Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2021-03-04		Original

Authorized for issue by:				
Tested By		Curry_Wu		2020-12-11 to 2020-12-31
		Curry_Wu /Project Engineer		**Date**
Checked By		Ricky_Liu		2021-03-04
		Ricky_Liu /Reviewer		**Date**

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2 Test Summary

Emission Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Emissions at Mains Terminals (150kHz-30MHz)	EN 55032:2015 +A11:2020	EN 55032:2015 +A11:2020	Class B	Pass
Radiated Emissions (30MHz-1GHz)	EN 55032:2015 +A11:2020	EN 55032:2015 +A11:2020	Class B	Pass
Harmonic Current Emission	EN IEC 61000-3-2:2019	EN IEC 61000-3-2:2019	Class A	Pass
Voltage Fluctuations and Flicker	EN 61000-3-3: 2013+A1:2019	EN 61000-3-3: 2013 +A1:2019	Clause 5 of EN 61000-3-3	Pass

Immunity Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Electrostatic Discharge	EN 55035:2017	EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
Radiated Immunity (80MHz-1GHz,1800MHz,2600MHz,3500MHz,5000MHz)	EN 55035:2017	EN 61000-4-3:2006 +A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod.	Pass
Electrical Fast Transients/Burst at Power Port	EN 55035:2017	EN 61000-4-4:2012	1kV 5/50ns Tr/Td 5kHz Repetition Frequency	Pass
Surge at Power Port	EN 55035:2017	EN 61000-4-5:2014	1.2/50μs Tr/Td 1kV Line to Line 2kV Line to Ground	Pass
Conducted Immunity at Power Port (150kHz-80MHz)	EN 55035:2017	EN 61000-4-6:2014	3 Vrms: 0.15MHz - 10MHz 3 to 1 (Lines) Vrms: 10MHz - 30MHz 1 Vrms: 30MHz - 80MHz 80%,1kHz Amp. Mod.	Pass
Voltage Dips and Interruptions	EN 55035:2017	EN 61000-4-11:2004	<5% residual voltage for 0.5 cycle: B 70% residual voltage for 25 cycles: C <5% residual voltage for 250 cycles: C	Pass

Internal Source	Upper Frequency
Below 108MHz	1GHz
108MHz to 500MHz	2GHz
500MHz to 1GHz	5GHz
Above 1GHz	5 times the highest frequency or 6 GHz, whichever is less

3 Contents

4 General Information

4.1 Details of E.U.T.

Power Supply:	DC 5V supply by adaptor
	DC 3.7V rechargeable battery
Test Voltage:	DC 3.7V &AC 230V 50Hz
Cable:	About 0.5m unscreened micro USB cable
	About 1m unscreened AUX in cable
	About 1.2m unscreened AUX in cable
Internal Source Frequency:	<108MHz

4.2 Description of Support Units

The EUT has been tested with corresponding accessories as below:

Supplied by SGS:

Description	Manufacturer	Model No.	SN/Certificate NO
Adapter 1(EMCA021)	Minji	MJ4105	N/A
iPad Air	Apple	MD788ZP/A	DMPL92MCFK14
iPod nano	Apple	A1366	DCYDWE22DDVX

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conducted Disturbance Voltage at Mains Terminals	3.63dB (9kHz to 150kHz)
		3.22dB (150kHz to 30MHz)
2	Disturbance Power	3.78dB
3	Radiated Emissions	5.0dB (30MHz-1GHz)
		5.2dB (1GHz-6GHz)
		5.5dB (6GHz-18GHz)
4	Radiated Immunity	2.18dB(80MHz-3GHz)
5	Conducted Immunity	3.5dB(150kHz-230MHz)
6	Electrostatic Discharge	±6 %
7	EFT (Electrical Fast Transients)	±4 %
8	Surge Immunity	±6%
9	Voltage Dips and Interruptions	±4 %
10	CISPR 20 Immunity	1.5dB
11	Temperature	±0.4°C
12	Humidity	±1.3%
13	DC power	±0.5 %

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,
198 Kezhu Road, Scientech Park, Guangzhou Economic & Technology Development District, Guangzhou, China 510663
Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.

4.5 Test Facility

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

● NVLAP (Lab Code: 200611-0)

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

● ACMA

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

● SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

● CNAS (Lab Code: L0167)

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2018 accreditation criteria for testing laboratories (identical to

ISO/IEC 17025:2017 General Requirements) for the Competence of Testing Laboratories.

● FCC Recognized 2.948 Listed Test Firm(Registration No.: 282399)

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 282399, May 31, 2002.

● FCC Recognized Accredited Test Firm(Registration No.: 486818)

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818, Jul 13, 2017.

● Industry Canada (Registration No.: 4620B, CAB identifier: CN0052)

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

● VCCI (Registration No.: R-12460, C-12584, G-10449 and T-11179)

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584，G-10449 and T-11179 respectively.

● CBTL (Lab Code: TL129)

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

4.8 Monitoring of EUT for All Immunity Test

Visual: Monitored the indicator of the EUT.

Audio: Monitored the sound from the EUT.

Other: Monitored the spectrum analyser of any unintentionally response.

5 Equipment List

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	N/A	N/A
Two-Line V-Network	Rohde & Schwarz	ENV216	EMC0118	2020-01-10	2021-01-09
LISN	Rohde & Schwarz	ENV216	EMC2135	2020-09-25	2021-09-24
EMI Test Receiver	Rohde & Schwarz	ESCS30	EMC0506	2020-11-13	2021-11-12
Coaxial Cable	HangTianXing	2m	EMC0107	2020-09-09	2022-09-08
Voltage Probe	SGS-EMC	N/A	EMC0106	2019-05-10	2021-05-09
Conical Metal Housing	SGS-EMC	N/A	EMC0167	2020-04-19	2022-04-18
Test Software E3c	Audix	Ver. 5.4.1221b	GZE100-62	N/A	N/A

Radiated Emissions (30MHz-1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EMI Test Receiver	Rohde & Schwarz	ESIB26	EMC0522	2020-01-10	2021-01-09
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2020-01-10	2021-01-09
Chamber cable	HangTianXing	N/A	EMC0542	2019-06-28	2021-06-27
Trilog Broadband Antenna 25MHz-1GHz	SCHWARZBECKMESS-ELEKTRONIK	VULB 9168	EMC2174	2018-09-06	2021-09-05
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKMESS-ELEKTRONIK	VULB 9168	SEM003-18	2019-02-22	2022-02-22
Bi-log Type Antenna	Schaffner Chase	CBL6143	EMC0519	2020-06-08	2023-06-07
Horn Antenna 1GHz-18GHz	Rohde & Schwarz	HF906	EMC0518	2018-09-02	2021-09-01
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2020-01-10	2021-01-09
Amplifier	HP	8447F	EMC2065	2020-05-26	2021-05-25
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2020-11-13	2021-11-12
Active Loop Antenna	ETS-Lindgren	6502	EMC2190	2019-12-27	2021-12-26
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2020-01-10	2021-01-09
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2020-01-10	2021-01-09
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2019-10-20	2022-10-19
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2020-12-19	2023-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2020-11-13	2021-11-12
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2020-09-17	2021-09-16
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

Voltage Fluctuations and Flicker					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
AC Power Source	California	50001iX	EMC0608	2020-03-27	2021-03-26
Power Analyzer	California	PACS	EMC0607	2020-03-27	2021-03-26
Test Software CTS4	California	Ver 4.14.0	GZE100-66	N/A	N/A

Electrostatic Discharge					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
ESD Simulator	TESEQ AG	NSG 435	EMC2071	2020-06-30	2021-06-30
ESD Simulator	EMTEST	NX30	EMC2186	2020-03-02	2021-03-01
ESD Ground Plane	SGS-EMC	3m x 3m	EMC0804	N/A	N/A
Temperature & Humidity	Shanghai Meteorological Instrument Factory Co., Ltd.	ZJ1-2B	EMC0078	2020-07-04	2021-07-03

Electrical Fast Transients/Burst at Power Port					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EMC Immunity Test System	TESEQ AG	NSG 3060CDN3061I NA 6502 CIBCND3425	EMC2072	2020-01-10	2021-01-09
Oscilloscope	Tektronix	TDS3052C	EMC2055	2020-01-10	2021-01-09
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A

Surge at Power Port					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Modular Impulse Surge Generator	EMC PARTNER	MIG0603EN	EMC2059	2020-01-10	2021-01-09
EMC Immunity Test System	TESEQ AG	NSG 3060CDN3061I NA 6502 CIBCND3425	EMC2072	2020-01-10	2021-01-09
Oscilloscope	Tektronix	TDS3052C	EMC2055	2020-01-10	2021-01-09
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A

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Conducted Immunity at Power Port (150kHz-80MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Test System for Conducted and Radiated Immunity	TESEQ AG	NSG 4070B-80	EMC2115	2020-11-30	2021-11-29
Test Software NSG4070_Ctrl1	TESEQ AG	Ver.1.3.0.1	GZE100-72	N/A	N/A
CDN S502A	TESEQ AG	CDN S502A	EMC2113	2019-07-13	2021-07-12
CDN ST08A	TESEQ AG	CDN ST08A	EMC2112	2019-07-13	2021-07-12
CDN USB3.0	TESEQ AG	CDN USB3.0	EMC2114	2019-07-13	2021-07-12
Dual Directional coupler	Werlatone Inc.	C1795	EMC1105	2020-05-26	2021-05-25
Oscilloscope	Tektronix	TDS3052C	EMC2055	2020-01-10	2021-01-09
CDN	Elektronik-Feinmechanik	L-801:M2/M3	EMC2048	2020-08-21	2022-08-20
CDN M2	Schaffner Chase	CDN-M2-16	EMC1107	2020-10-23	2023-10-22
Current Probe	Schaffner Chase	CIP9136	EMC1116	2020-03-27	2022-03-26
Current Probe	Schaffner Chase	CSP8445	EMC1117	2020-03-27	2022-03-26
Audio Analyzer	Keysight	U8903B	EMC2180	2020-09-18	2021-09-17

Voltage Dips and Interruptions					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
EMC Immunity Test System	TESEQ AG	NSG 3060CDN3061I NA 6502 CIBCND3425	EMC2072	2020-01-10	2021-01-09
Oscilloscope	Tektronix	TDS3052C	EMC2055	2020-01-10	2021-01-09
Test Software WIN 3000	TESEQ AG	Ver 1.3.2	GZE100-68	N/A	N/A

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
DMM	Fluke	73	EMC0006	2020-07-09	2021-07-08
DMM	Fluke	73	EMC0007	2020-07-09	2021-07-08

6 Emission Test Results

6.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement:	EN 55032:2015 +A11:2020
Test Method:	EN 55032:2015 +A11:2020
Frequency Range:	150kHz to 30MHz
Limit:	
0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

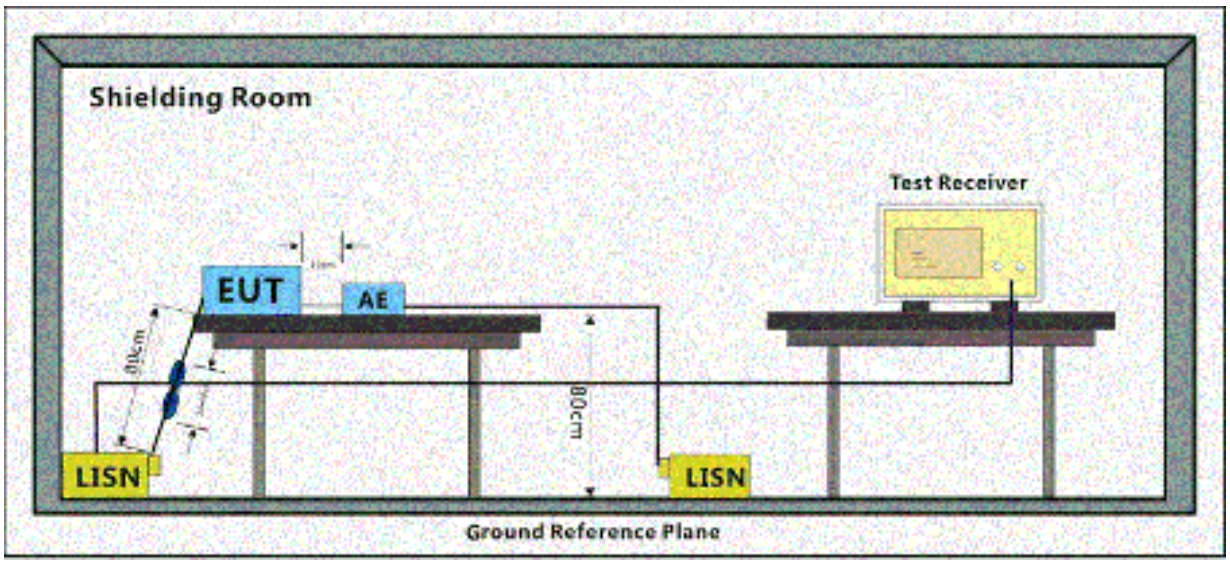
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Pretest these modes to find the worst case:	c:Charging mode_Keep EUT in charging status k: AUX in mode_1kHz Sinewave l: AUX in + aux sharing mode_1kHz sine wave
The worst case for final test:	c:Charging mode_Keep EUT in charging status

6.1.2 Test Setup Diagram

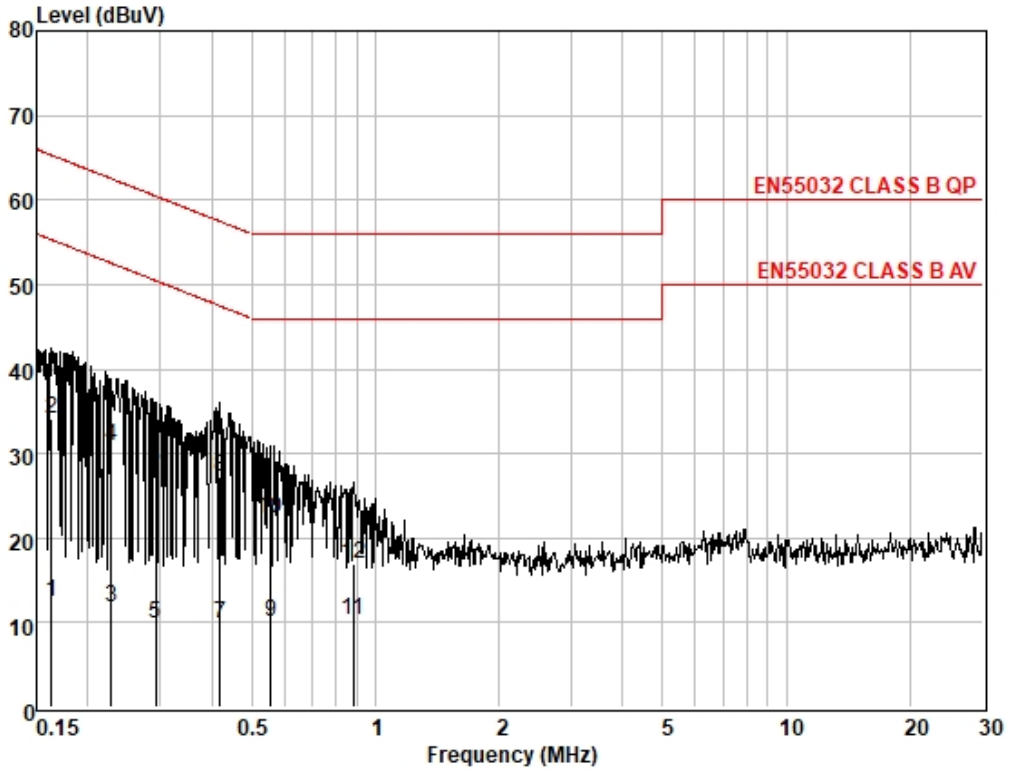


6.1.3 Measurement Data

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.

Measured Level = Read level + Cable Loss + LISN Factor

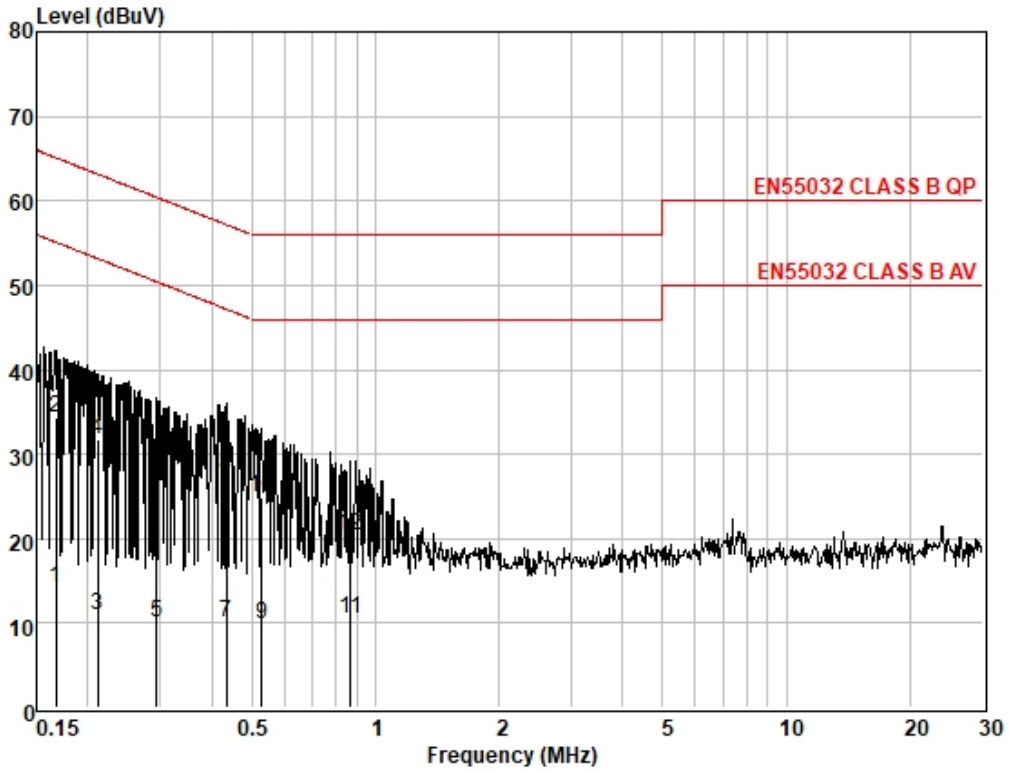
Mode:c; Line:Live Line



Pol :LINE
Mode :
Model :

Frequenc MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.16	2.70	0.06	9.62	12.38	55.30	-42.92	Average
0.16	24.49	0.06	9.62	34.17	65.30	-31.13	QP
0.23	2.08	0.06	9.62	11.76	52.52	-40.76	Average
0.23	21.18	0.06	9.62	30.86	62.52	-31.66	QP
0.29	0.22	0.06	9.62	9.90	50.46	-40.56	Average
0.29	18.67	0.06	9.62	28.35	60.46	-32.11	QP
0.42	0.10	0.06	9.62	9.78	47.46	-37.68	Average
0.42	17.53	0.06	9.62	27.21	57.46	-30.25	QP
0.56	0.31	0.07	9.63	10.01	46.00	-35.99	Average
0.56	12.61	0.07	9.63	22.31	56.00	-33.69	QP
0.88	0.55	0.07	9.62	10.24	46.00	-35.76	Average
0.88	7.20	0.07	9.62	16.89	56.00	-39.11	QP

Mode:c; Line:Neutral Line



Pol :NEUTRAL
Mode :
Model :

Frequenc MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
0.17	4.61	0.06	9.55	14.22	55.08	-40.86	Average
0.17	24.75	0.06	9.55	34.36	65.08	-30.72	QP
0.21	1.24	0.06	9.54	10.84	53.14	-42.30	Average
0.21	22.23	0.06	9.54	31.83	63.14	-31.31	QP
0.29	0.49	0.06	9.54	10.09	50.41	-40.32	Average
0.29	18.97	0.06	9.54	28.57	60.41	-31.84	QP
0.44	0.53	0.06	9.56	10.15	47.15	-37.00	Average
0.44	17.89	0.06	9.56	27.51	57.15	-29.64	QP
0.53	0.19	0.07	9.55	9.81	46.00	-36.19	Average
0.53	15.27	0.07	9.55	24.89	56.00	-31.11	QP
0.87	0.97	0.07	9.55	10.59	46.00	-35.41	Average
0.87	10.82	0.07	9.55	20.44	56.00	-35.56	QP

6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement:	EN 55032:2015 +A11:2020
Test Method:	EN 55032:2015 +A11:2020
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Limit:	
30MHz-230MHz	40 dB(μV/m) quasi-peak
230MHz-1GHz	47 dB(μV/m) quasi-peak
Detector:	Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

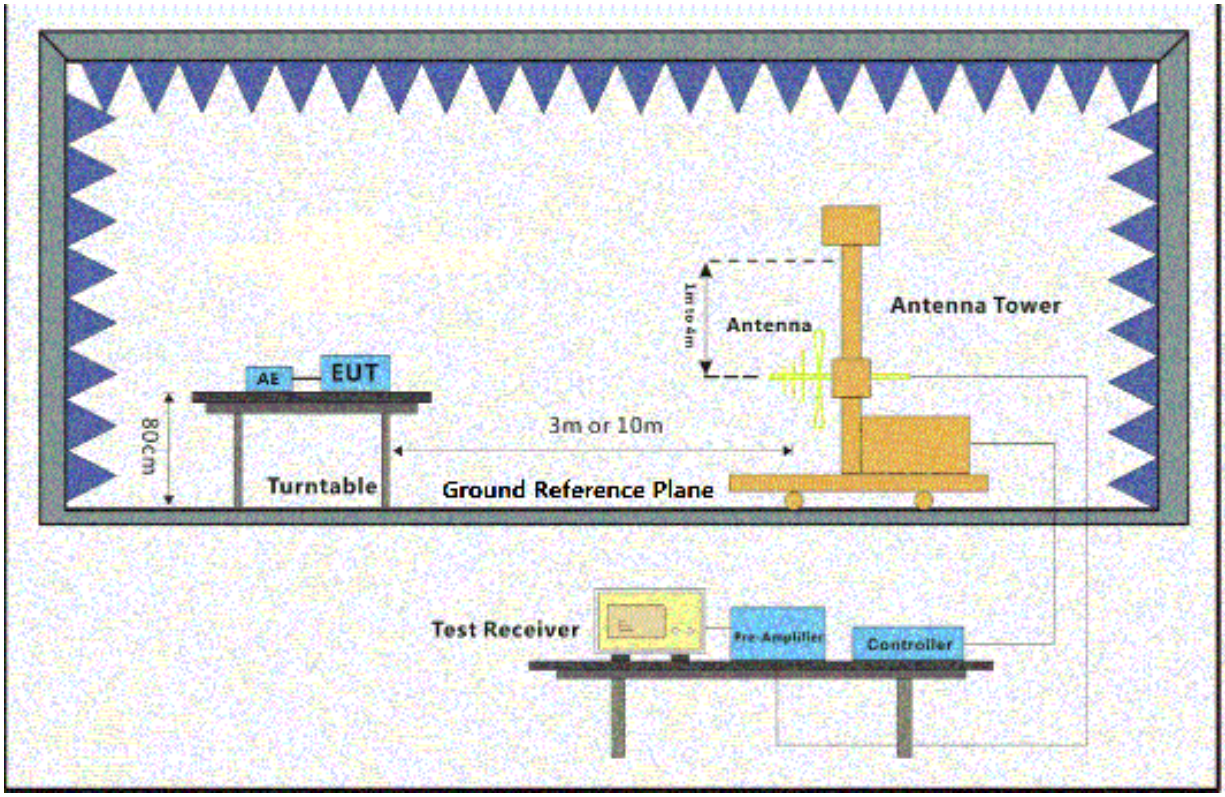
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 20.7 °C Humidity: 59.2 % RH Atmospheric Pressure: 1020 mbar

Pretest these modes to find the worst case:	c:Charging mode_Keep EUT in charging status k: AUX in mode_1kHz Sinewave l: AUX in + aux sharing mode_1kHz sine wave
The worst case for final test:	k: AUX in mode_1kHz Sinewave

6.2.2 Test Setup Diagram

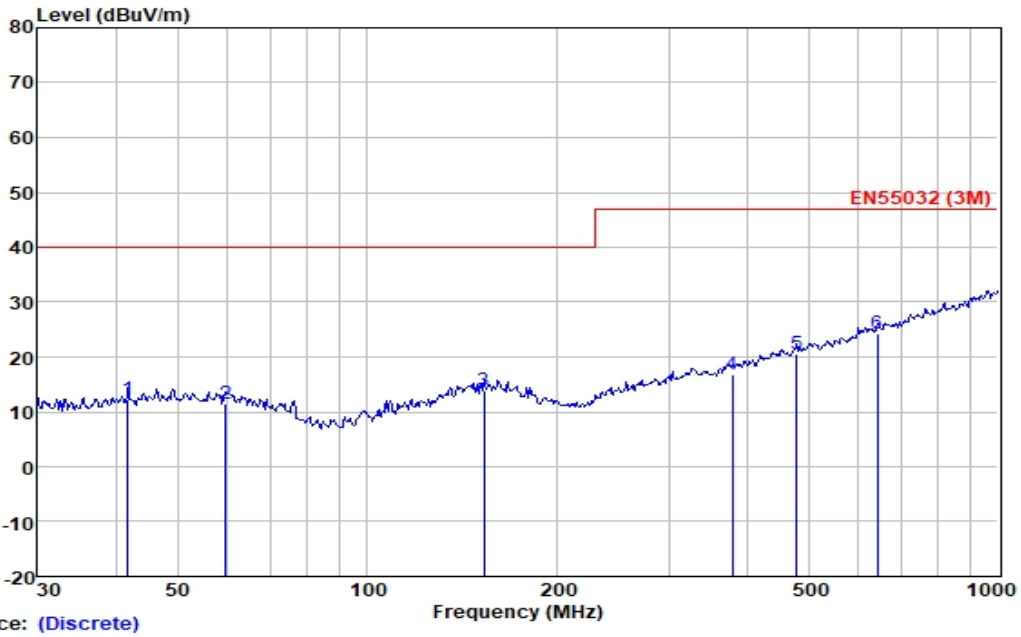


6.2.3 Measurement Data

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

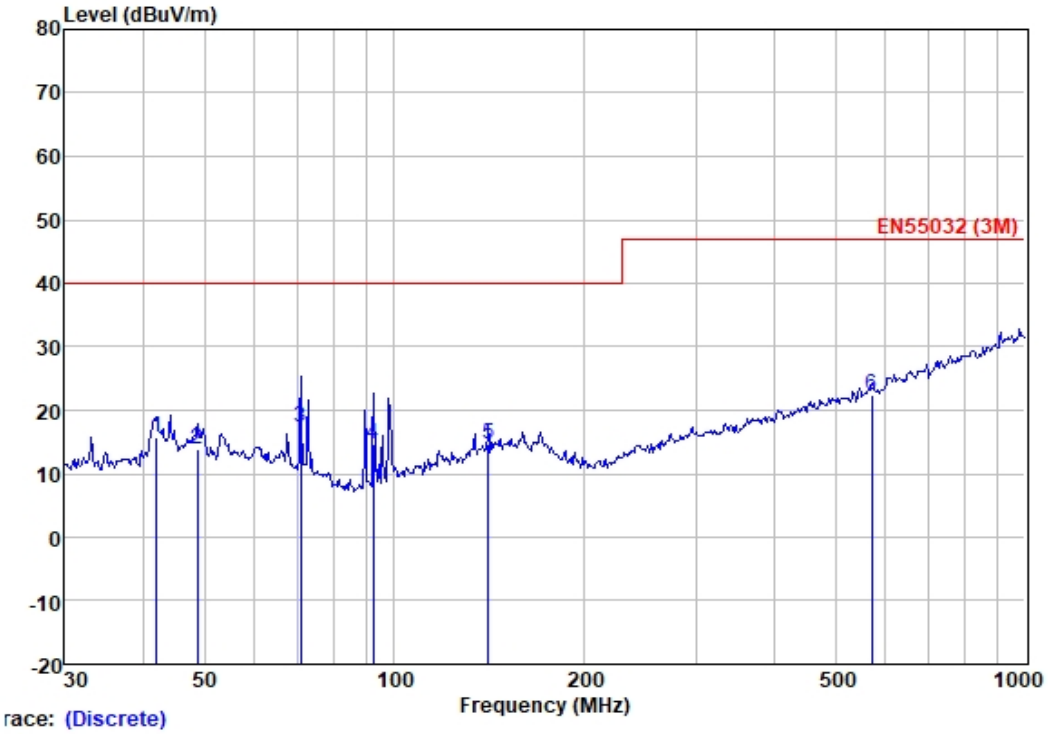
Mode:k; Polarization:Horizontal



race: (Discrete)
Site : SGS
Condition: EN55032 (3M) 3m HORIZONTAL
Job :
Model :
Power :
Test Mode: AUX IN

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	41.713	24.65	13.68	1.11	27.17	12.27	40.00	-27.73	HORIZONTAL	QP
2	59.649	24.02	13.44	1.25	27.16	11.55	40.00	-28.45	HORIZONTAL	QP
3	153.200	24.54	13.80	2.28	26.82	13.80	40.00	-26.20	HORIZONTAL	QP
4	378.584	24.73	15.48	3.82	27.24	16.79	47.00	-30.21	HORIZONTAL	QP
5	478.846	26.42	17.57	4.34	27.90	20.43	47.00	-26.57	HORIZONTAL	QP
6	642.861	26.51	20.42	5.45	28.19	24.19	47.00	-22.81	HORIZONTAL	QP

Mode:k; Polarization:Vertical



race: (Discrete)
Site : SGS
Condition: EN55032 (3M) 3m VERTICAL
Job :
Model :
Power :
Test Mode: AUX IN

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	42.007	28.20	13.70	1.11	27.17	15.84	40.00	-24.16	VERTICAL	QP
2	48.672	26.00	13.97	1.14	27.17	13.94	40.00	-26.06	VERTICAL	QP
3	71.080	31.27	11.70	1.41	27.12	17.26	40.00	-22.74	VERTICAL	QP
4	92.462	32.04	8.13	1.65	27.08	14.74	40.00	-25.26	VERTICAL	QP
5	140.835	25.98	13.40	2.10	26.91	14.57	40.00	-25.43	VERTICAL	QP
6	570.610	26.62	18.90	4.98	28.17	22.33	47.00	-24.67	VERTICAL	QP

6.3 Harmonic Current Emission

Test Requirement: EN IEC 61000-3-2:2019

Test Method: EN IEC 61000-3-2:2019

Frequency Range: 100Hz to 2kHz

Remark:

Since the EUT was belong to exception of clause 7 and Annex B, according to EN IEC 61000-3-2 figure 1, it was deemed to conform to the requirements of this standard without further testing.

"7 Harmonic current limits

The procedure for applying the limits and assessing the results is shown in Figure 1.

For the following categories of equipment, limits are not specified in this standard:

NOTE 1 Limits may be defined in a future amendment or revision of the standard.

- lighting equipment with a rated power less than but not equal to 5 W;
- equipment with a rated power of 75 W or less, other than lighting equipment;

NOTE 2 This value may be reduced from 75 W to 50 W in the future, subject to approval by National Committees at that time.

- professional equipment with a total rated power greater than 1 kW;
- symmetrically controlled heating elements with a rated power less than or equal to 200 W;
- independent phase control dimmers

with a rated power less than or equal to 1 kW when operating incandescent lamps;

with a rated power less than or equal to 200 W for trailing edge dimmers, and universal phase control dimmers with the default mode set to trailing edge, when operating lighting equipment other than incandescent lamps;

with a rated power less than or equal to 100 W for leading edge dimmers, and universal phase control dimmers without default mode set to trailing edge, when operating lighting equipment other than incandescent lamps.

and

Kitchen machines as listed in the scope of IEC 60335-2-14 are deemed to conform to the harmonic current limits of this standard without further testing.

Please read clause 7 & Annex B of this standard for reference.

6.4 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-3-3:2013+A1:2019

Test Method: EN 61000-3-3:2013 +A1:2019

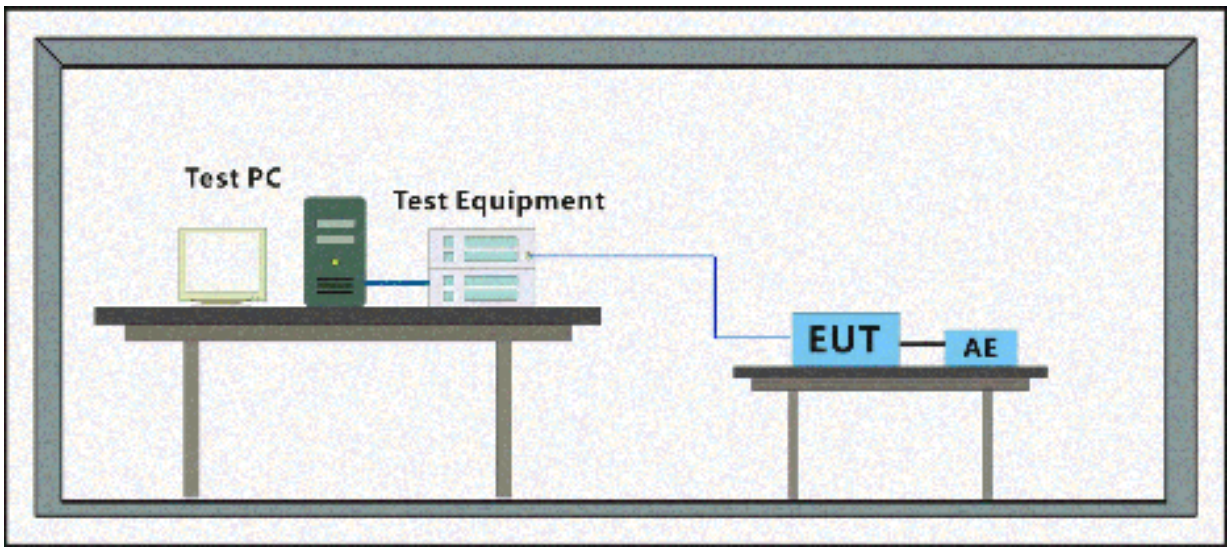
6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 21 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Pretest these modes to find the worst case:	c:Charging mode_Keep EUT in charging status k: AUX in mode_1kHz Sinewave l: AUX in + aux sharing mode_1kHz sine wave
The worst case for final test:	c:Charging mode_Keep EUT in charging status

6.4.2 Test Setup Diagram



6.4.3 Measurement Data

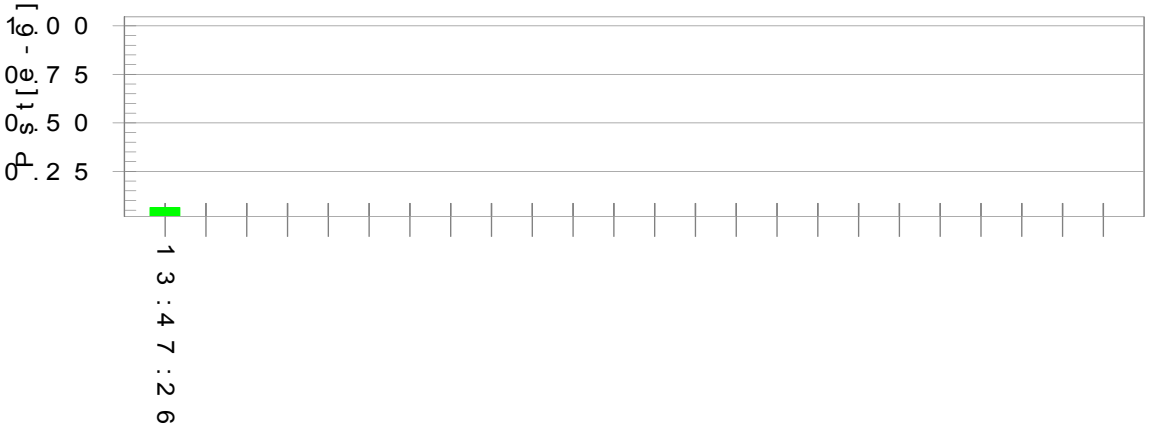
Mode:c

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

Test category: dt,dmax,dc and Pst (European limits) **Test Margin: 100**
Test duration (min): 10

Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.89**			
T-max (mS):	**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**

7 Immunity Test Results

7.1 Performance Criteria Description in EN 55035:2017

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. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if 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. The performance level may be replaced by a permissible loss of performance.

During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.

If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if 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.

Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

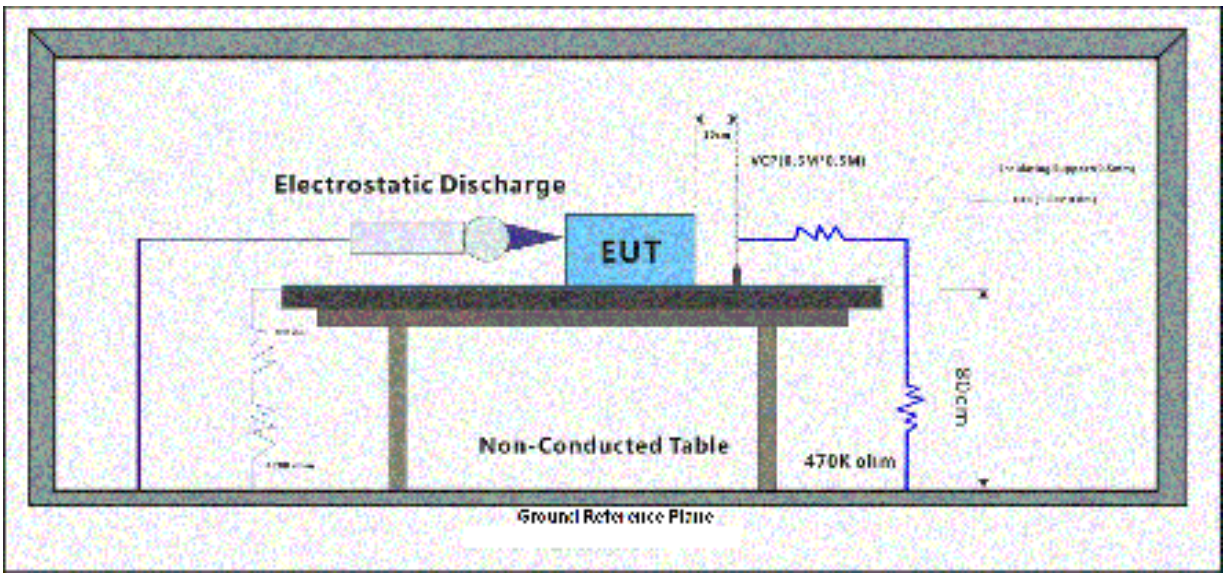
7.2 Electrostatic Discharge

Test Requirement: EN 55035:2017
Test Method: EN 61000-4-2:2009
Performance Criterion: B
Discharge Impedance: 330Ω/150pF
Number of Discharge: Minimum 10 times at each test point
Discharge Mode: Single Discharge
Discharge Period: 1 second minimum

7.2.1 E.U.T. Operation

Operating Environment:
Temperature: 21 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar
Test Mode: c:Charging mode_Keep EUT in charging status
k: AUX in mode_1kHz Sinewave
l: AUX in + aux sharing mode_1kHz sine wave

7.2.2 Test Setup Diagram



7.2.3 Test Results

Observations:

Test Point:

1. All insulated enclosure and seams.
2. All accessible metal parts of the enclosure.
3. All side

Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	2,4,8	+	1	A
Air Discharge	2,4,8	-	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

Results:

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

7.3 Radiated Immunity (80MHz-1GHz,1800MHz,2600MHz,3500MHz,5000MHz)

Test Requirement: EN 55035:2017

Test Method: EN 61000-4-3:2006 +A1:2008+A2:2010

Performance Criterion: A

Frequency Range: 80MHz to 1GHz, 1800MHz, 2600MHz, 3500MHz, 5000MHz

Antenna Polarisation: Vertical and Horizontal

Modulation 1kHz,80% Amp. Mod,1% increment

7.3.1 E.U.T. Operation

Operating Environment:

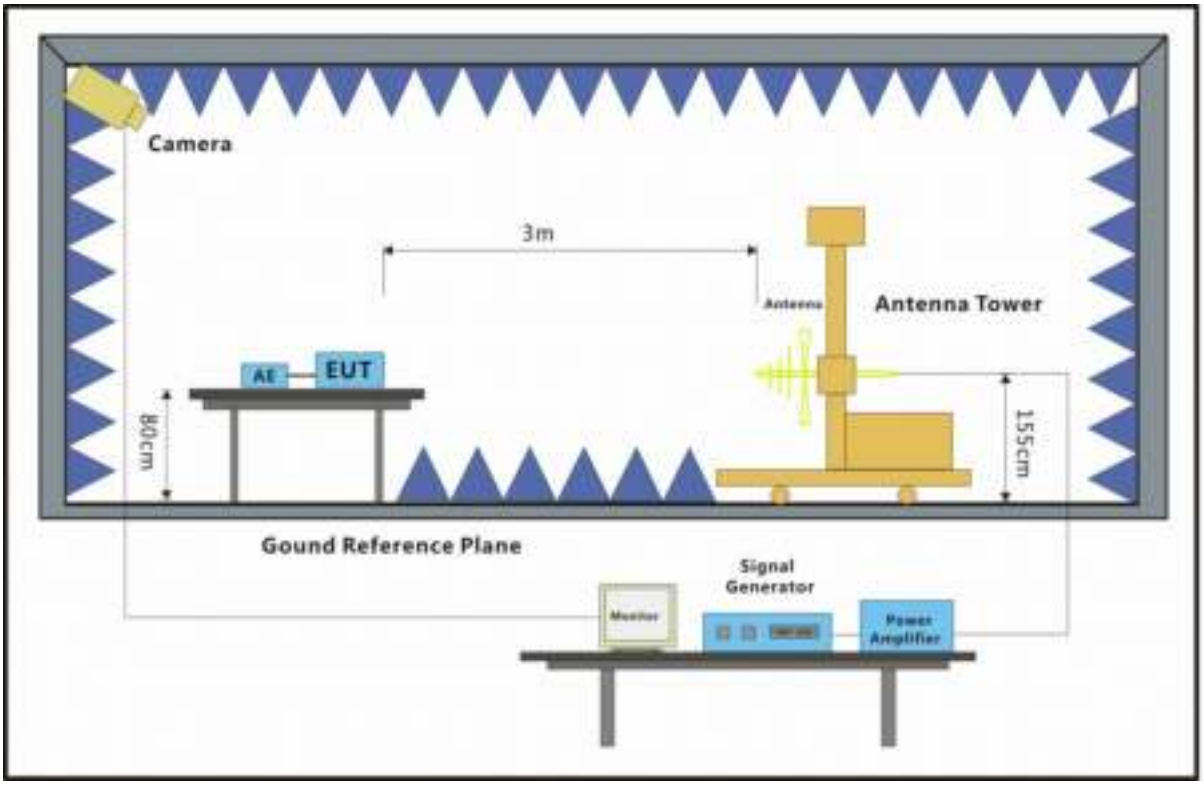
Temperature: 23 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test Mode: c:Charging mode_Keep EUT in charging status

k: AUX in mode_1kHz Sinewave

l: AUX in + aux sharing mode_1kHz sine wave

7.3.2 Test Setup Diagram



7.3.3 Test Results

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-1GHz	3	Front	2s	A
80MHz-1GHz	3	Back	2s	A
80MHz-1GHz	3	Left	2s	A
80MHz-1GHz	3	Right	2s	A
80MHz-1GHz	3	Top	2s	A
80MHz-1GHz	3	Underside	2s	A
1800MHz	3	Front	2s	A
1800MHz	3	Back	2s	A
1800MHz	3	Left	2s	A
1800MHz	3	Right	2s	A
1800MHz	3	Top	2s	A
1800MHz	3	Underside	2s	A
2600MHz	3	Front	2s	A
2600MHz	3	Back	2s	A
2600MHz	3	Left	2s	A
2600MHz	3	Right	2s	A
2600MHz	3	Top	2s	A
2600MHz	3	Underside	2s	A
3500MHz	3	Front	2s	A
3500MHz	3	Back	2s	A
3500MHz	3	Left	2s	A
3500MHz	3	Right	2s	A
3500MHz	3	Top	2s	A
3500MHz	3	Underside	2s	A
5000MHz	3	Front	2s	A
5000MHz	3	Back	2s	A
5000MHz	3	Left	2s	A
5000MHz	3	Right	2s	A
5000MHz	3	Top	2s	A
5000MHz	3	Underside	2s	A

Results:

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

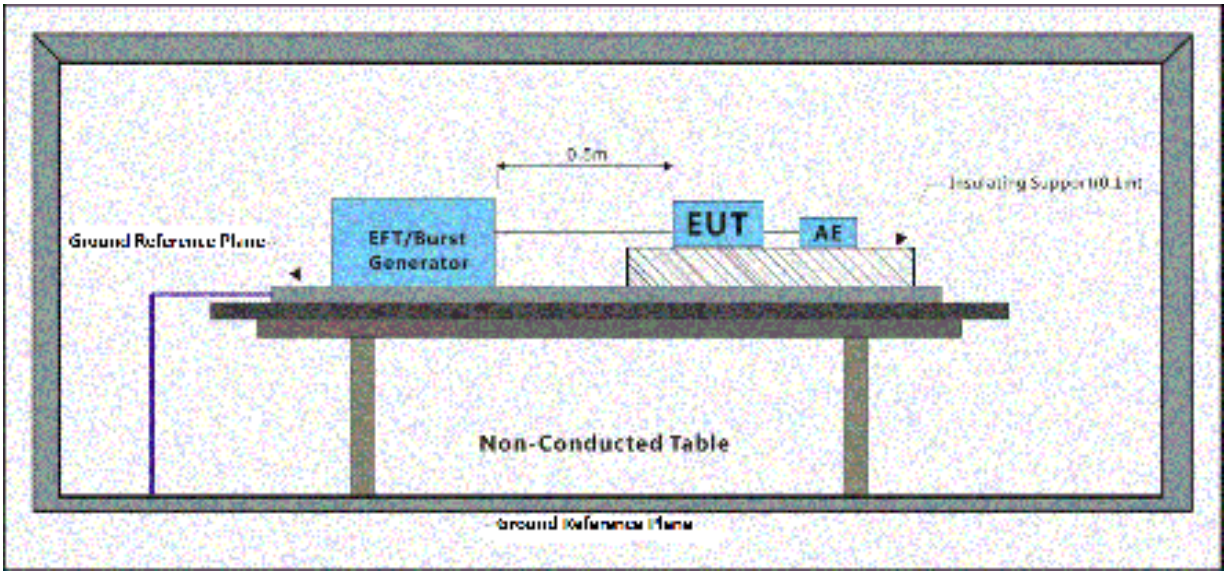
7.4 Electrical Fast Transients/Burst at Power Port

Test Requirement: EN 55035:2017
Test Method: EN 61000-4-4:2012
Performance Criterion: B
Repetition Frequency: 5kHz
Burst Period: 300ms
Test Duration: 2 minute per level & polarity

7.4.1 E.U.T. Operation

Operating Environment:
Temperature: 20 °C Humidity: 52.8 % RH Atmospheric Pressure: 1020 mbar
Test Mode: c:Charging mode_Keep EUT in charging status
k: AUX in mode_1kHz Sinewave
l: AUX in + aux sharing mode_1kHz sine wave

7.4.2 Test Setup Diagram



7.4.3 Test Results

Test Line	Level (kV)	Polarity	CDN/Clamp	Result / Observations
AC power port	1	+	CDN	A
AC power port	1	-	CDN	A

Results:

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

7.5 Surge at Power Port

Test Requirement: EN 55035:2017

Test Method: EN 61000-4-5:2014

Performance Criterion: B

Interval: 60s between each surge

No. of surges: 5 positive at 90°, 5 negative at 270°.

7.5.1 E.U.T. Operation

Operating Environment:

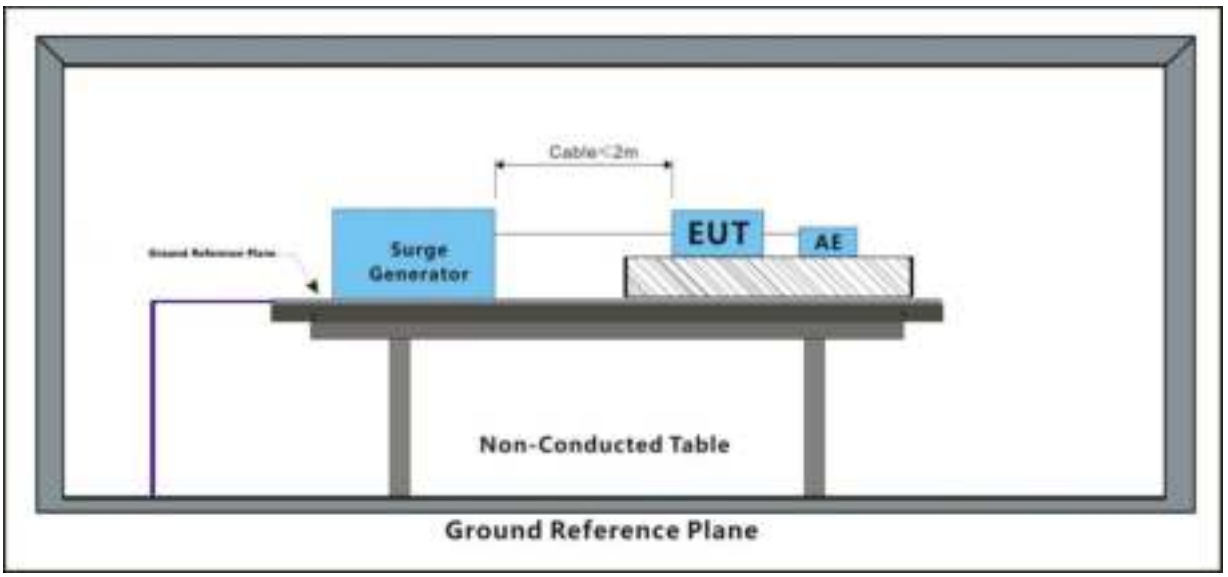
Temperature: 20 °C Humidity: 52.7 % RH Atmospheric Pressure: 1020 mbar

Test Mode: c:Charging mode_Keep EUT in charging status

k: AUX in mode_1kHz Sinewave

l: AUX in + aux sharing mode_1kHz sine wave

7.5.2 Test Setup Diagram



7.5.3 Test Results

Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	1	+	90°	A
L-N	1	-	270°	A

Results:

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

7.6 Conducted Immunity at Power Port (150kHz-80MHz)

Test Requirement: EN 55035:2017

Test Method: EN 61000-4-6:2014

Performance Criterion: A

Frequency Range: 0.15MHz to 80MHz

Modulation: 80%, 1kHz Amplitude Modulation

Step Size 1%

7.6.1 E.U.T. Operation

Operating Environment:

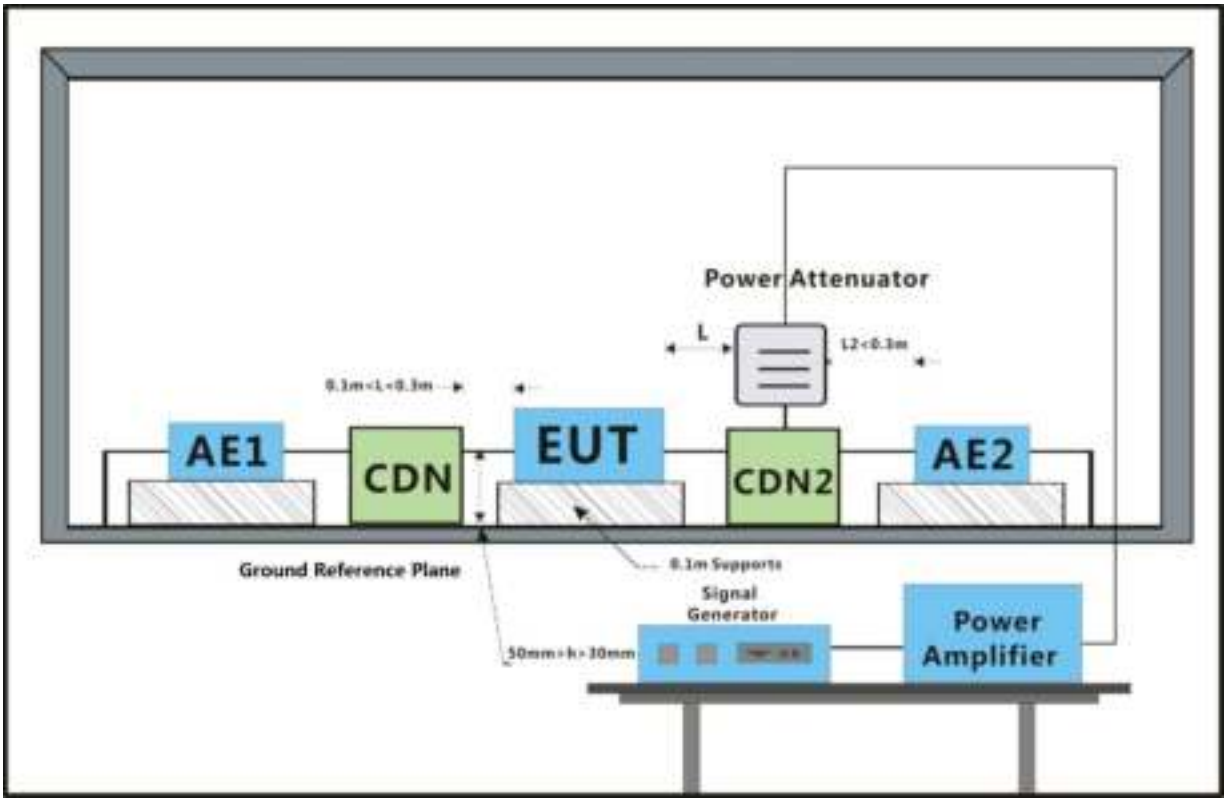
Temperature: 20 °C Humidity: 52.6 % RH Atmospheric Pressure: 1020 mbar

Test Mode: c:Charging mode_Keep EUT in charging status

k: AUX in mode_1kHz Sinewave

l: AUX in + aux sharing mode_1kHz sine wave

7.6.2 Test Setup Diagram



7.6.3 Test Results

Cable port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	3(0.15MHz-10MHz)	CDN	2s	A
AC power port	3 to 1(10MHz-30MHz, Lines)	CDN	2s	A
AC power port	1(30MHz-80MHz)	CDN	2s	A

Results:

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

7.7 Voltage Dips and Interruptions

Test Requirement: EN 55035:2017

Test Method: EN 61000-4-11:2004

Performance Criterion: <5% residual voltage for 0.5 Cycle: B
70% residual voltage for 25 Cycles: C
<5% residual voltage for 250 Cycles: C

No. of Dips / Interruptions: 3 per Level

Time between dropout 10s

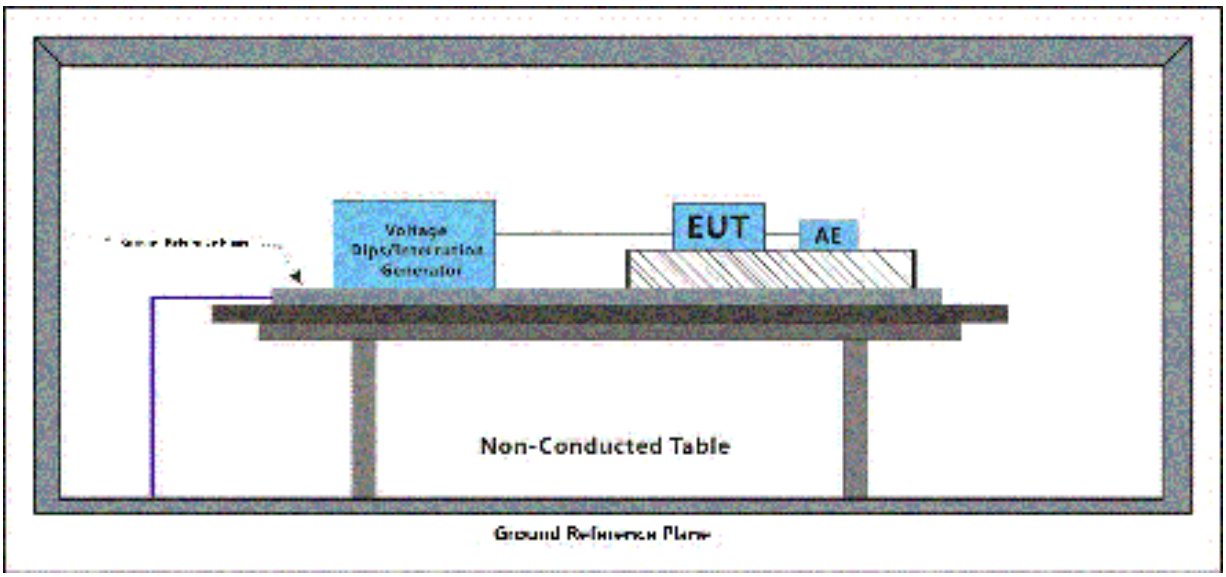
7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 20 °C Humidity: 52.7 % RH Atmospheric Pressure: 1020 mbar

Test Mode: c:Charging mode_Keep EUT in charging status
k: AUX in mode_1kHz Sinewave
l: AUX in + aux sharing mode_1kHz sine wave

7.7.2 Test Setup Diagram



7.7.3 Test Results

Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
0	0°	0.5 Cycles	3	A
0	0°	250 Cycles	3	C
70	0°	25 Cycles	3	A

Results:

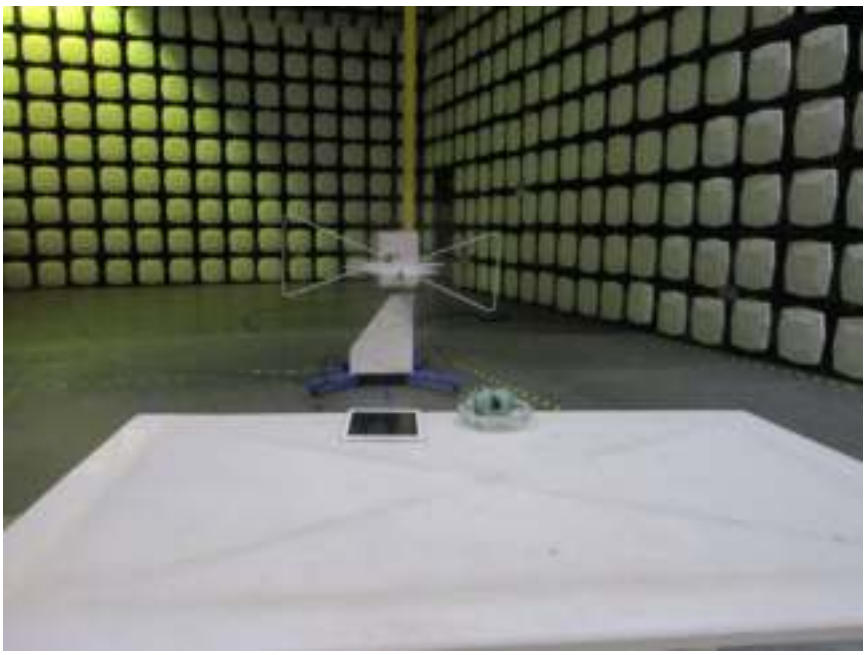
A: No degradation in the performance of the EUT was observed.

C: During test, the EUT stopped working. After test, it could be recovered manually

8 Photographs

8.1 Conducted Emissions at Mains Terminals (150kHz-30MHz) Test Setup

8.2 Radiated Emissions (30MHz-1GHz) Test Setup



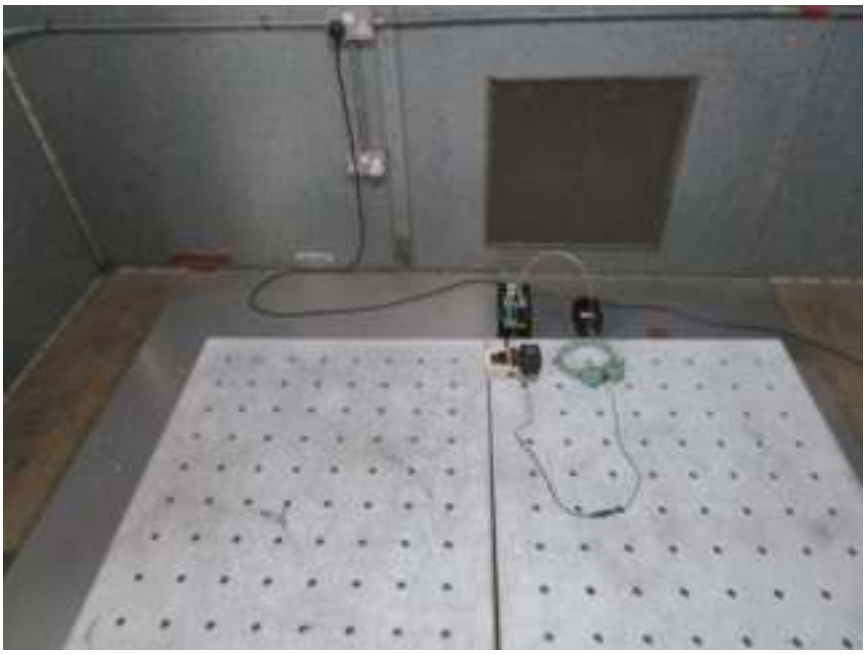
8.3 Voltage Fluctuations and Flicker Test Setup

8.4 Electrostatic Discharge Test Setup

8.5 Electrical Fast Transients/Burst at Power Port Test Setup

8.6 Surge at Power Port Test Setup

8.7 Conducted Immunity at Power Port (150kHz-80MHz) Test Setup



8.8 Voltage Dips and Interruptions Test Setup

8.9 EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for GZEM2012017093CR

--End of Report--