

EMC Test Report

Report No.: AGC11005210301EE01

PRODUCT DESIGNATION: PBX Appliance

BRAND NAME : Call4tel

MODEL NAME : SBC-NX-32 Lite

APPLICANT : Call4tel Pte Ltd

DATE OF ISSUE : Mar. 12, 2021

EN 55032:2015/A11:2020

STANDARD(S) : EN IEC 61000-3-2:2019

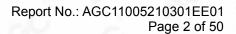
EN 61000-3-3:2013/A1:2019 EN 55035:2017/A11:2020

REPORT VERSION: V1.0

Attestation of Global Conce Shenzhen) Co., Ltd



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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	9 1.0	Mar. 12, 2021	Valid	Initial release

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1 VERIFICATION OF CONFORMITY

Applicant	Call4tel Pte Ltd
Address	#03-06 , Novalty TechPoint , 27 New industrial Road, Singapore 536212
Manufacturer	Call4tel Pte Ltd
Address	#03-06 , Novalty TechPoint , 27 New industrial Road, Singapore 536212
Factory	SGM Telecom Limited LTD
Address	No.248 HongWu Road, Nanjing, China
Product Designation	PBX Appliance
Brand Name	Call4tel
Test Model	SBC-NX-32 Lite
Date of test	Mar. 04, 2021 to Mar. 12, 2021
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	Jack bui	
6	Jack Gui (Project Engineer)	Mar. 12, 2021
Reviewed By	Calin Lin	No. No
CGC .	Calvin Liu (Reviewer)	Mar. 12, 2021
Approved By	Formestics	
igo Fee	Forrest Lei (Authorized Officer)	Mar. 12, 2021

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2 SYSTEM DESCRIPTION

NO.	TEST MODE DESCRIPTION	WORST
1	Normal operation	V

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, Uc = ±3.1dB
- Uncertainty of Radiated Emission, Uc = ±4.0dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±5.4dB

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4 PRODUCT INFORMATION

Housing Type	Plastic
EUT Input Rating	DC 12V by adapter
Adapter Model name	WT12-1201000-Z
Adapter Input Rating	AC 100-240V 50/60Hz 1.6A
Adapter output Rating	DC 12V 1.0A

I/O Port Information (⊠Applicable □Not Applicable)

I/O Port of EUT						
I/O Port Type	Number	Cable Description	Tested With			
DC In) <u>,</u> 0 ,	1.2m Unshielded	W1 ,			
HDMI	1 0	7 20 - 2	1			
USB	2	-G-	2			
LAN	2	F 5	2			

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5 SUPPORT EQUIPMENT

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
Displayer	SUMSUNG	TH-L32X30C		O-	r:0- ,
Displayer	DELL	-0-	20 - 2	- 1	S 50
USB disk	-C -	1	-GV	0-	
Router	0	, ±0	E N		7.6

Note:

1 All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.

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6 TEST FACILITY

Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao 'an District, Shenzhen, Guangdong, China

7 TEST EQUIPMENT LIST

TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Test Receiver	R&S	ESPI	101206	May 15, 2020	May 14, 2021
LISN	R&S	ESH2-Z5	100086	Jul. 03, 2020	Jul. 02, 2021
8-Wire ISN CAT 5	Schwarzbeck	CAT5 8158	#158	Dec. 21, 2019	Dec.20, 2021
Test software	FARA	EZ_EMC (Ver.RA-03A)	N/A	N/A	N/A

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Test Receiver	R&S	ESCI	10096	May 15, 2020	May 14, 2021
Antenna	SCHWARZBEC K	VULB9168	494	Sep. 20, 2019	Sep. 19, 2021
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May 17, 2019	May 16, 2021
EXA Signal Analyzer	Agilent	N9010A	MY53470504	Dec. 07, 2019	Dec. 06, 2021
Test software	FARA	EZ_EMC (Ver.RA-03A)	N/A	N/A	N/A
Test software	Tonscend	JS32-re(Ver.2.5)	N/A	N/A	N/A

TEST EQUIPMENT OF POWER HARMONICS / VOLTAGE FLUCTUATION / FLICKER

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due	
Signal Conditioning Unit	Schaffner	CCN1000-1	72431	Jul. 15, 2020	Jul. 14, 2022	
AC Source	Schaffner	NSG1007	56825	Jul. 15, 2020	Jul. 14, 2022	

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TEST EQUIPMENT OF SURGE/EFT/DIPSTEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due	
EFT Surge Generator	Schaffner	Modula 6150	34437	Jul. 03, 2020	Jul. 02, 2022	

TEST EQUIPMENT OF ESD TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due	
ESD Simulator	Schaffner	dito	P1527160053	Jan. 10, 2020	Jan. 09, 2022	

TEST EQUIPMENT OF RS IMMUNITY TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due	
Signal Generator	R&S	E4421B	MY43351603	Jun. 08 2020	Jun. 07, 2022	
Power Sensor	R&S	URV5-Z4	100124	May 22, 2020	May 21, 2022	
Power Meter	R&S	NRVD	8323781027	May 22, 2020	May 21, 2022	
Power Amplifier	KALMUS	7100LC	04-02/17-06-00 1	N/A	N/A	
Power Amplifier	Power Amplifier Milmega		1004793	N/A	N/A	
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May 17, 2019	May 16, 2021	
Antenna	SCHWAR7BEC		494	Sep. 20, 2019	Sep. 19, 2021	
Power Amplifier	rflight	NTWPA-256010 0	17063183	N/A	N/A	
Broadband High Gain Horn Antenna	SCHWARZBEC K	BBHA 9120 J	00073	Sep.27, 2019	Sep.26, 2021	

TEST EQUIPMENT OF CS IMMUNITY TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due	
Power Amplifier	CDN ZHINAN		18464	N/A	N/A	
CDN			15004	Sep. 03, 2020	Sep. 02, 2022	
6dB attenuator			N/A	Sep. 03, 2020	Sep. 02, 2022	
Power Sensor	R&S	URV5-Z4	100124	May 22, 2020	May 21, 2022	
Power Meter	R&S	NRVD	8323781027	May 22, 2020	May 21, 2022	
Signal Generator	R&S	E4421B	MY43351603	Jun. 08 2020	Jun. 07, 2022	

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8 TESTSUMMARY LIST

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 IEC 61000-3-2	EN IEC 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-AC Power port	EN 55035	EN 61000-4-4	+/- 1kV for Power Supply Lines	Pass
Electrical fast transient/burst Immunity Signal Port	EN 55035	EN 61000-4-4	+/- 0.5kV	Pass
Surge immunity-AC Power port	EN 55035	EN 61000-4-5	+/- 1kV (Line to Line) +/- 2kV (Line to Ground)	Pass
Immunity to Conducted Disturbances Induced by RF fields-AC Power port	EN 55035	EN 61000-4-6	3V(0.15MHz-10MHz) 3V-1V(10MHz-30MHz) 1V(30MHz-80MHz) with 80% AM. 1 kHz Modulation	Pass
Immunity to Conducted Disturbances Induced by RF fields- Signal Port	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:

- 1. N/A means not applicable.
- 2. Power frequency magnetic field: Applicable only to EUT containing devices susceptible to magnetic fields, such as CRT monitors, Hall elements, electrodynamic microphones, magnetic field sensors, etc.

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9 EN 55032 LINE CONDUCTED EMISSION TEST

9.1 LIMITS OF LINE CONDUCTED EMISSION TEST

AT AC MAINS POWER PORT

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

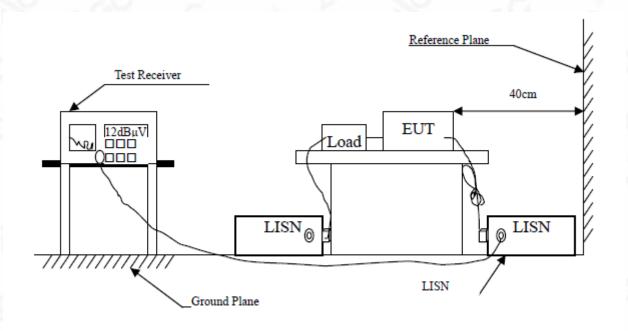
Note:

- 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.

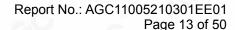
AT telecommunication PORT

Francis	Maximum RF Line Voltage						
Frequency	Q.P.(dBuV)	Average(dBuV)					
150kHz-500kHz	84-74	74-64					
500kHz-30MHz	74	64					

9.2 BLOCK DIAGRAM OF TEST SETUP



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9.3 PROCEDURE OF LINE CONDUCTED EMISSION TEST

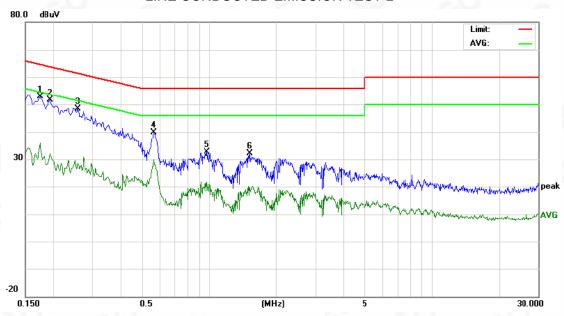
- (1)The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per EN 55032 (see Test Facility for the dimensions of the ground 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 DC 12V power 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



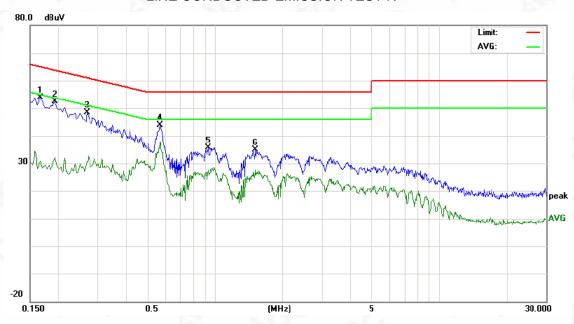
No.	Freq.	Reading_Level (dBuV)		Correct Measurement Factor (dBuV)		Limit (dBuV)		Margin (dB)		P/F	Comment			
	(MHz)	Peak	QP	AVG	dΒ	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1740	39.95	36.16	17.22	12.82	52.77	48.98	30.04	64.76	54.76	-15.78	-24.72	Р	
2	0.1940	38.88	34.65	16.05	12.85	51.73	47.50	28.90	63.86	53.86	-16.36	-24.96	Р	
3	0.2580	35.39	30.09	12.99	12.96	48.35	43.05	25.95	61.49	51.49	-18.44	-25.54	Р	
4	0.5660	26.02	23.59	14.91	13.79	39.81	37.38	28.70	56.00	46.00	-18.62	-17.30	Р	
5	0.9820	18.78	14.78	5.86	13.81	32.59	28.59	19.67	56.00	46.00	-27.41	-26.33	Р	
6	1.5339	18.29	12.78	3.95	13.74	32.03	26.52	17.69	56.00	46.00	-29.48	-28.31	Р	

RESULT: PASS

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LINE CONDUCTED EMISSION TEST-N



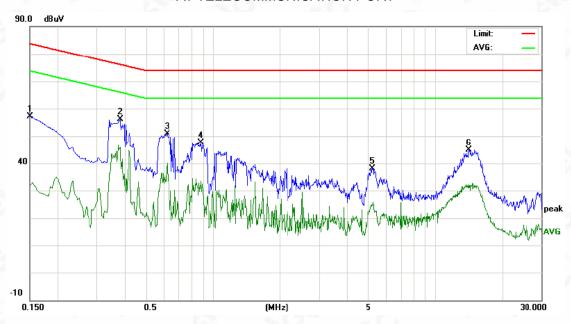
No.	Freq.	Reading_Level (dBuV)			Correct Factor	Measurement (dBuV)			Limit (dBuV)		Margin (dB)		P/F	Comment
	(MHz)	Peak	QP	AVG	dΒ	Peak	QP	AVG	QP	AVG	QP	AVG		
1	0.1660	41.12	34.79	15.92	12.81	53.93	47.60	28.73	65.15	55.15	-17.55	-26.42	Р	
2	0.1940	39.64	33.87	15.16	12.85	52.49	46.72	28.01	63.86	53.86	-17.14	-25.85	Р	
3	0.2700	35.36	29.28	15.52	12.97	48.33	42.25	28.49	61.12	51.12	-18.87	-22.63	Р	
4	0.5700	30.05	27.32	22.33	13.80	43.85	41.12	36.13	56.00	46.00	-14.88	-9.87	Р	
5	0.9380	21.86	17.74	12.24	13.82	35.68	31.56	26.06	56.00	46.00	-24.44	-19.94	Р	
6	1.5260	21.21	16.59	11.34	13.75	34.96	30.34	25.09	56.00	46.00	-25.66	-20.91	Р	

RESULT: PASS

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AT TELECOMMUNICATION PORT



	No.	Freq. (MHz)	Reading_Level (dBuV)		Correct Factor	Measurement (dBuV)		Limit (dBuV)		Margin (dB)		P/F	Comment		
			Peak	QP	AVG	dΒ	Peak	QP	AVG	QP	AVG	QP	AVG		
	1	0.1500	44.39	41.58	19.07	12.78	57.17	54.36	31.85	83.99	73.99	-29.63	-42.14	Р	
	2	0.3820	42.62	40.34	30.52	13.42	56.04	53.76	43.94	76.23	66.23	-22.47	-22.29	Р	
	3	0.6220	37.14	35.06	23.88	13.82	50.96	48.88	37.70	74.00	64.00	-25.12	-26.30	Р	
	4	0.8820	33.80	31.00	16.50	13.82	47.62	44.82	30.32	74.00	64.00	-29.18	-33.68	Р	
	5	5.2420	25.82	20.71	10.39	12.34	38.16	33.05	22.73	74.00	64.00	-40.95	-41.27	Р	
	6	14.1420	31.46	23.98	16.99	13.46	44.92	37.44	30.45	74.00	64.00	-36.56	-33.55	Р	

RESULT: PASS

Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the specificated restriction. Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC, the test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15day after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.



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

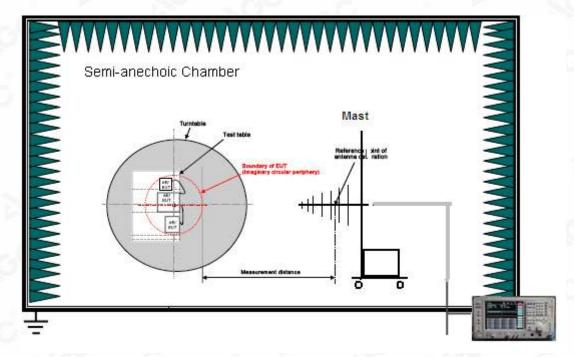
Eraguanay ranga (MUz)	Limits (dBuV/m), Class B ITE				
Frequency range (MHz)	Peak	Average			
1000-3000	70	50			
3000-6000	74	54			

Notes:

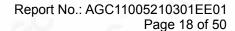
- 1. The lower limit shall apply at the transition frequency.
- 2. Additional provisions may be required for cases where interference occurs.

10.2 BLOCK DIAGRAM OF TEST SETUP

System Diagram of Connections between EUT and Simulators



Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the conditional description of the stamped by the condition of the stamped by the conditional description of the stamped by the condition of the stamped by the condition





10.3 PROCEDURE OF RADIATED EMISSION TEST

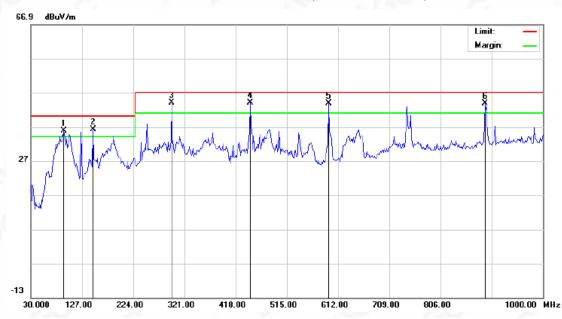
- (1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per EN 55032 (see Test Facility for the dimensions of the 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 connected to the display works normally.
- (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-(30MHz-1000MHz) Horizontal



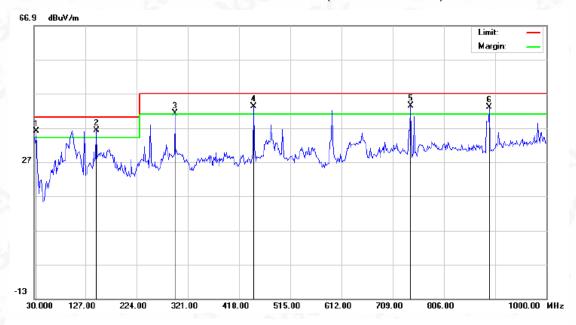
No.	Μk	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dΒ	dBuV/m	dBuV/m	dΒ	Detector	cm	degree	Comment
1	ļ	93.0499	20.55	15.29	35.84	40.00	-4.16	peak			
2	ļ	148.0166	17.09	19.21	36.30	40.00	-3.70	peak			
3	ļ	296.7500	24.38	19.55	43.93	47.00	-3.07	peak			
4	*	445.4832	20.07	23.89	43.96	47.00	-3.04	peak			
5	ļ	594.2166	16.88	26.84	43.72	47.00	-3.28	peak			
6	ļ	890.0665	12.16	31.57	43.73	47.00	-3.27	peak			

RESULT: PASS

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Radiated Emission Test at 3m Distance-(30MHz-1000MHz) Vertical



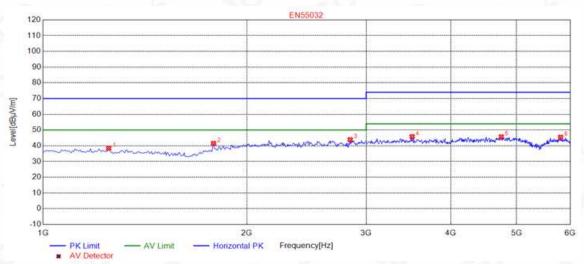
No.	МІ	k. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dΒ	Detector	cm	degree	Comment
1	ļ	34.8500	23.69	12.32	36.01	40.00	-3.99	peak			
2	ļ	148.0166	17.04	19.21	36.25	40.00	-3.75	peak			
3	ļ	296.7500	21.68	19.55	41.23	47.00	-5.77	peak			
4	ļ	445.4832	19.23	23.89	43.12	47.00	-3.88	peak			
5	*	742.9500	14.33	29.12	43.45	47.00	-3.55	peak			
6	ļ	891.6833	11.38	31.59	42.97	47.00	-4.03	peak			

RESULT: PASS

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Radiated Emission Test at 3m Distance-Above 1G -Horizontal



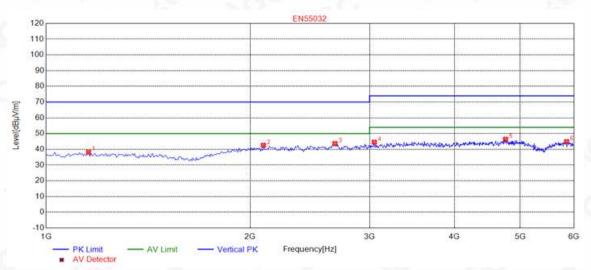
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1250.2503	38.38	-16.89	70.00	31.62	100	140	Horizontal
2	1785.7858	41.56	-14.09	70.00	28.44	100	30	Horizontal
3	2841.8418	43.89	-9.45	70.00	26.11	100	300	Horizontal
4	3507.5075	45.84	-7.58	74.00	28.16	100	30	Horizontal
5	4748.7487	45.70	-4.96	74.00	28.30	100	100	Horizontal
6	5809.8098	45.49	-4.30	74.00	28.51	100	170	Horizontal

RESULT: PASS

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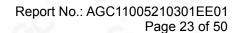
Radiated Emission Test at 3m Distance Above 1G -Vertical



NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1155.1552	38.17	-16.79	70.00	31.83	100	210	Vertical
2	2091.0911	42.59	-11.44	70.00	27.41	100	340	Vertical
3	2666.6667	43.69	-9.59	70.00	26.31	100	260	Vertical
4	3047.0470	44.56	-9.17	74.00	29.44	100	120	Vertical
5	4758.7588	46.38	-4.95	74.00	27.62	100	310	Vertical
6	5854.8549	44.88	-4.15	74.00	29.12	100	30	Vertical

RESULT: PASS

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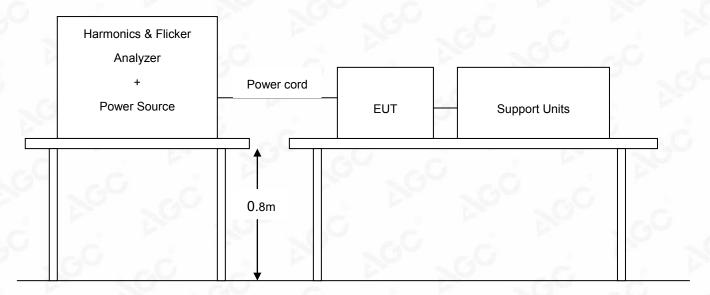


11 EN IEC 61000-3-2 POWER HARMONICS TEST

POWER HARMONICS MEASUREMENT

Port	AC mains
Basic Standard	EN IEC 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: Owning to the power of EUT is less than 75W, so test is not applicable.

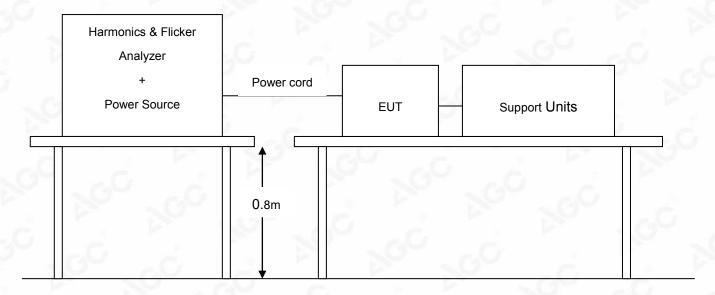
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the Bedicated restriction Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC, the test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15day after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc@agc-cert.com.



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	23.6°C
Humidity	57.5% RH

12.1 BLOCK DIAGRAM OF TEST SETUP



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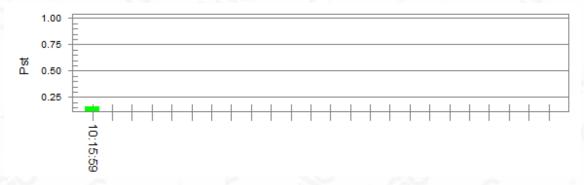


12.2 RESULT

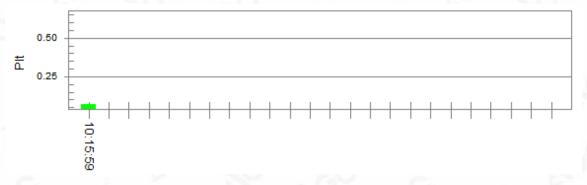
Flicker Test Summary per EN/IEC61000-3-3 (Run time)

Pst_i and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at	the end	of test	(Volt):	230.72
---------	---------	---------	---------	--------

Highest dt (%):	0.00	Test limit (%):	3.30	Pass
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):	0.160	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.070	Test limit:	0.650	Pass

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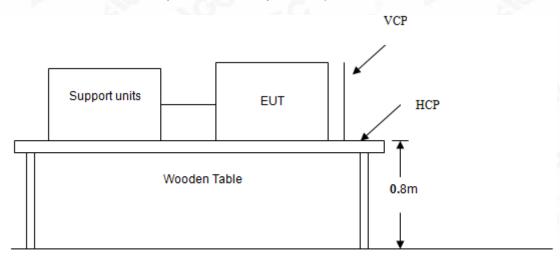
13 EN 61000-4-2 ESD IMMUNITY TEST

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	В
Temperature	24.3°C
Humidity	57.2% RH

13.1 BLOCK DIAGRAM OF TEST SETUP

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



Ground Reference Plane₽

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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	Α	
±4kV	Indirect Discharge HCP (Front)	No function loss	Α	
±4kV	Indirect Discharge HCP (Left)	No function loss	Α	
±4kV	Indirect Discharge HCP (Back)	No function loss	Α	
±4kV	Indirect Discharge HCP (Right)	No function loss	A	
±4kV	Indirect Discharge VCP (Front)	No function loss	Α	
±4kV	Indirect Discharge VCP (Left)	No function loss	Α	
±4kV	Indirect Discharge VCP (Back)	No function loss	Α	
±4kV	Indirect Discharge VCP (Right)	No function loss	Α	
±8kV	Air Discharge	No function loss	Α	

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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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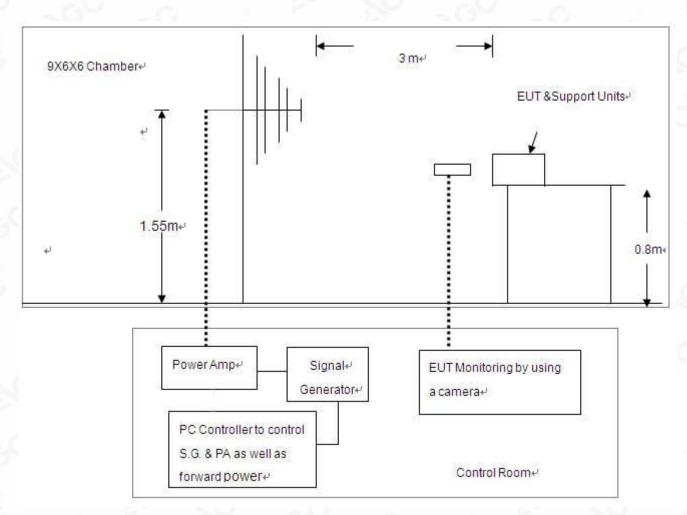


14 EN 61000-4-3 RS IMMUNITY TEST

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	22.1°C
Humidity	57.5% 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	Α
80-1000	3V/m	AM	H/V	Left	No function loss	Α
80-1000	3V/m	AM	H/V	Back	No function loss	Α
80-1000	3V/m	AM	H/V	Right	No function loss	Α
1800,2600, 3500,5000	3V/m	AM	H/V	Front	No function loss	Α
1800,2600, 3500,5000	3V/m	AM	H/V	Left	No function loss	Α
1800,2600, 3500,5000	3V/m	AM	H/V	Back	No function loss	Α
1800,2600, 3500,5000	3V/m	AM	H/V	Right	No function loss	Α

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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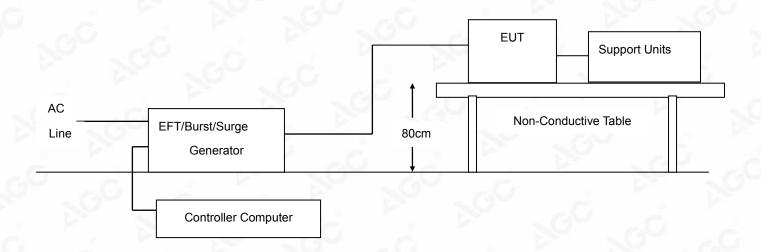


15 EN 61000-4-4 EFT IMMUNITY TEST

ELECTRICAL FAST TRANSIENTS/BURST IMMUNITY TEST

Port	On Power Supply Lines				
Basic Standard	EN 61000-4-4				
Test Level	+/- 1kV for Power Supply Lines +/- 0.5kV for signal port				
Standard require	В				
Temperature	23.2°C				
Humidity	58.0% 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	Α
Signal	+/- 0.5	Coupling	No function loss	Α

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.

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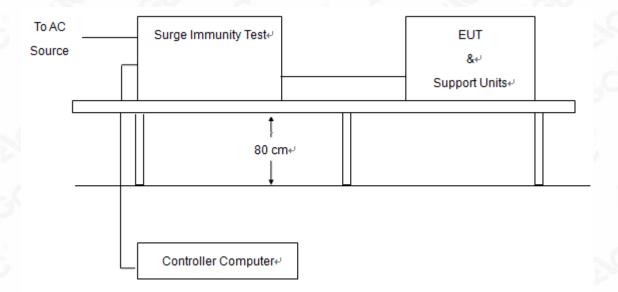


16 EN 61000-4-5 SURGE IMMUNITY TEST

SURGE IMMUNITY TEST

OUNCE IMMOUTH	1201
Port	On Power Supply Lines
Basic Standard	EN 61000-4-5
Requirements	+/- 1kV (Line to Line)
Standard require	В
Temperature	23.2°C
Humidity	58.0% 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 <i>u</i> s
Current Waveform	8/20 us
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	Α
L1-N	1_0	Negative	Capacitive	No function loss	Α

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.

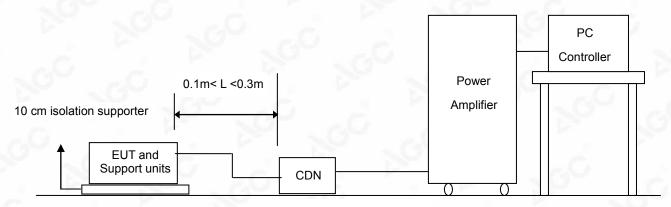
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17 EN 61000-4-6 CS IMMUNITY TEST

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	24.0°C
Humidity	58.2% RH

17.1 BLOCK DIAGRAM OF TEST SETUP



Ground Reference Plane

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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 for AC power port and signal port:

Frequency Range	0.15MHz-80MHz	100	. AO	- 2	P
Frequency Step	1% of fundamental			100	- 7.0
Dwell Time	3 sec	C			F 30

Range (MHz)	Strength	Modulation	Result
0.15-10	3V	AM	Α
10-30	3V-1V	AM	Α
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.

□FAIL	⊠PASS
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18 EN 61000-4-11 DIPS IMMUNITY TEST

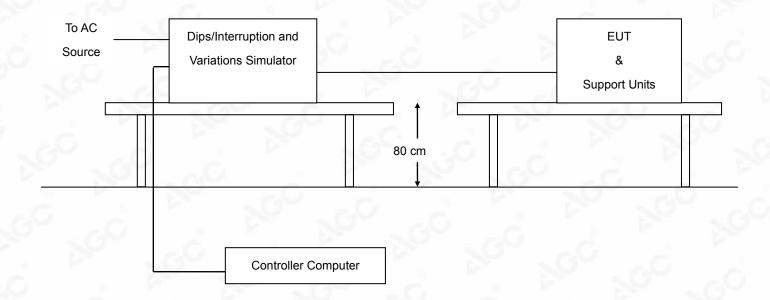
VOLTAGE DIPS, SHORT INTERRUPTIONS AND VOLTAGE VARIATIONS IMMUNITY TEST

Port	On Power Supply Lines
Basic Standard	EN 61000-4-11
Requirements	PHASE ANGLE 0degrees
Test Interval	Min. 10 sec.
Temperature	23.2°C
Humidity	58.0% RH

	Test Level % U _T	Reduction (%)	Duration (periods)	Performance Criteria
Voltage Dips	<5	>95	0.5	В
	70	30	25	С

Voltage Interruptions	Test Level % U _T	Reduction (%)	Duration (periods)	Performance Criteria
	<5	>95	250	С

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	Α
70	30	25	Normal	Α

Voltage Interruptions:

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

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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APPENDIX A: PHOTOGRAPHS OF TEST SETUP

EN 55032 CONDUCTED EMISSION TEST SETUP



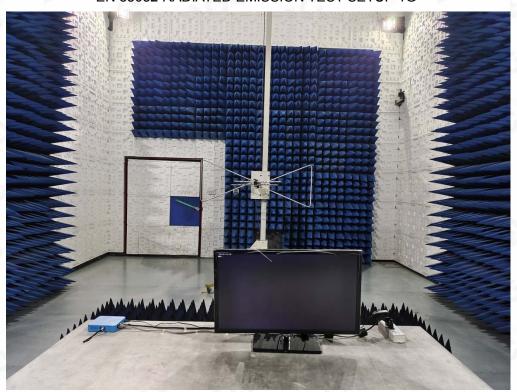
EN 55032 CONDUCTED EMISSION TEST SETUP (LAN)



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EN 55032 RADIATED EMISSION TEST SETUP 1G-



EN 55032 RADIATED EMISSION TEST SETUP 1G+



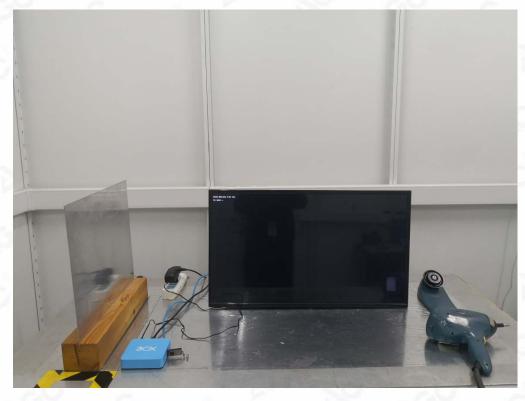
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EN 61000-3-3 VOLTAGE HARMONICS/FLUCTUATION / FLICKER TEST



EN 61000-4-2 ESD IMMUNITY TEST SETUP



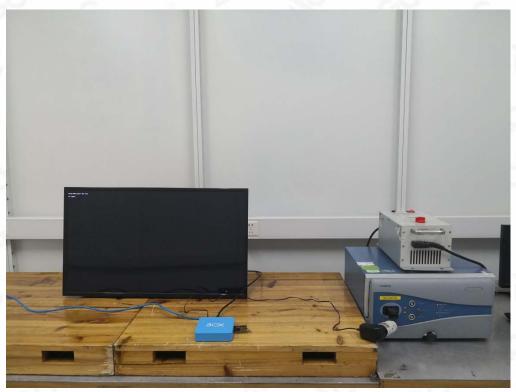
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EN 61000-4-3 RS IMMUNITY TEST SETUP



EFT SURGE and DIPS IMMUNITY TEST SETUP-AC POWER PORT



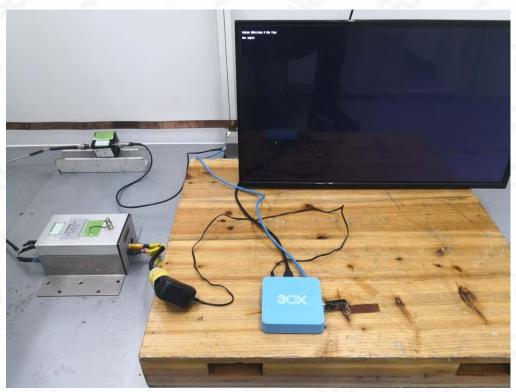
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EFT IMMUNITY TEST SETUP- SIGNAL PORT



EN 61000-4-6 CS IMMUNITY TEST SETUP- SIGNAL PORT



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EN 61000-4-6 CS IMMUNITY TEST SETUP-AC POWER PORT



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APPENDIX B: PHOTOGRAPHS OF EUT

ALL VIEW OF EUT



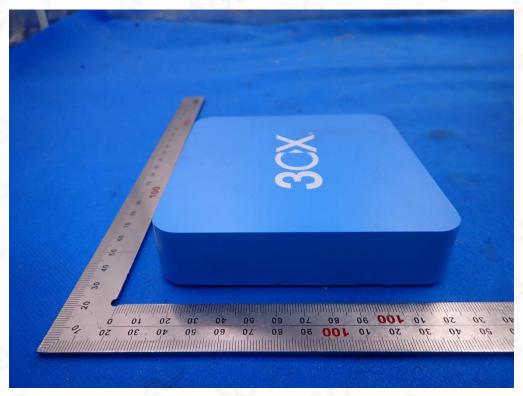
TOP VIEW OF EUT



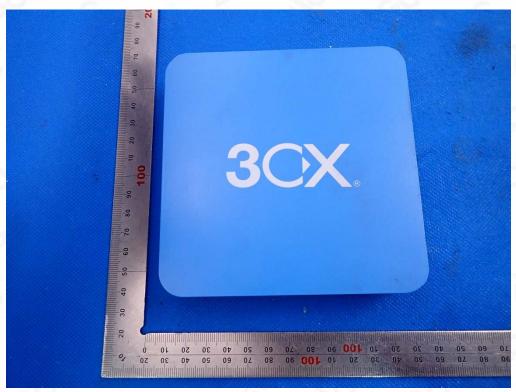
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BOTTOM VIEW OF EUT



FRONT VIEW OF EUT



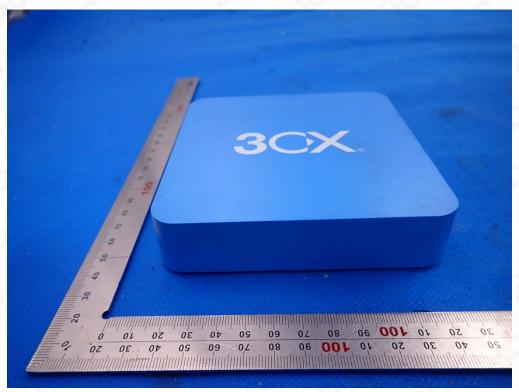
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BACK VIEW OF EUT



LEFT VIEW OF EUT



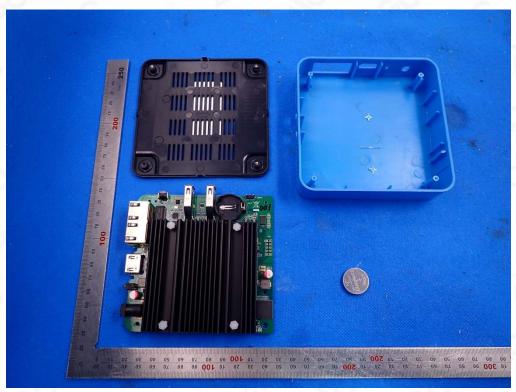
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RIGHT VIEW OF EUT



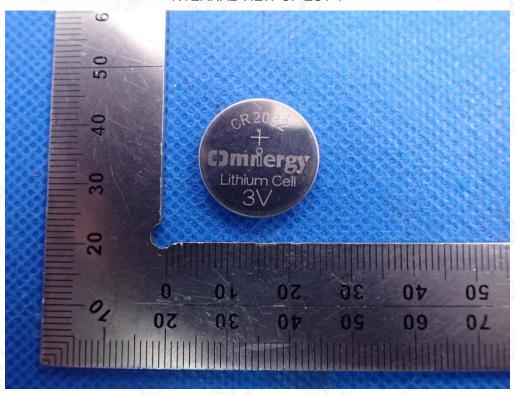
OPEN VIEW OF EUT



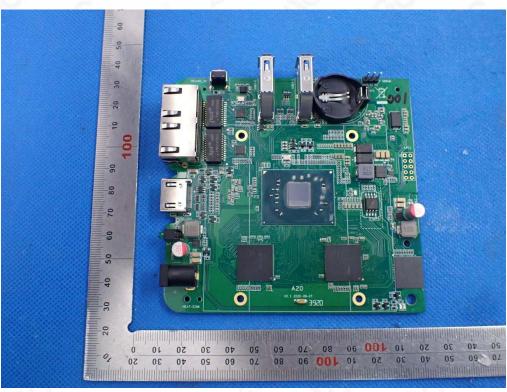
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NTERNAL VIEW OF EUT-1



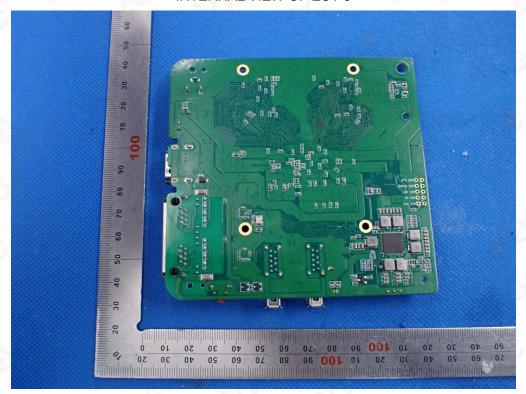
INTERNAL VIEW OF EUT-2



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INTERNAL VIEW OF EUT-3



ADAPTER OF EUT



----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.

The test results

he test report.

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