

Report No.: GZEM200901520101

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TEST REPORT

Application No.: GZEM2009015201HS

Applicant: Nanchang Smile Technology Co., Ltd

Address of Applicant: Room 1201, 12th Floor, MSQ Building, No.888 Gaoxin South Avenue, Qingshan

Lake District, Nanchang 330096, Jiangxi, China

Manufacturer: Nanchang Smile Technology Co., Ltd

Address of Manufacturer: Room 1201,12th Floor, MSQ Building, No.888 Gaoxin South Avenue, Qingshan

Lake District, Nanchang 330096, Jiangxi, China

Factory: Nanchang Smile Technology Co., Ltd

Address of Factory: Room 1201,12th Floor, MSQ Building, No.888 Gaoxin South Avenue, Qingshan

Lake District, Nanchang 330096, Jiangxi, China

Equipment Under Test (EUT):

EUT Name: Electric toothbrush

Model No.: IVI-02TB, IVI-02TW, IVI-02TP

Trade Mark: IVISMILE

Standard(s): EN 55011:2016+A1:2017

EN 55014-1:2017

EN IEC 61000-3-2:2019 EN 61000-3-3:2013+A1:2019

EN 55014-2:2015

Date of Receipt: 2020-09-18

Date of Test: 2020-09-23 to 2020-10-12

Date of Issue: 2020-10-20

Test Result: Pass*

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

Kobe Jian EMC Laboratory Manager



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^{*} In the configuration tested, the EUT complied with the standards specified above.



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Revision Record					
Version	Chapter	Date	Modifier	Remark	
01		2020-10-20		Original	

Authorized for issue by:		
Tested By	Stren 2 hon	2020-09-23 to 2020-10-12
	Allen_Zhou /Project Engineer	Date
Checked By	Terry Lai	2020-10-20
	Terry_Lai /Reviewer	Date



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2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at Mains Terminals (150kHz-30MHz)	EN 55011:2016 +A1:2017	EN 55011:2016 +A1:2017	N/A	Pass
Radiated Emissions (30MHz-1GHz)	EN 55011:2016 +A1:2017	EN 55011:2016 +A1:2017	N/A	Pass
Radiated Emissions (30MHz-1GHz)	EN 55014-1:2017	CISPR 16-2-3	N/A	Pass
Radiated Emissions (Magnetic field Strength) (150kHz- 30MHz)	EN 55011:2016 +A1:2017	EN 55011:2016 +A1:2017	N/A	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

N/A: Not applicable



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mmunity Part				.	
Item	Standard	Method	Requirement	Result	
Electrostatic Discharge	EN 55014-2:2015	EN 61000-4-2:2009	4kV Contact Discharge	Pass	
Biodiaige			8kV Air Discharge		
Radiated Immunity (80MHz-1GHz)	EN 55014-2:2015	EN 61000-4-3:2006 +A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod.	Pass	
			1kV		
Electrical Fast Transients/Burst at	EN 55014-2:2015	EN 61000-4-4:2012	5/50ns Tr/Td	Pass	
Power Port	LIN 03014-2.2013	LIN 01000-4-4.2012	5kHz Repetition Frequency	1 233	
			1.2/50µs Tr/Td		
Surge at Power Port	EN 55014-2:2015	EN 61000-4-5:2014	1kV Line to Line	Pass	
			2kV Line to Ground		
			For 50Hz:		
			0 % UT for 0.5cycle		
			40 % UT for 10cycles		
Valta va Dia a and			70 % UT for 25cycles		
Voltage Dips and Interruptions	EN 55014-2:2015	EN 61000-4-11:2004	For 60Hz:	Pass	
Interruptions			0 % UT for 0.5cycle		
			40 % UT for 12cycles		
			70 % UT for 30cycles		
			UT is Supply Voltage		
Conducted Immunity at Power Port (150kHz-230MHz)	EN 55014-2:2015	EN 61000-4-6:2014	3Vrms (emf),80%,1kHz Amp. Mod.	Pass	

¤ Declaration of EUT Family Grouping:

Model No.: IVI-02TB, IVI-02TW, IVI-02TP.

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference on the model No.

Therefore only one model IVI-02TB was tested in this report.



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General Information

4.1 Details of E.U.T.

Power Supply: DC 3.7V with an internal rechargeable battery

charge voltage: DC 5V

1.0m unscreened USB charge cable Cable:

4.2 Description of Support Units

Description	Manufacturer	Model No.	SN/Certificate NO
Adapter 2(EMCA022)	Caixinge Shenzhen Electronic Co., Ltd	CX-4405	N/A

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
	Conducted Disturbance Voltage at	3.63dB (9kHz to 150kHz)
'	Mains Terminals	3.22dB (150kHz to 30MHz)
2	Disturbance Power	3.78dB
3	Dedicted Emissions	5.0dB (30MHz-1GHz)
3	Radiated Emissions	5.0dB (1GHz-6GHz)
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 %



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4.4 Test Location

All tests were performed at:

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Tel: +86 20 82155555 Fax: +86 20 82075059

No tests were sub-contracted.



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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.



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4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

4.8 Monitoring of EUT for All Immunity Test

Visual: motor running and LED indicator lighting

Audio: N/A Other: N/A



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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	2019-11-18	2020-11-17
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 (30	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	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	EMC2174	2018-09-06	2021-09-05	
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-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	2019-11-18	2020-11-17	
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	2017-12-19	2020-12-18	
MXE EMI Receiver	Keysight	N9038A	EMC2139	2019-11-18	2020-11-17	
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2019-11-18	2020-11-17	
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A	



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Radiated Emissions (Ma		i			1
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	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	EMC2174	2018-09-06	2021-09-05
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-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	2019-11-18	2020-11-17
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	2017-12-19	2020-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2019-11-18	2020-11-17
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2019-11-18	2020-11-17
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	



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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

Radiated Immunity (80N	·		l	0.15.4	
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Compact 3m Semi- Anechoic Chamber	ChangZhou ZhongYu	N/A	EMC0525	2019-10-20	2022-10-19
Laser Probe Interface	RF Microwave Instrumentation	FI7000	EMC2089	N/A	N/A
Open Switch And Control Unit	Rohde & Schwarz	OSP130	EMC2090	N/A	N/A
Broadband Amplifier(80MHz~1GHz/ 250W)	Rohde & Schwarz	BBA150	EMC2091	2020-01-10	2021-01-09
Broadband Amplifier(800MHz~3GHz /110W)	Rohde & Schwarz	BBA150	EMC2092	2020-01-10	2021-01-09
Signal Generator	Rohde & Schwarz	SMB100A	EMC2093	2020-01-10	2021-01-09
Laser Probe	RF Microwave Instrumentation	FL7006	EMC2094	2020-03-02	2021-03-21
NRP-Z91 Power Sensor 6GHz	Rohde & Schwarz	NPR-Z91	EMC2095	2020-01-10	2021-01-09
NRP-Z91 Power Sensor 6GHz	Rohde & Schwarz	NPR-Z91	EMC2096	2020-01-10	2021-01-09
High-Gain Log-preiodic Antenna	Rohde & Schwarz	HL046E	EMC2097	2019-02-15	2022-02-14
Stacked Logarithmic- Periodic Broadband Antenna (0.7~9GHz)/300W	SCHWARZBECK MESS - ELEKTRONIK	STLP 9149	SEM003-21	2018-09-18	2021-09-17
Broadband Amplifier (2.5~6GHZ/30W)	Rohde & Schwarz	BBA150	EMC2105	2020-09-18	2021-09-17
RI Cable	Rohde & Schwarz	7m	EMC2098	2020-05-24	2021-05-23
Oscilloscope	Tektronix	TDS3052C	EMC2055	2020-01-10	2021-01-09
Audio Analyzer	Keysight	U8903B	EMC2180	2020-09-18	2021-09-17
Monitor System	Mitsubish Corp.	M-0552AB	EMC0909	N/A	N/A
Test Software EMC32	Rohde & Schwarz	Ver. 9.26.00	GZE100-63	N/A	N/A



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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

Voltage Dips and Interruptions								
Equipment Manufacturer Model No Inventory No Cal Date Cal Due								
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	Conducted Immunity at Power Port (150kHz-230MHz)								
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date				
Test System for Conducted and Radiated Immunity	TESEQ AG	NSG 4070B-80	EMC2115	2019-12-03	2020-12-02				
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	2017-10-26	2020-10-25				
Current Probe	Schaffner Chase	CIP9136	EMC1116	2017-10-26	2020-10-25				
Current Probe	Schaffner Chase	CSP8445	EMC1117	2017-10-26	2020-10-25				
Audio Analyzer	Keysight	U8903B	EMC2180	2020-09-18	2021-09-17				

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



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6 Emission Test Results

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

Test Requirement: EN 55011:2016+A1:2017
Test Method: EN 55011:2016 +A1:2017

Frequency Range: 150kHz to 30MHz

Limit:

0.15M-0.5MHz $66dB(\mu V)$ - $56dB(\mu V)$ quasi-peak, $56dB(\mu V)$ - $46dB(\mu V)$ average

0.5M-5MHz 56dB(μ V) quasi-peak, 46dB(μ V) average 5M-30MHz 60dB(μ V) quasi-peak, 50dB(μ V) average

Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

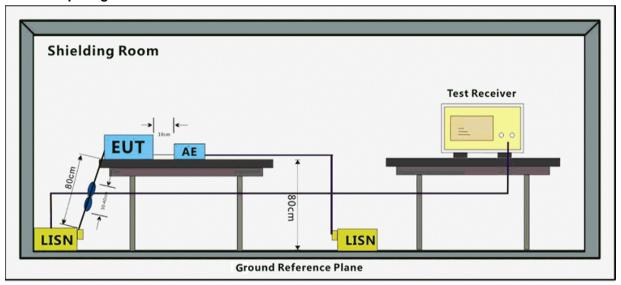
6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25.5 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: charging mode power with AC/DC adapter.

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



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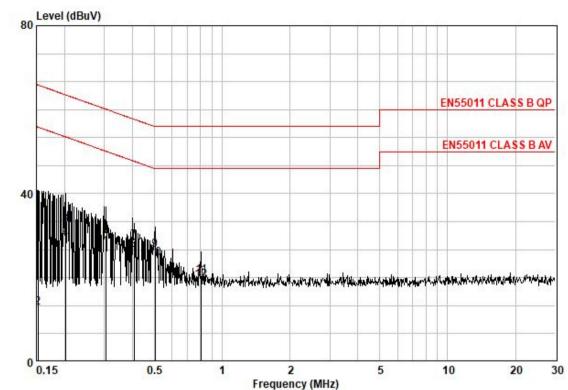
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Mode:a; Line:Live Line



Pol	:LIVE
Mode	0.000
Model	20

Frequency MHz 0.15	read level dBuV 24.36	Cable Loss dB 0.10	Factor dB	Measured level dBuV 34.07	Limit Line dBuV 65.87	Over limit dB -31.80	Remark QP
0. 15	3. 22	0. 10	9. 61	12. 93	55. 87	-42. 94	AVERAGE
0. 20	23. 00	0. 10	9. 60	32.70	63. 54	-30.84	QP
0. 20	19. 51	0.10	9. 60	29, 21	53. 54	-24. 33	AVERAGE
0. 31	20. 38	0.10	9.60	30.08	60.10	-30.02	QP
0.31	19. 14	0.10	9. 60	28. 84	50. 10	-21. 26	AVERAGE
0.41	19.04	0.10	9. 61	28.75	57. 73	-28.98	QP
0. 41	16. 89	0.10	9. 61	26.60	47. 73	-21. 13	AVERAGE
0.50	16.86	0.10	9. 61	26. 57	56.00	-29. 43	QP
0.50	15. 01	0.10	9. 61	24. 72	46.00	-21. 28	AVERAGE
0.81	10.74	0.10	9. 61	20. 45	56.00	-35. 55	QP
0.81	9. 62	0.10	9. 61	19. 33	46.00	-26. 67	AVERAGE



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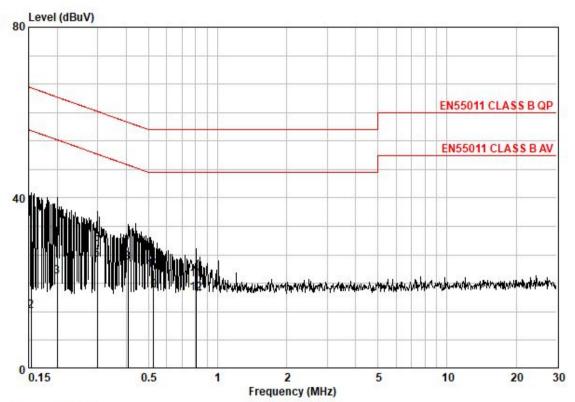
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Mode:a: Line:Neutral Line



Pol : NEUTRAL Mode

Frequency MHz 0.15	read level dBuV 24.54		dB	Measured level dBuV 34.25	Limit Line dBuV 65.78	Over limit dB -31.53	Remark QP
0. 15	3. 74	0. 10	9. 61	13. 45	55. 78	-42. 33	AVERAGE
0. 20	11.85	0. 10	9. 62	21. 57	53. 62	-32.05	AVERAGE
0. 20	20.86	0.10	9. 62	30. 58	63. 62	-33.04	QP
0. 30	15. 82	0.10	9. 63	25. 55	50. 28	-24. 73	AVERAGE
0.30	19. 52	0. 10	9. 63	29. 25	60. 28	-31.03	QP
0. 41	18. 90	0.10	9. 64	28. 64	57. 73	-29.09	QP
0. 41	15.06	0.10	9. 64	24. 80	47. 73	-22. 93	AVERAGE
0. 53	8. 62	0. 10	9. 64	18. 36	46.00	-27.64	AVERAGE
0. 53	13. 28	0.10	9. 64	23. 02	56.00	-32.98	QP
0.80	11. 22	0. 10	9. 67	20.99	56.00	-35.01	QP
0.80	7.99	0.10	9.67	17. 76	46.00	-28. 24	AVERAGE



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6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement: EN 55011:2016+A1:2017 Test Method: EN 55011:2016 +A1:2017

Frequency Range: 30MHz to 1GHz

Measurement Distance: 10m

Limit:

30MHz-80.872MHz 30dB(µV/m) quasi-peak 80.872MHz-81.848MHz 50dB(µV/m) quasi-peak 81.848MHz-134.786MHz 30dB(µV/m) quasi-peak 134.786MHz-136.414MHz 50dB(µV/m) quasi-peak 136.414MHz-230MHz 30dB(µV/m) quasi-peak 230MHz-1000MHz 37dB(µV/m) quasi-peak

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 300MHz

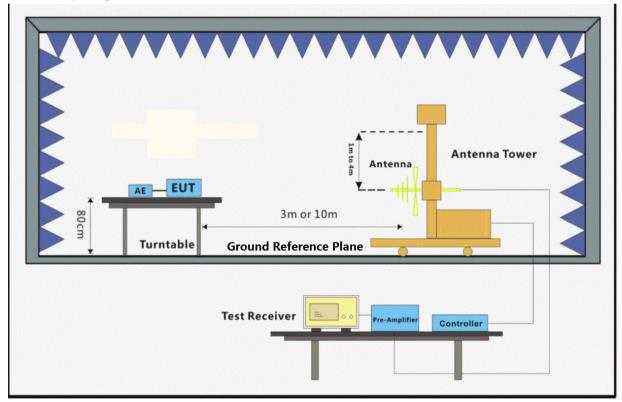
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: charging mode power with AC/DC adapter.

6.2.2 Test Setup Diagram





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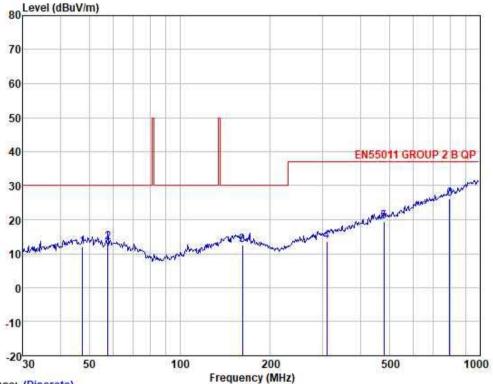
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6.2.3 Measurement Data

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:a; Polarization:Horizontal



Trace: (Discrete)

Site : SGS

Condition: EN55011 GROUP 2 B QP 10m HORIZONTAL

Job Model | Power Test Mode:

	Freq		Antenna Factor						Pol/Phase	Remark
-	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	-	-
1	47.326	24.02	13.97	1.19	27.17	12.01	30.00	-17.99	HORIZONTAL	QP
2	57.594	25.52	13.62	1.30	27.16	13.28	30.00	-16.72	HORIZONTAL	QP
3	162.041	23.60	13.60	2.15	26.79	12.56	30.00	-17.44	HORIZONTAL	QP
4	308.913	23.33	13.85	2.99	26.60	13.57	37.00	-23,43	HORIZONTAL	QP
5	478.846	25.58	17.57	4.08	27.90	19.33	37.00	-17.67	HORIZONTAL	QP
6	793.396	25.80	22.53	5.78	28.04	26.07	37.00	-10.93	HORIZONTAL	QP



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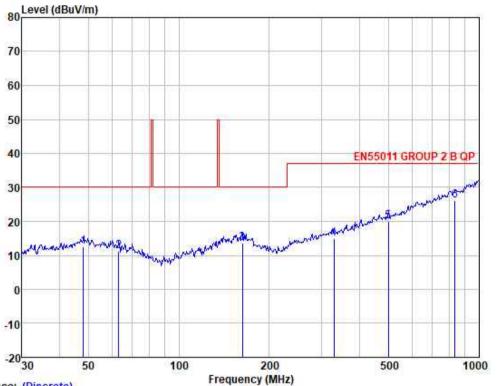
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Mode:a; Polarization:Vertical



Trace: (Discrete)

Site : SGS

Condition: EN55011 GROUP 2 B QP 10m VERTICAL

Job Model Power Test Mode:

	Freq		Intenna Factor		11 145 3 4 1 1 1 1 1 1 1 1				Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	-	=====
1	47.994	24.47	14.00	1.19	27.17	12.49	30.00	-17.51	VERTICAL	QP
2	63.092	24.07	13.00	1.31	27.15	11.23	30.00	-18.77	VERTICAL	QP
3	163.182	24.77	13.53	2.17	26.79	13.68	30.00	-16.32	VERTICAL	QP
4	329.039	24.05	14.48	3.02	26.73	14.82	37.00	-22.18	VERTICAL	QP
5	499.425	25.92	17.90	4.03	27.98	19.87	37.00	-17.13	VERTICAL	QP
6	833.317	25.72	22.70	5.71	27.98	26.15	37.00	-10.85	VERTICAL	QP



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6.3 Radiated Emissions (30MHz-1GHz)

Test Requirement: EN 55014-1:2017
Test Method: CISPR 16-2-3
Frequency Range: 30MHz to 1GHz

Measurement Distance: 10m

Limit:

30 MHz - 230 MHz $30 \text{ dB}(\mu\text{V/m})$ quasi-peak 230 MHz - 1 GHz $37 \text{ dB}(\mu\text{V/m})$ quasi-peak

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

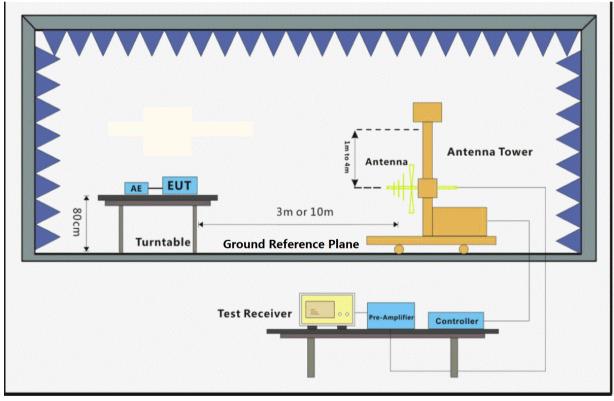
6.3.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test Mode: b: motor running mode power with internal DC battery.

6.3.2 Test Setup Diagram



6.3.3 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



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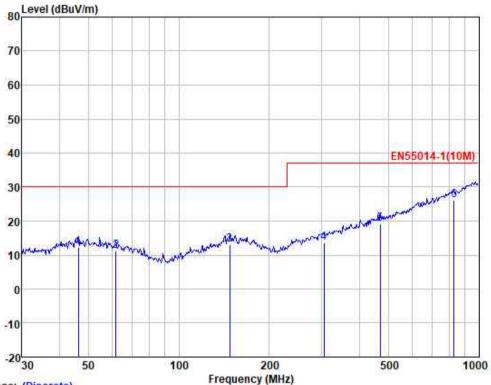
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Mode:b; Polarization:Horizontal



Trace: (Discrete)

Site : SGS

Condition: EN55014-1(10M) 10m HORIZONTAL

Job Model Power Test Mode:

		9623-30	manuscus and a	945 B T S	MODEL LINE		1000000	A01515		
	Freq		Antenna Factor		11 14 14 14 14 14 14 14 14 14 14 14 14 1				Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	,	-
1	46.340	24.36	13.91	1.19	27.17	12.29	30.00	-17.71	HORIZONTAL	QP
2	61.778	23.96	13.13	1.32	27.15	11.26	30.00	-18.74	HORIZONTAL	QP
3	147.921	24.10	13.70	2.05	26.85	13.00	30.00	-17.00	HORIZONTAL	QP
4	304.610	23.36	13.70	2.98	26.57	13.47	37.00	-23.53	HORIZONTAL	QP
5	468.876	25.53	17.47	4.13	27.84	19.29	37.00	-17.71	HORIZONTAL	QP
6	827.493	25.59	22.72	5.71	27.99	26.03	37.00	-10.97	HORIZONTAL	QP



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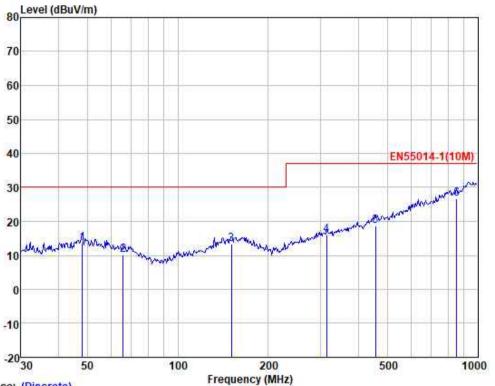
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Mode:b; Polarization:Vertical



Trace: (Discrete)

Site : SGS

Condition: EN55014-1(10M) 10m VERTICAL

Job : Model : Power : Test Mode:

5.0	· ··ouc·									
		ReadA	Antenna	Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
30	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		5-
1	47.994	25.51	14.00	1.19	27.17	13.53	30.00	-16.47	VERTICAL	QP
2	65.803	23.42	12.63	1.30	27.15	10.20	30.00	-19.80	VERTICAL	QP
3	151.067	24.40	13.80	2.06	26.83	13.43	30.00	-16.57	VERTICAL	QP
4	313.276	25.55	14.04	2.99	26.62	15.96	37.00	-21.04	VERTICAL	QP
5	455.906	24.81	17.42	4.12	27.75	18.60	37.00	-18.40	VERTICAL	QP
6	851.035	25.94	22.80	5.83	27.93	26.64	37.00	-10.36	VERTICAL	QP.



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6.4 Radiated Emissions (Magnetic field Strength) (150kHz-30MHz)

Test Requirement: EN 55011:2016+A1:2017
Test Method: EN 55011:2016 +A1:2017

Frequency Range: 150kHz to 30MHz

Measurement Distance: 3m

Limit:

0.15MHz-30MHz 39dB(µA/m) - 3dB(µA/m) guasi-peak

Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

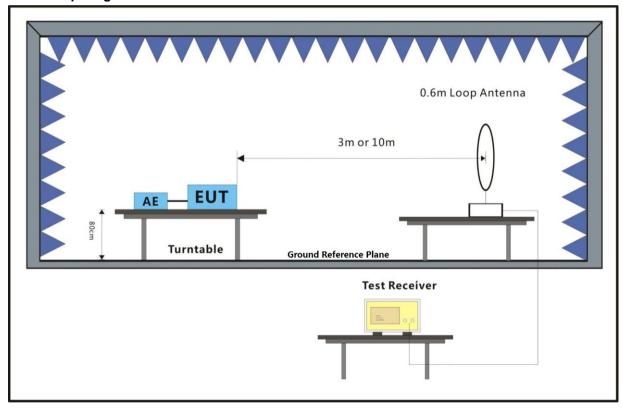
6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: charging mode power with AC/DC adapter.

6.4.2 Test Setup Diagram



6.4.3 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



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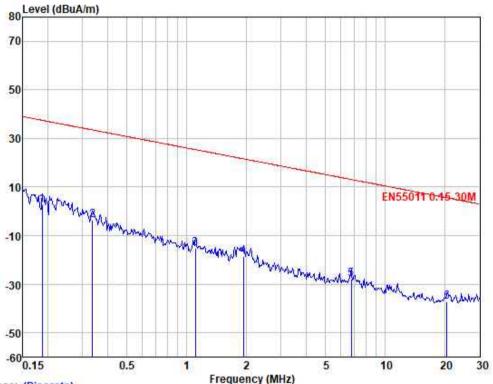
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Mode:a; Polarization:Horizontal



Trace: (Discrete)

Site : SGS

Condition: EN55011 0.15-30M 3m HORIZONTAL

Job : Model : Power : Test Mode:

				Preamp Factor Level				Remark		
2	MHz	dBuA/m	dB/m	dB	dB	dBuA/m	dBuA/m	dB	-	-
1 2 3 4 5	0.187	72.83	-40.72	0.00	29.45	2.66	37.49	-34.83	HORIZONTAL	QP
2	0.336	66.35	-40.77	0.10	29.43	-3.75	33.53	-37.28	HORIZONTAL	QP
3	1.106	55.23	-41.05	0.10	29.41	-15.13	25.43	-40.56	HORIZONTAL	QP
4	1.939	51.24	-40.51	0.10	29.38	-18.55	21.61	-40.16	HORIZONTAL	QP
5	6.769	42.29	-41.14	0.30	29.32	-27.87	13.12	-40.99	HORIZONTAL	QP
6	20.486	34.48	-43.11	0.50	29.20	-37.33	5.59	-42.92	HORIZONTAL	QP



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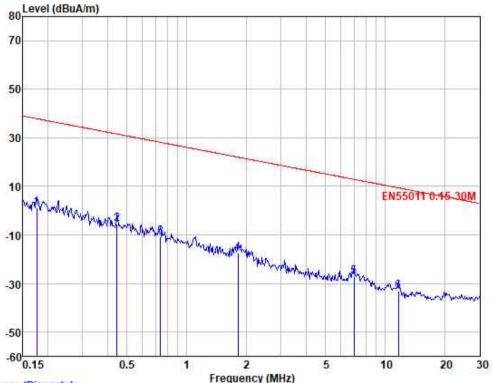
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Mode:a; Polarization:Vertical



Trace: (Discrete)

Site : SGS

Condition: EN55011 0.15-30M 3m VERTICAL

Job Model Power Test Mode:

Apple No.	14000000	Read	ReadAntenna		ntenna Cable Preamp		Limit Over			
	Freq			Factor Loss	HU14503-51111-89					Remark
2	MHz	dBuA/m	dB/m	dB	dB	dBuA/m	dBuA/m	dB		5
1 2 3 4	0.176	71.47	-40.74	0.00	29.45	1.28	37.92	-36.64	VERTICAL	QP
2	0.447	64.69	-40.79	0.10	29.42	-5.42	31.58	-37.00	VERTICAL	QP
3	0.739	59.60	-40.99	0.10	29.41	-10.70	28.16	-38.86	VERTICAL	QP
	1.819	52.45	-40.55	0.10	29.38	-17.38	22.04	-39,42	VERTICAL	QP
5	6.988	43.04	-41.18	0.30	29.31	-27.15	12.90	-40.05	VERTICAL	QP
6	11.683	37.61	-41.84	0.37	29.27	-33.13	9.41	-42.54	VERTICAL	QP.



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6.5 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.



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6.6 Voltage Fluctuations and Flicker

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

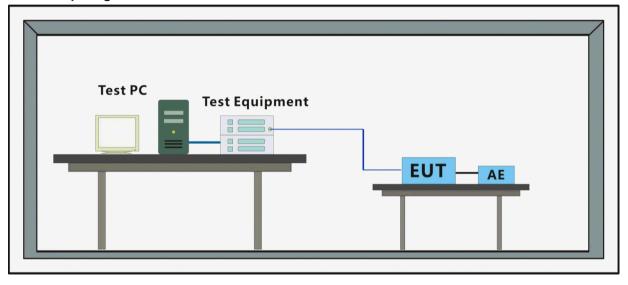
6.6.1 E.U.T. Operation

Operating Environment:

Temperature: 26.2 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: charging mode power with AC/DC adapter.

6.6.2 Test Setup Diagram





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6.6.3 Measurement Data

Mode:a

Flicker Test Summary per EN 61000-3-3 (Run time)

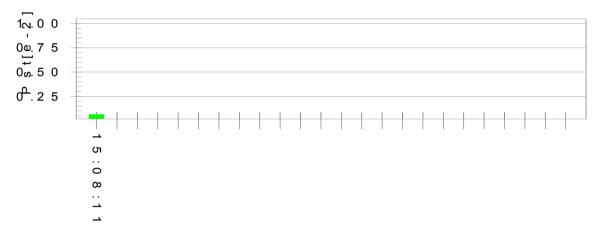
Test category: dt,dmax,dc and Pst (European limits)

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): 230.04

T-max (mS): Highest dc (%): Test limit (mS): Test limit (%): 500.0 **Pass** 0.00 3.30 **Pass** Highest dmax (%): Test limit (%): 4.00 **Pass** 0.00 Highest Pst (10 min. period): 0.064 **Test limit:** 1.000 **Pass**



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7 Immunity Test Results

7.1 Performance Criteria Description in EN 55014-2:2015

Criterion A

The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. 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 from what the user may reasonably expect from the apparatus if used as intended.

Criterion B

The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however. 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, then either of these may be derived from the product description and documentation and from what the user may reasonably expect from the apparatus if used as intended.

Criterion C

Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.



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7.2 Electrostatic Discharge

Test Requirement: EN 55014-2:2015 Test Method: EN 61000-4-2:2009

Performance Criterion:

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

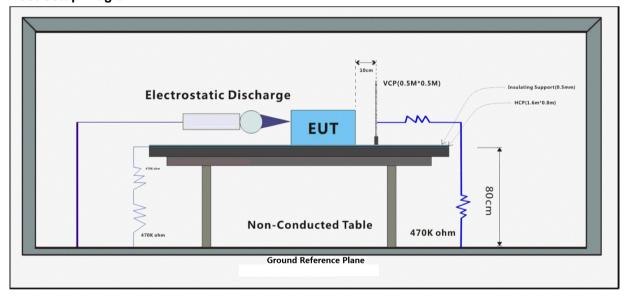
Operating Environment:

Temperature: 26.3 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: charging mode power with AC/DC adapter.

b: motor running mode power with internal DC battery.

7.2.2 Test Setup Diagram





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7.2.3 Test Results

Test Point:

Observations:

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	8	+	1	Α
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

Results:

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



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7.3 Radiated Immunity (80MHz-1GHz)

Test Requirement: EN 55014-2:2015

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

Performance Criterion: A

Frequency Range: 80MHz to 1GHz

Antenna Polarisation: Vertical and Horizontal

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

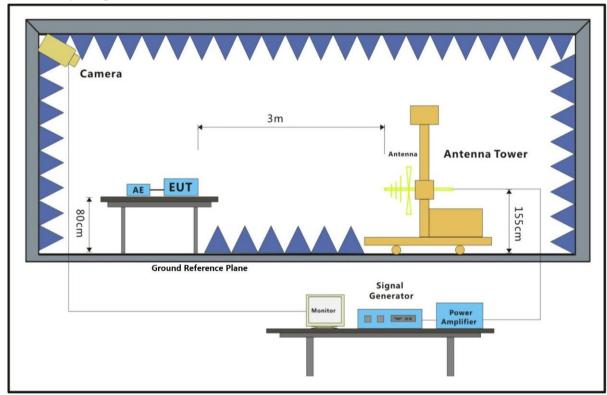
7.3.1 E.U.T. Operation

Operating Environment:

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

Test Mode: b: motor running mode power with internal DC battery.

7.3.2 Test Setup Diagram





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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	Α
80MHz-1GHz	3	Right	2s	A
80MHz-1GHz	3	Тор	2s	A
80MHz-1GHz	3	Underside	2s	A

Results:

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



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7.4 Electrical Fast Transients/Burst at Power Port

Test Requirement: EN 55014-2:2015
Test Method: EN 61000-4-4:2012

Performance Criterion: B
Repetition Frequency: 5kHz
Burst Period: 300ms

Test Duration: 2 minute per level & polarity

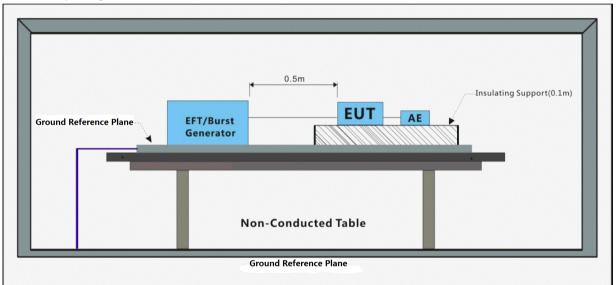
7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23.1 °C Humidity: 60 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: charging mode power with AC/DC adapter.

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	Α
AC power port	1	ı	CDN	Α

Results:

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



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7.5 Surge at Power Port

Test Requirement: EN 55014-2:2015
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°.

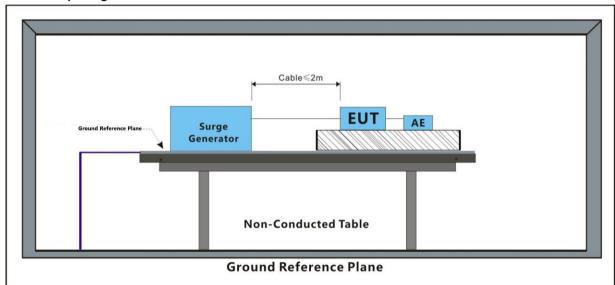
7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.1 °C Humidity: 60.1 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: charging mode power with AC/DC adapter.

7.5.2 Test Setup Diagram



7.5.3 Test Results

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

Results:

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



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7.6 Voltage Dips and Interruptions

Test Requirement: EN 55014-2:2015 Test Method: EN 61000-4-11:2004

For 50Hz: Performance Criterion:

0% of UT (Rated Voltage) for 0.5 Cycle: C;

40% of UT for 10 Cycle: C; 70% of UT for 25 Cycle: C

For 60Hz:

0% of UT (Rated Voltage) for 0.5 Cycle: C;

40% of UT for 12 Cycle: C; 70% of UT for 30 Cycle: C

No. of Dips / Interruptions: 3 per Level

Time between dropout 10s

7.6.1 E.U.T. Operation

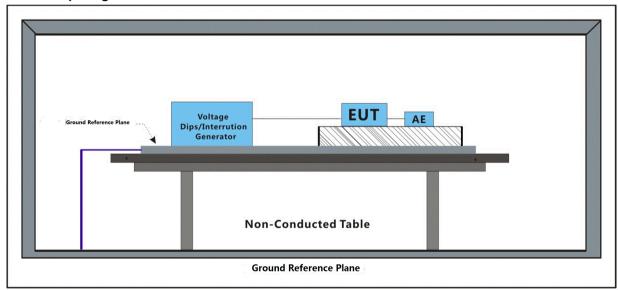
Operating Environment:

mbar Temperature: 23.1 °C Humidity: 60.2 % RH Atmospheric Pressure: 1020

Test Mode: a: charging mode power with AC/DC adapter.

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7.6.2 Test Setup Diagram





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7.6.3 Test Results

Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
0	0°	0.5 Cycles for 50Hz	3	А
0	180°	0.5 Cycles for 50Hz	3	А
40	0°	10 Cycles for 50Hz	3	А
40	180°	10 Cycles for 50Hz	3	А
70	0°	25 Cycles for 50Hz	3	А
70	180°	25 Cycles for 50Hz	3	А
0	0°	0.5 Cycles for 60Hz	3	А
0	180°	0.5 Cycles for 60Hz	3	А
40	0°	12 Cycles for 60Hz	3	А
40	180°	12 Cycles for 60Hz	3	А
70	0°	30 Cycles for 60Hz	3	А
70	180°	30 Cycles for 60Hz	3	А

Results:

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



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7.7 Conducted Immunity at Power Port (150kHz-230MHz)

Test Requirement: EN 55014-2:2015
Test Method: EN 61000-4-6:2014

Performance Criterion: A

Frequency Range: 0.15MHz to 230MHz

Modulation: 80%, 1kHz Amplitude Modulation

Step Size 1%

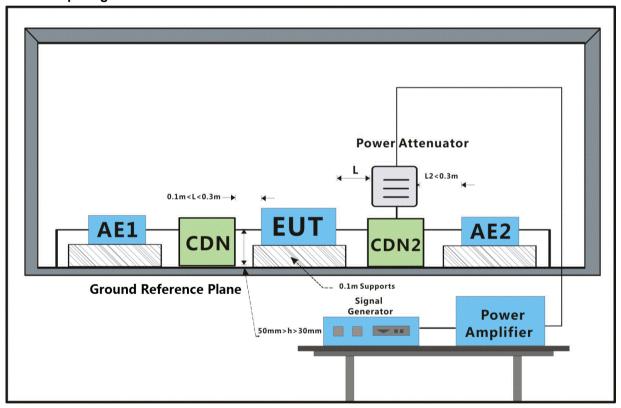
7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 23.1 °C Humidity: 60.2 % RH Atmospheric Pressure: 1020 mbar

Test Mode: a: charging mode power with AC/DC adapter.

7.7.2 Test Setup Diagram



7.7.3 Test Results

Cable port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	3	CDN	2s	A

Results:

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



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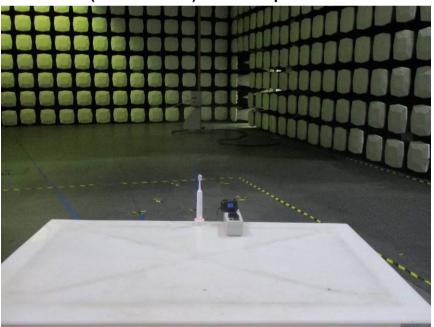
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Photographs 8

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



Radiated Emissions (30MHz-1GHz) Test Setup





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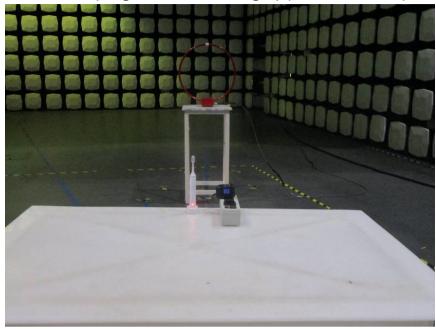
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Radiated Emissions (Magnetic field Strength) (150kHz-30MHz) Test Setup





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8.4 Voltage Fluctuations and Flicker Test Setup





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Electrostatic Discharge Test Setup







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Radiated Immunity (80MHz-1GHz) Test Setup



Electrical Fast Transients/Burst at Power Port Test Setup





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8.8 Surge at Power Port Test Setup



8.9 Voltage Dips and Interruptions Test Setup





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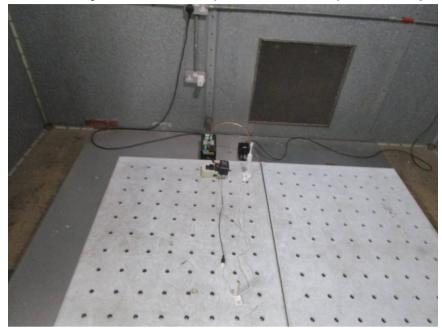
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8.10 Conducted Immunity at Power Port (150kHz-230MHz) Test Setup





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8.11 EUT Constructional Details





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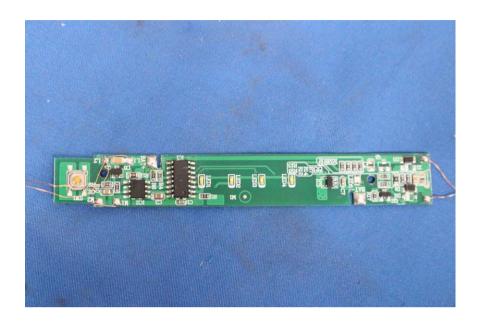
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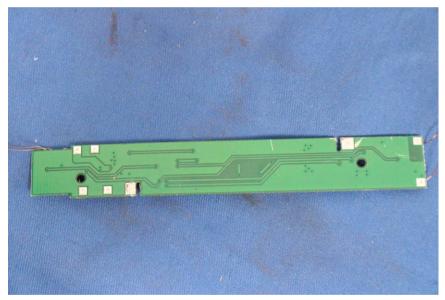
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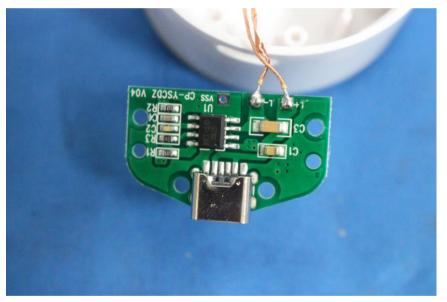
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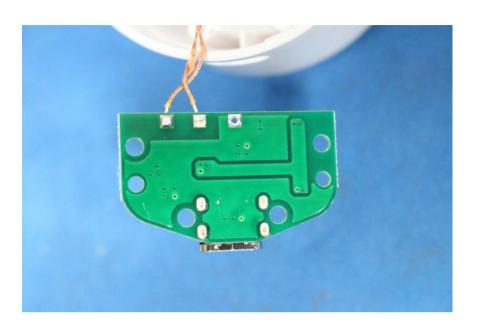
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