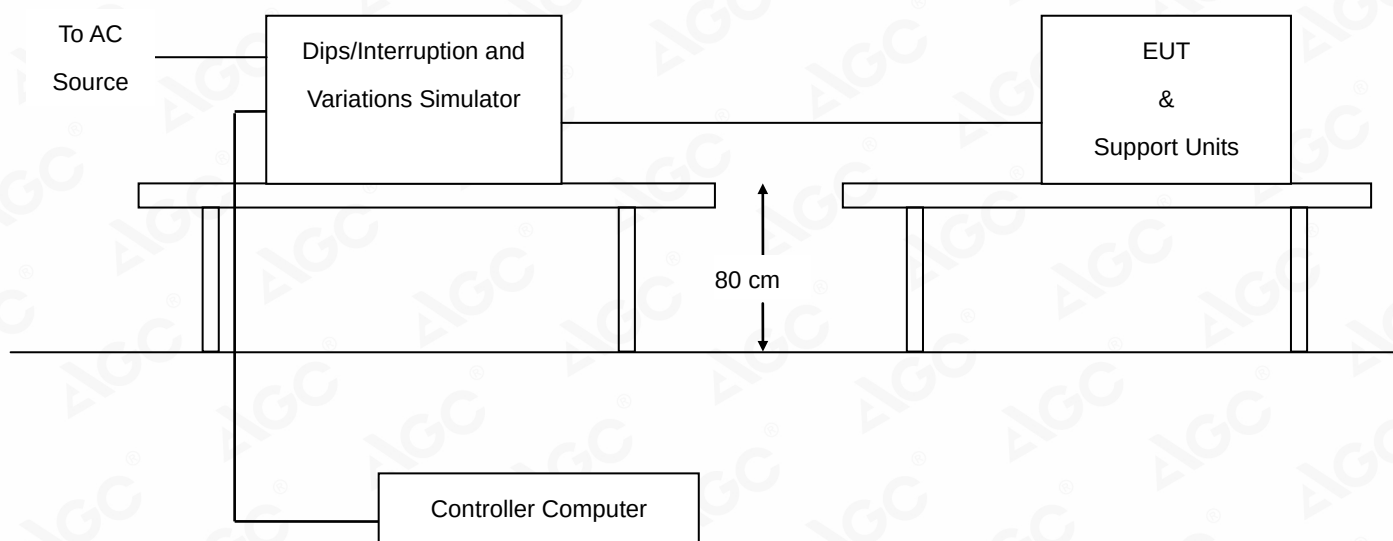
VOLTAGE DIPS, SHORT INTERRUPTIONS AND VOLTAGE VARIATIONS IMMUNITY TEST

Port	On Power Supply Lines
Basic Standard	EN 61000-4-11
Requirements	0degrees
Test Interval	Min. 10 sec.
Temperature	23.6°C
Humidity	57.8% RH

Voltage Dips	Test Level % U_T	Reduction (%)	Duration (periods)	Performance Criteria
	<5	>95	0.5	B
	70	30	25	C

Voltage Interruptions	Test Level % U_T	Reduction (%)	Duration (periods)	Performance Criteria
	<5	>95	250	C

18.1 BLOCK DIAGRAM OF TEST SETUP



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18.2 TEST PROCEDURE

The EUT and support units were located on a wooden table, 0.8 m away from ground floor.

EUT worked with resistance load, and make sure EUT worked normally.

Setting the parameter of tests and then perform the test software of test simulator.

Conditions changes to occur at 0 degree crossover point of the voltage waveform.

Recording the test result in test record form.

Test conditions:

The duration with a sequence of three dips/interruptions with interval of 10 s minimum
(Between each test event)

Voltage Dips:

Test Level % U_T	Reduction (%)	Duration (periods)	Observation	Performance Result
<5	>95	0.5	Normal	A
70	30	25	Normal	A

Voltage Interruptions:

Test Level % U_T	Reduction (%)	Duration (periods)	Observation	Performance Result
<5	>95	250	The EUT stopped working during the test, it can be recovered by itself after the test.	B

18.3 INTERPRETATION

Criteria A:	The apparatus continues to operate as intended. 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. In some cases the performance level may be replaced by a permissible loss of performance.
Criteria B:	The apparatus continues 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 apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
Criteria C:	Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

☒ **PASS**
☐ **FAIL**

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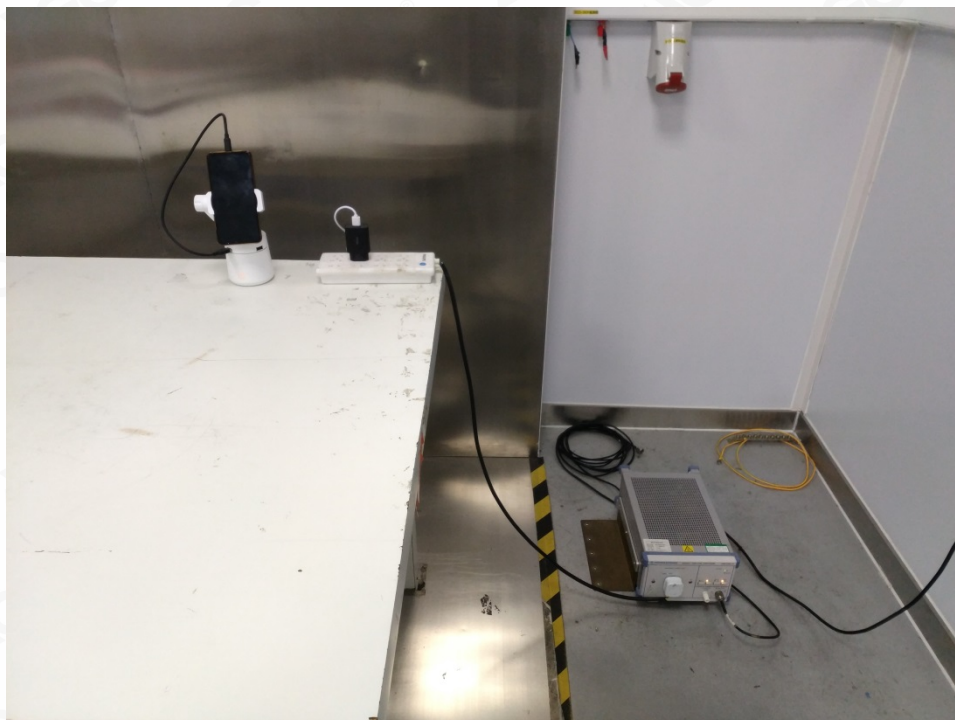
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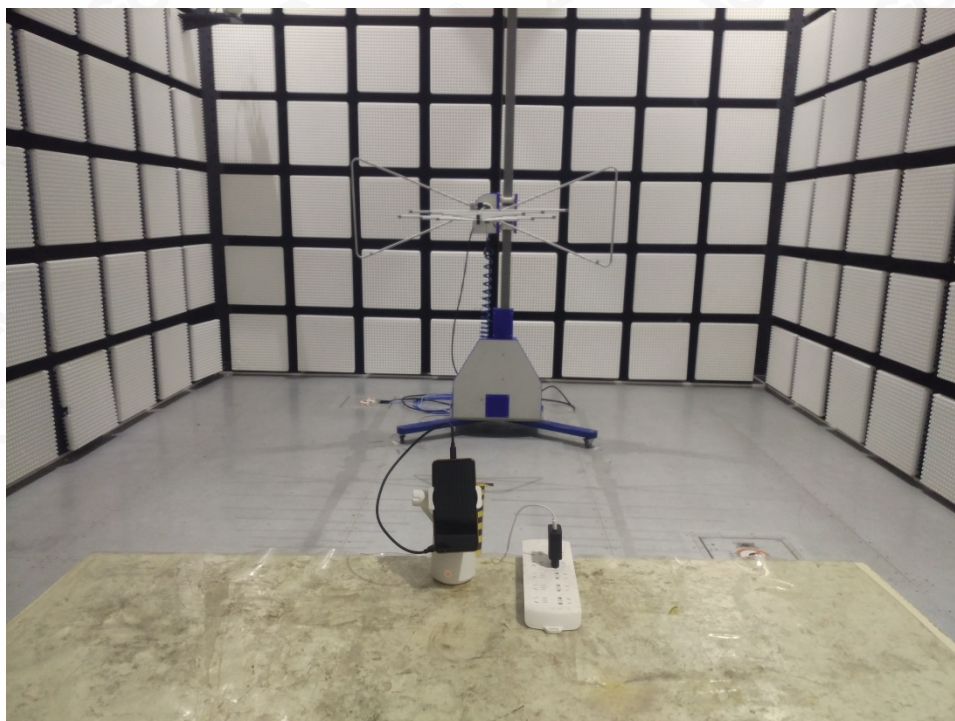


APPENDIX A: PHOTOGRAPHS OF TEST SETUP

EN 55032 CONDUCTED EMISSION TEST SETUP



EN 55032 RADIATED EMISSION TEST SETUP



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EN 61000-3-3 VOLTAGE FLUCTUATION / FLICKER TEST



EN 61000-4-2 ESD IMMUNITY TEST SETUP

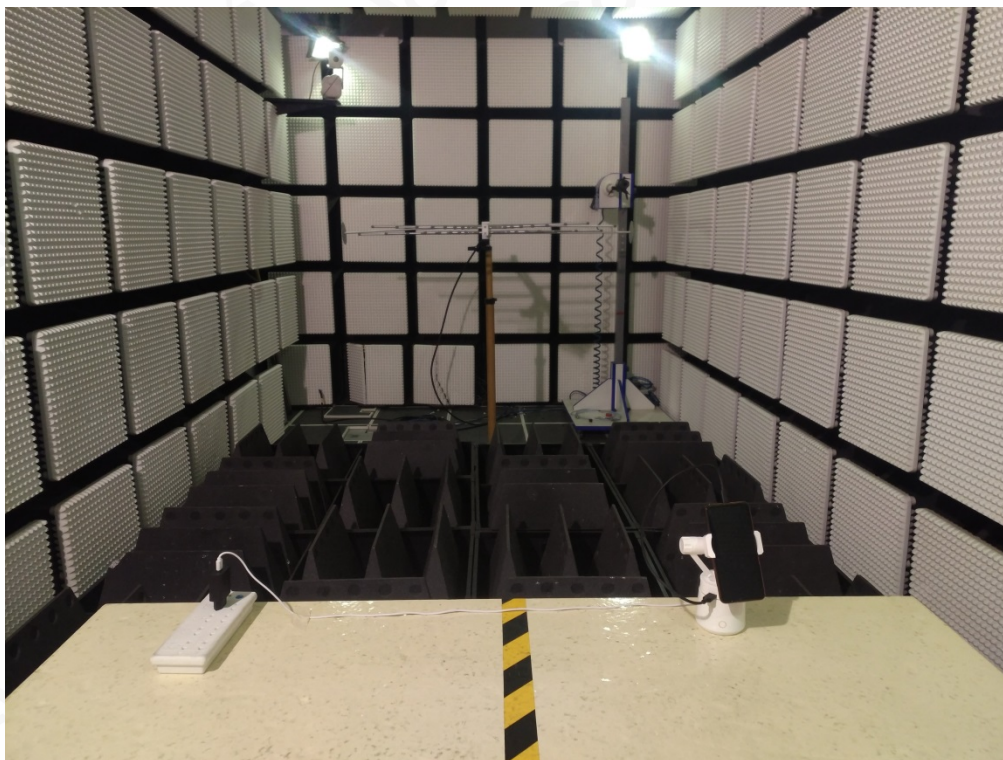


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EN 61000-4-3 RS IMMUNITY TEST SETUP



EN 61000-4-4/-5/-11 EFT/SURGE/DIPS IMMUNITY TEST SETUP

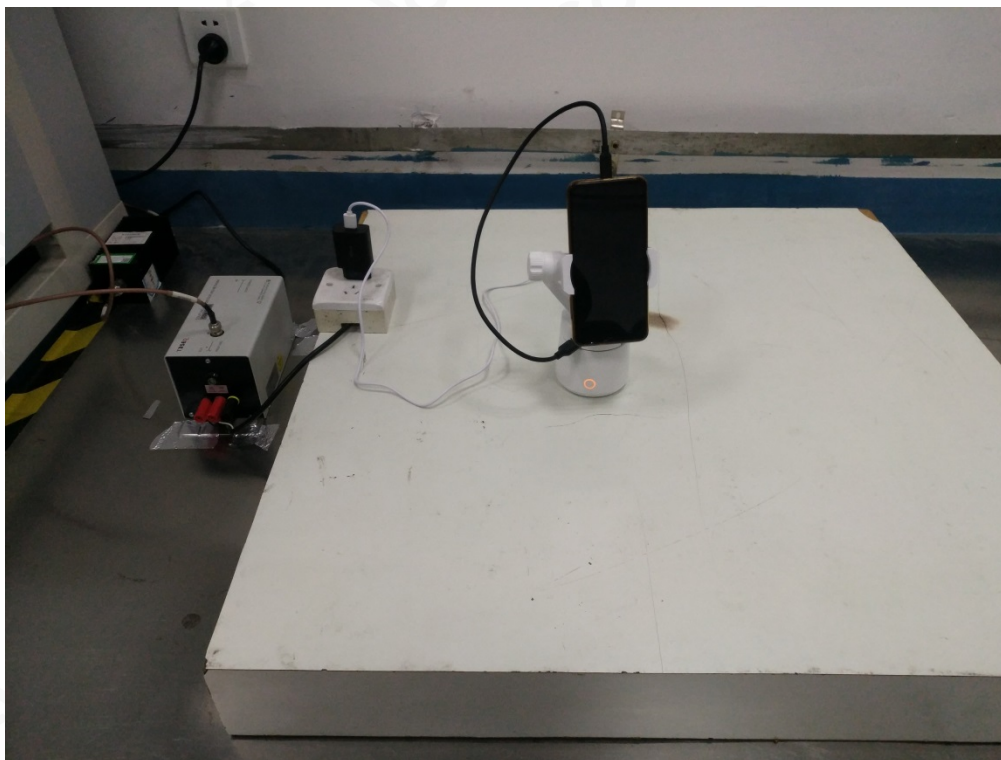


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EN 61000-4-6 CS IMMUNITY TEST SETUP



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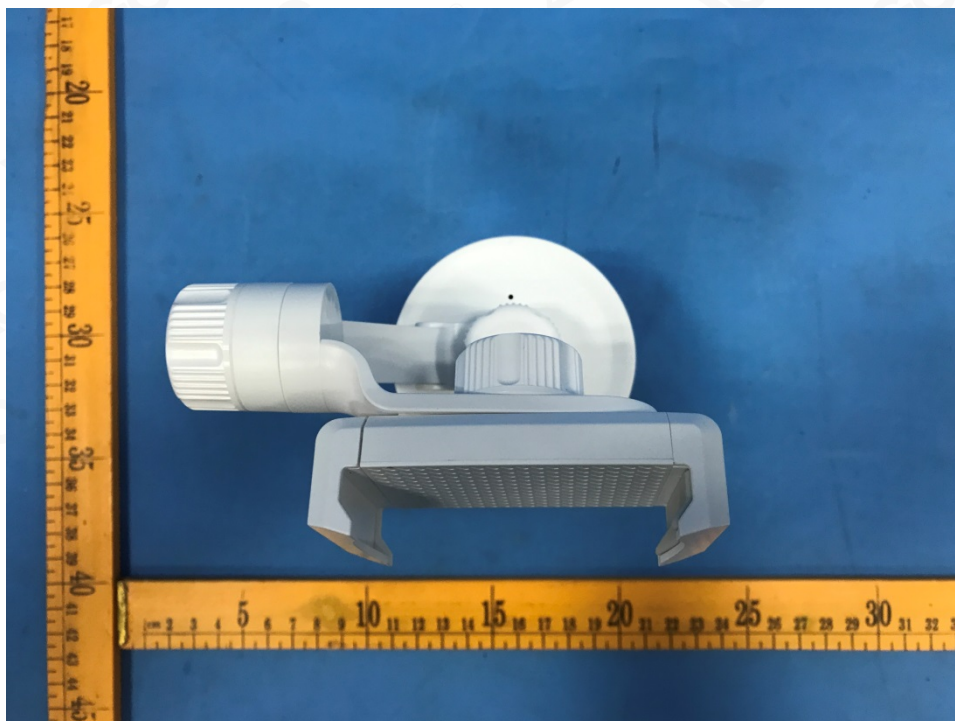


APPENDIX B: PHOTOGRAPHS OF EUT

ALL VIEW OF EUT



TOP VIEW OF EUT



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BOTTOM VIEW OF EUT



FRONT VIEW OF EUT



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BACK VIEW OF EUT



LEFT VIEW OF EUT



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RIGHT VIEW OF EUT



INTERNAL VIEW OF EUT-1

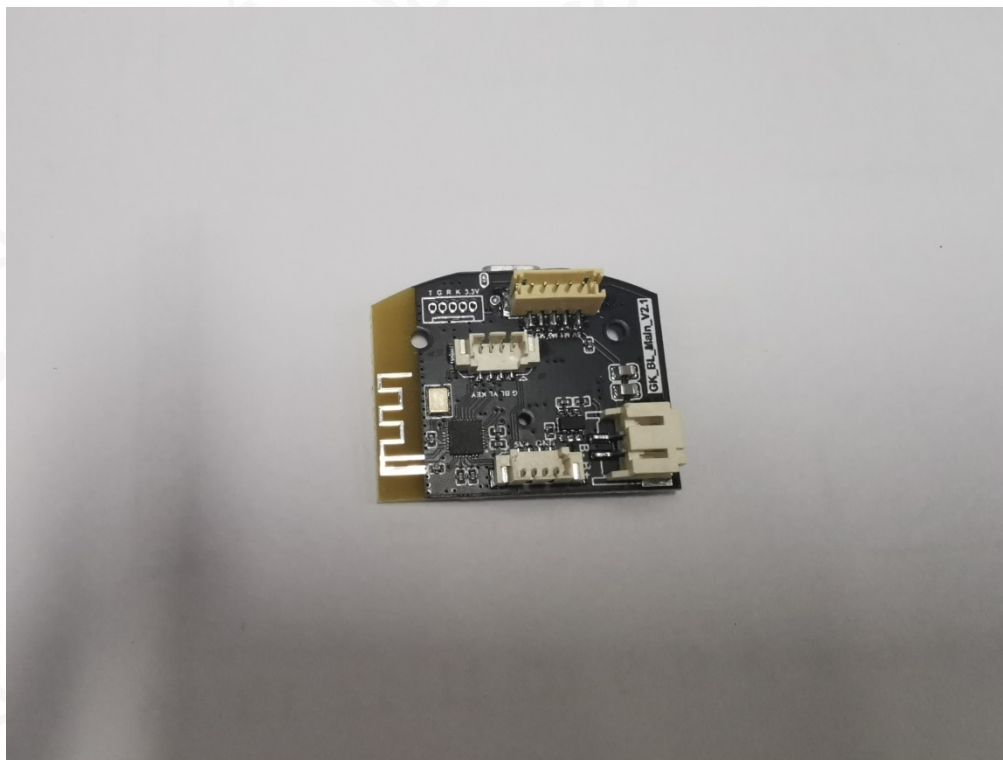


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INTERNAL VIEW OF EUT-2



INTERNAL VIEW OF EUT-3

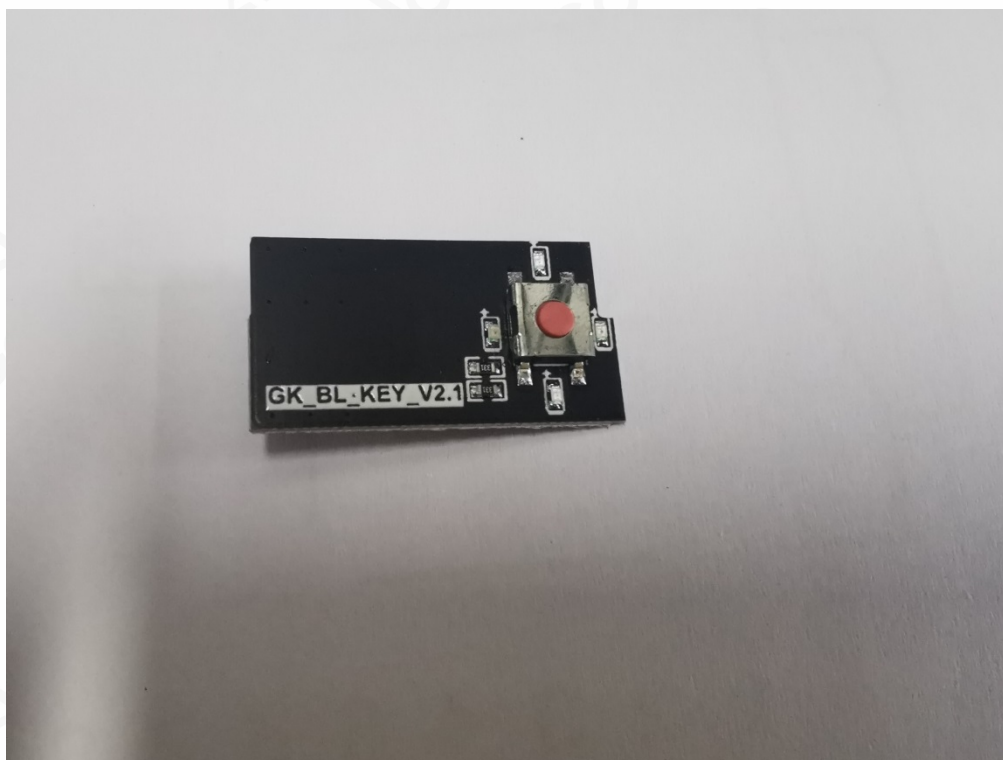


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INTERNAL VIEW OF EUT-4



----END OF REPORT----

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Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the “Company”) solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the “Clients”).
2. Any report issued by Company as a result of this application for testing services (the “Report”) shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.
3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
4. The non-CMA report issued by AGC is only permitted to be used by the client as internal reference use and shall not be used for public demonstration purpose.
5. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
6. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
7. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
8. Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
9. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
10. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.

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