

EMC Test Report

Report No.: AGC11262210402EE01

PRODUCT DESIGNATION : PBX Appliance

BRAND NAME : Call4tel

MODEL NAME : SBC-NX-96

APPLICANT : Call4tel Pte Ltd

DATE OF ISSUE : May 14, 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 Compliance (Shenzhen) Co., Ltd

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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	9 1	May 14, 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-96			
Date of test	Mar. 23, 2021 to May 14, 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 brui	
- N	Jack Gui (Project Engineer)	May 14, 2021
Reviewed By	Calin Lin	200 FC
	Calvin Liu (Reviewer)	May 14, 2021
Approved By	Formestics	
100 100	Forrest Lei (Authorized Officer)	May 14, 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 and metal
EUT Input Rating	AC 100-240V 50/60Hz

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

I/O Port of EUT						
I/O Port Type	Number	Cable Description	Tested With			
AC IN	. 6 ⁹ 1 6	1.2m Unshielded	1			
HDMI	1	-,0 2-	1			
WAN	1	CO	_1			
USB	2	27	2			
LAN	1 0	2.0 - 2	1			

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5 SUPPORT EQUIPMENT

Device Type	Manufacturer	Model Name	Serial No.	Data Cable	Power Cable
Displayer	DELL	,0 =		O-	r.O- ,
LAN cable	-	-0-	20 - 2		50
HDMI cable	-C -	1	-GV	0-	J - 1
USB disk	0	, ±0	E S		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 11, 2021	May 10, 2022
LISN	R&S	ESH2-Z5	100086	Jul. 03, 2020	Jul. 02, 2021
8-Wire ISN CAT 5	Schwarzbeck	CAT5 8158	#158	Dec. 09, 2020	Dec. 08, 2021
Test software	R&S	ES-K1(Ver.V1.7.1)	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	Mar. 15, 2021	Mar. 14, 2022
Antenna	SCHWARZBECK	VULB9168	494	Jan. 08, 2021	Jan. 07, 2023
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Mar. 23, 2021	Mar. 22, 2023
EXA Signal Analyzer	Agilent	N9010A	MY53470504	Dec. 07, 2020	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

Description	Manufacturer	Model	S/N	Cal. Date	Cal. Due
EFT Surge Generator	Schaffner	Modula 6150	34437	Jul. 03, 2020	Jul. 02, 2021

TEST EQUIPMENT OF ESD TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
ESD Simulator	Schaffner	NSG 438	782	Jan. 08, 2021	Jan. 07, 2022

TEST EQUIPMENT OF RS IMMUNITY TEST

Description	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Signal Generator	R&S	E4421B	MY43351603	Jun. 08 2020	Jun. 07, 2021
Power Sensor	R&S	URV5-Z4	100124	May 22, 2020	May 21, 2021
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	Milmega	AS0104-55_55	1004793	N/A	N/A
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	May 17, 2019	May 16, 2021
Antenna	SCHWARZBEC K	VULB9168	494	Jan. 08, 2021	Jan. 07, 2023
Power Amplifier	rflight	NTWPA-256010 0	17063183	N/A	N/A
Broadband High Gain Horn Antenna	SCHWARZBEC K	BBHA 9120 J	00073	N/A	N/A

TEST EQUIPMENT OF CS IMMUNITY TEST

Description	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Power Amplifier	AR	75A250	18464	N/A	N/A
CDN	ZHINAN	ZN3751	15004	Sep. 03, 2020	Sep. 02, 2022
6dB attenuator	ZHINAN	E-002	N/A	Sep. 03, 2020	Sep. 02, 2022
Power Sensor	R&S	URV5-Z4	100124	May 22, 2020	May 21, 2021
Power Meter	R&S	NRVD	8323781027	May 22, 2020	May 21, 2021
Signal Generator	R&S	E4421B	MY43351603	Jun. 08 2020	Jun. 07, 2021

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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			

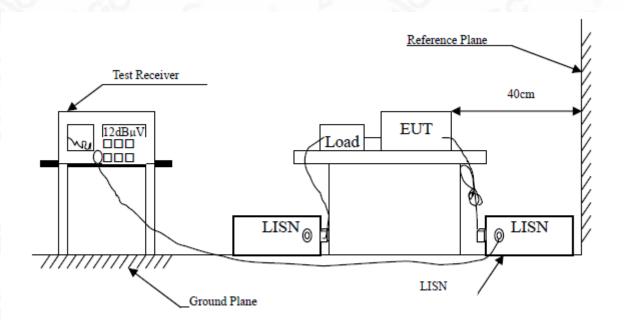
Note:

- 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.

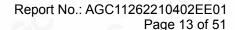
AT telecommunication PORT

Eraguanov	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

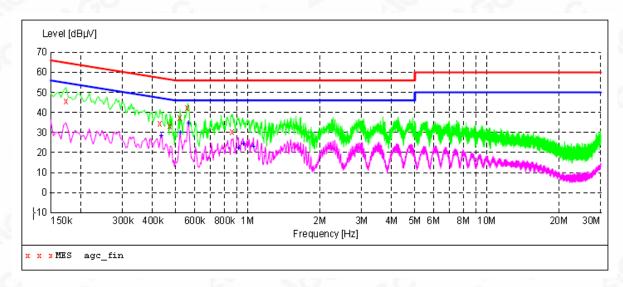
- (1)The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per EN 55032 (see Test Facility for the dimensions of the ground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



MEASUREMENT RESULT: "agc fin"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.174000 0.430000 0.474000 0.522000 0.562000 0.862000	45.70 34.40 33.40 37.50 42.30 30.20	12.4 12.4 12.4 12.4 12.4 12.4	65 57 56 56 56	19.1 22.9 23.0 18.5 13.7 25.8	QP QP QP QP QP QP	L1 L1 L1 L1 L1

MEASUREMENT RESULT: "agc fin2"

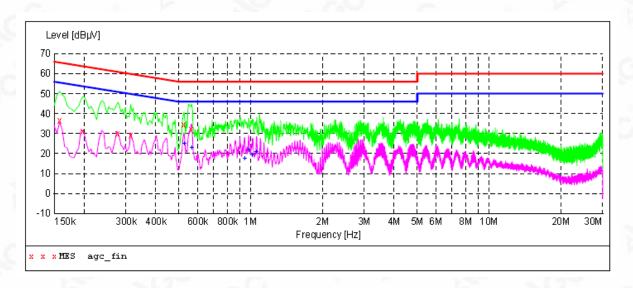
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.434000	28.40	12.4	47	18.8	AV	L1
0.522000	29.90	12.4	46	16.1	AV	L1
0.566000	34.30	12.4	46	11.7	AV	L1
0.914000	22.00	12.4	46	24.0	AV	L1
0.958000	24.10	12.4	46	21.9	AV	L1
1.058000	22.80	12.4	46	23.2	AV	L1

RESULT: PASS

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LINE CONDUCTED EMISSION TEST-N



MEASUREMENT RESULT: "agc fin"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.158000	36.40	12.4	66	29.2	QP	N
0.198000	31.20	12.4	64	32.5	QP	N
0.278000	29.70	12.4	61	31.2	QP	N
0.314000	29.00	12.4	60	30.9	QP	N
0.526000	34.40	12.4	56	21.6	QP	N
0.566000	32.10	12.4	56	23.9	QP	N

MEASUREMENT RESULT: "agc_fin2"

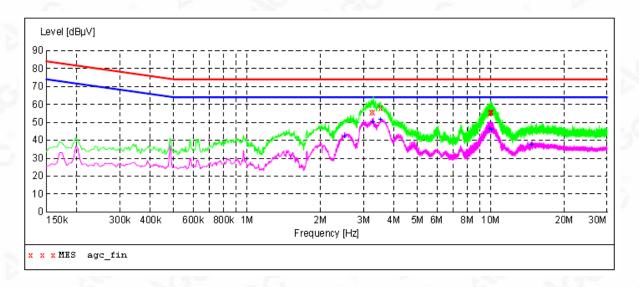
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
0.526000	24.80	12.4	46	21.2	AV	N
0.566000	22.90	12.4	46	23.1	AV	N
0.942000	17.50	12.4	46	28.5	AV	N
0.982000	21.50	12.4	46	24.5	AV	N
1.018000	19.20	12.4	46	26.8	AV	N
1.058000	20.60	12.4	46	25.4	AV	N

RESULT: PASS

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AT TELECOMMUNICATION PORT



MEASUREMENT RESULT: "agc fin"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
3.226000	55.70	12.5	74	18.3	QP	LAN
3.298000	55.80	12.5	74	18.2	QP	LAN
3.522000	58.10	12.5	74	15.9	QP	LAN
9.918000	55.30	12.9	74	18.7	QP	LAN
9.986000	55.40	12.9	74	18.6	QP	LAN
10.054000	55.50	12.9	74	18.5	QP	LAN

MEASUREMENT RESULT: "agc fin2"

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
2.514000	41.90	12.5	64	22.1	AV	LAN
3.282000	50.00	12.5	64	14.0	AV	LAN
3.526000	51.30	12.5	64	12.7	AV	LAN
9.874000	46.40	12.9	64	17.6	AV	LAN
10.074000	45.60	12.9	64	18.4	AV	LAN
14.722000	37.50	14.3	64	26.5	AV	LAN

RESULT: PASS

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10 EN 55032 RADIATED EMISSION TEST

10.1 LIMITS OF RADIATED DISTURBANCES

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

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

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

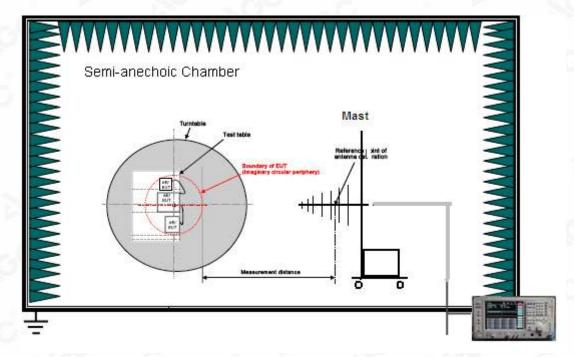
Fraguency range (MUz)	Limits (dBuV/m), Class B ITE					
Frequency range (MHz)	Peak	Average				
1000-3000	70	50				
3000-6000	74	54				

Notes:

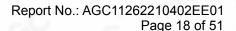
- 1. The lower limit shall apply at the transition frequency.
- 2. Additional provisions may be required for cases where interference occurs.

10.2 BLOCK DIAGRAM OF TEST SETUP

System Diagram of Connections between EUT and Simulators



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10.3 PROCEDURE OF RADIATED EMISSION TEST

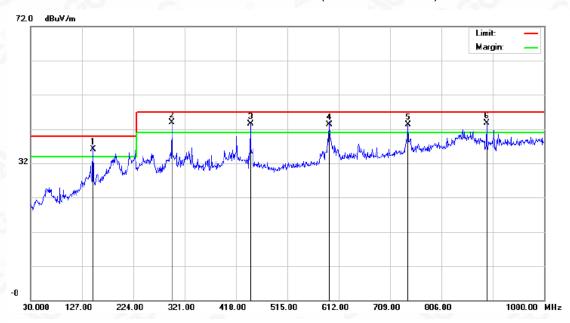
- (1) The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden turntable with a height of 0.8 meters is used which is placed on the ground plane as per EN 55032 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 10cm non-conductive covering to insulate the EUT from the ground plane.
- (2) Support equipment, if needed, was placed as per EN 55032.
- (3) All I/O cables were positioned to simulate typical actual usage as per EN 55032.
- (4) The EUT received AC230V/50Hz power from socket under the turntable.
- (5) The antenna was placed at 3 meter away from the EUT as stated in EN 55032. The antenna connected to the Analyzer via a cable and at times a pre-amplifier would be used.
- (6) The Analyzer / Receiver quickly scanned from 30MHz to 1000MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.
- (7) The test mode(s) were scanned during the test:
- (8) Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and Q.P./Peak reading is presented.

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10.4 TEST RESULT OF RADIATED EMISSION TEST

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



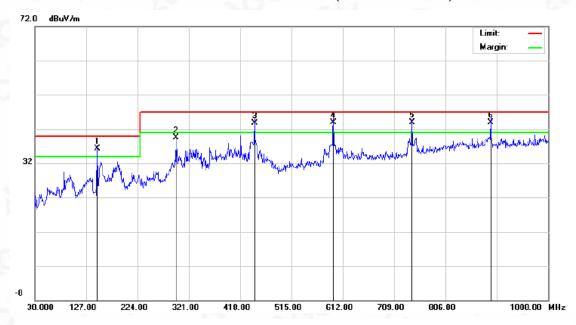
No.	M	c. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	ļ	148.3400	15.65	20.38	36.03	40.00	-3.97	QP			
2	*	296.7500	22.64	21.22	43.86	47.00	-3.14	peak			
3	ļ	445.1600	18.56	24.98	43.54	47.00	-3.46	peak			
4	İ	594.5399	16.37	26.84	43.21	47.00	-3.79	QP			
5	İ	742.9500	14.10	29.12	43.22	47.00	-3.78	peak			
6	İ	891.3600	12.21	31.59	43.80	47.00	-3.20	peak			

RESULT: PASS

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



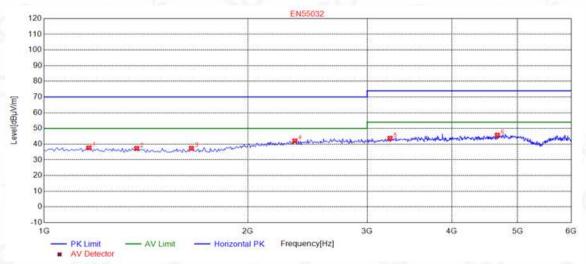
No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	İ	148.3400	15.85	20.38	36.23	40.00	-3.77	QP			
2		296.7500	18.32	21.22	39.54	47.00	-7.46	peak			
3	İ	445.1600	18.64	24.98	43.62	47.00	-3.38	QP			
4	İ	594.5399	17.12	26.84	43.96	47.00	-3.04	QP			
5	*	742.9500	14.85	29.12	43.97	47.00	-3.03	QP			
6	İ	891.3600	12.35	31.59	43.94	47.00	-3.06	QP			

RESULT: PASS

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



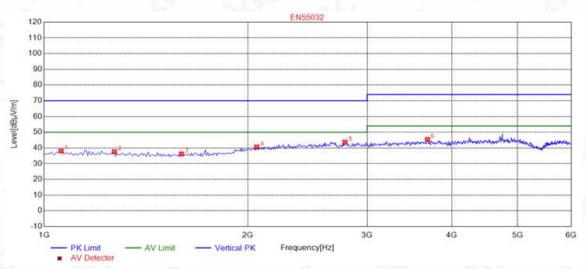
NO.	Freq. [MHz]	Level [dBµV/m]	Factor [dB]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1165.1652	37.66	-16.80	70.00	32.34	100	170	Horizontal
2	1370.3704	37.25	-17.00	70.00	32.75	100	40	Horizontal
3	1650.6507	37.31	-15.53	70.00	32.69	100	250	Horizontal
4	2346.3463	42.05	-10.37	70.00	27.95	100	340	Horizontal
5	3242.2422	43.71	-8.49	74.00	30.29	100	60	Horizontal
6	4668.6687	45.77	-5.04	74.00	28.23	100	260	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	1060.0601	38.03	-16.70	70.00	31.97	100	160	Vertical
2	1270.2703	37.59	-16.90	70.00	32.41	100	240	Vertical
3	1595.5956	36.16	-16.11	70.00	33.84	100	10	Vertical
4	2061.0611	40.61	-11.56	70.00	29.39	100	250	Vertical
5	2781.7818	43.73	-9.50	70.00	26.27	100	240	Vertical
6	3682.6827	45.38	-7.20	74.00	28.62	100	190	Vertical

RESULT: PASS

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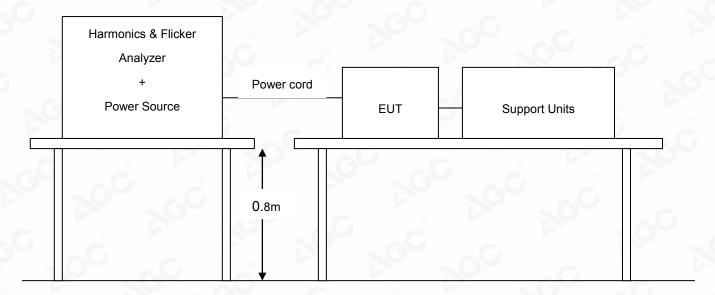
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11 EN IEC 61000-3-2 POWER HARMONICS TEST

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.

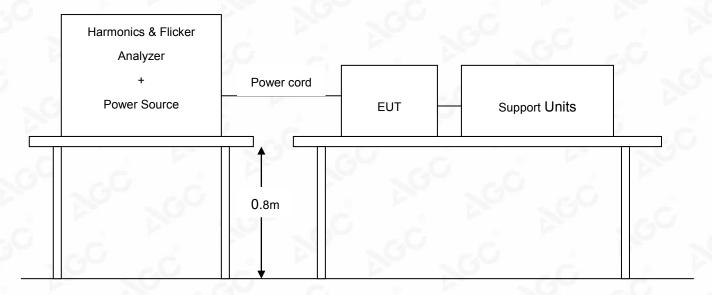
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the Bedicated restriction Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written 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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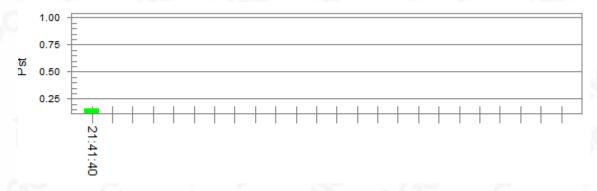


12.2 RESULT

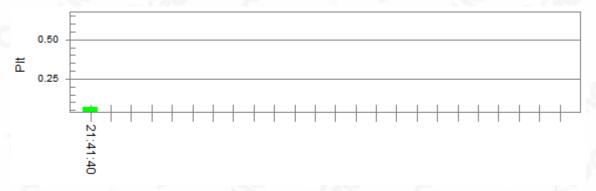
Flicker Test Summary per EN/IEC61000-3-3 (Run time)

Pst_i and limit line

European Limits



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.76			
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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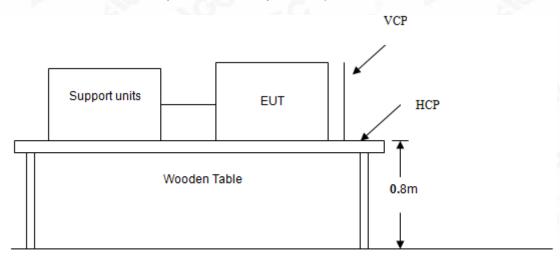
13 EN 61000-4-2 ESD IMMUNITY TEST

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	24.8°C
Humidity	55.2% 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 A	
±4kV	Contact Discharge	No function loss		
±4kV	Indirect Discharge HCP (Front)	No function loss	Α	
±4kV	Indirect Discharge HCP (Left)	No function loss	A	
±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	А	
±4kV	Indirect Discharge VCP (Left)	No function loss	Α	
±4kV	Indirect Discharge VCP (Back)	No function loss	A	
±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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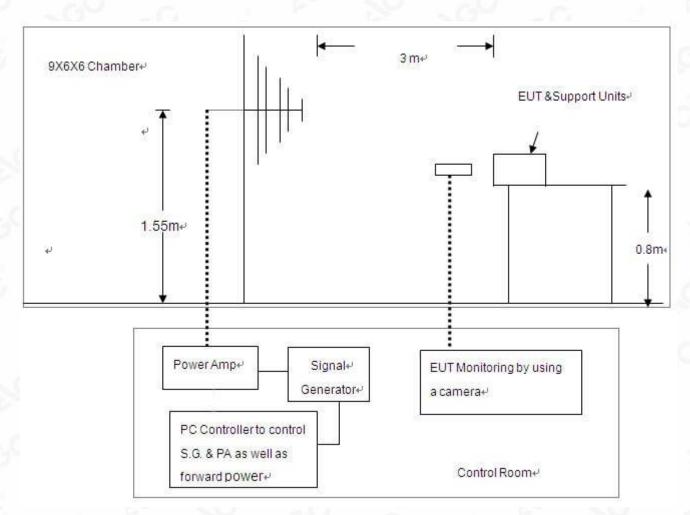


14 EN 61000-4-3 RS IMMUNITY TEST

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

- 1		
	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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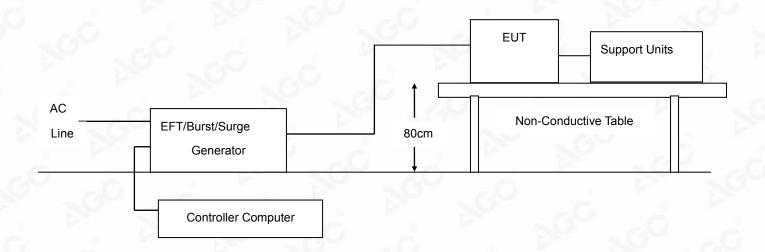


15 EN 61000-4-4 EFT IMMUNITY TEST

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	24.4°C
Humidity	56.0% 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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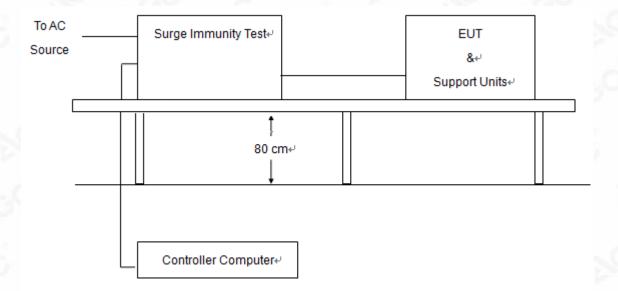


16 EN 61000-4-5 SURGE IMMUNITY TEST

SURGE IMMUNITY TEST

Port	On Power Supply Lines
Basic Standard	EN 61000-4-5
Requirements	+/- 1kV (Line to Line)
Standard require	В
Temperature	24.4°C
Humidity	56.0% 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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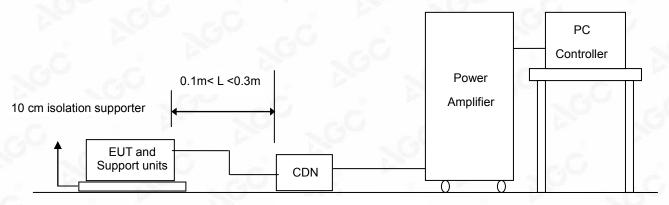
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17 EN 61000-4-6 CS IMMUNITY TEST

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	24.4°C
Humidity	55.7% 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
Frequency Step	1% of fundamental
Dwell Time	3 sec

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.

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18 EN 61000-4-11 DIPS IMMUNITY TEST

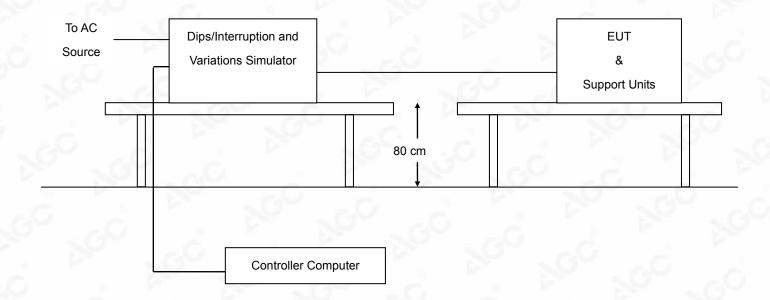
VOLTAGE DIPS, SHORT INTERRUPTIONS AND VOLTAGE VARIATIONS IMMUNITY TEST

Port	On Power Supply Lines
Basic Standard	EN 61000-4-11
Requirements	PHASE ANGLE 0degrees
Test Interval	Min. 10 sec.
Temperature	24.4°C
Humidity	56.0% 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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Report No.: AGC11262210402EE01

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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



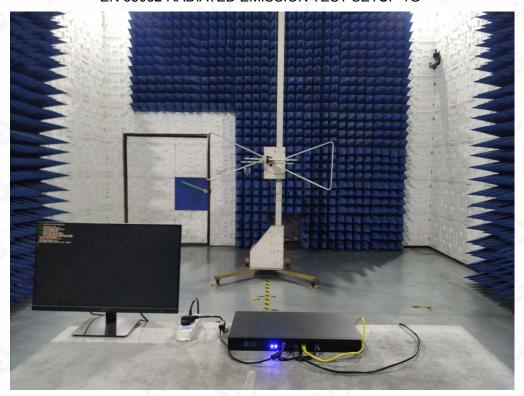
EN 55032 CONDUCTED EMISSION TEST SETUP (LAN)



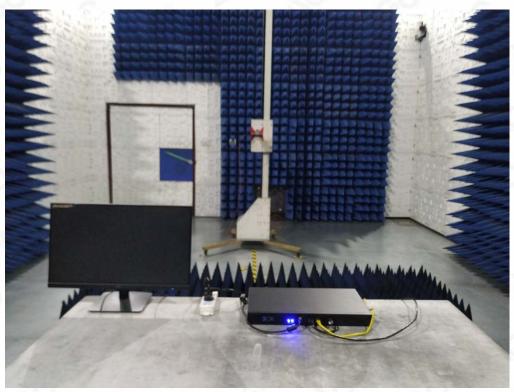
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EN 55032 RADIATED EMISSION TEST SETUP 1G-



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



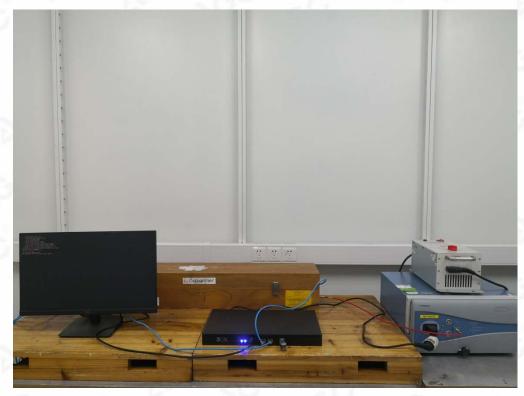
EFT SURGE and DIPS IMMUNITY TEST SETUP-AC POWER PORT



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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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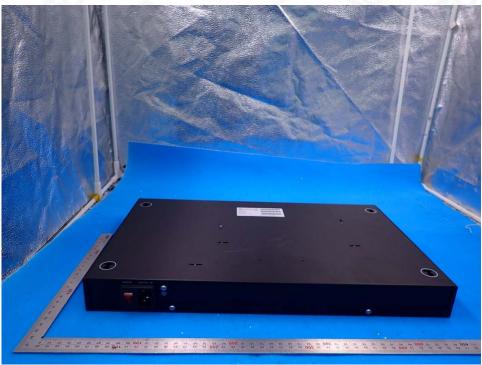


APPENDIX B: PHOTOGRAPHS OF EUT

ALL VIEW OF EUT



TOP VIEW OF EUT



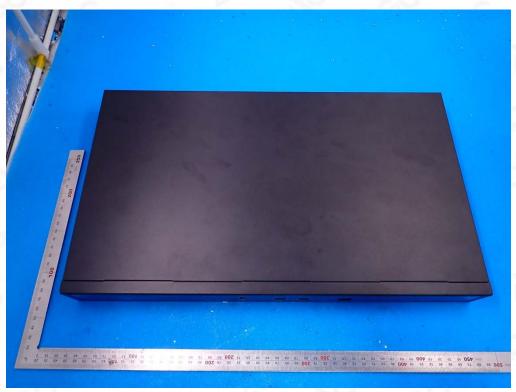
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BOTTOM VIEW OF EUT



FRONT VIEW OF EUT



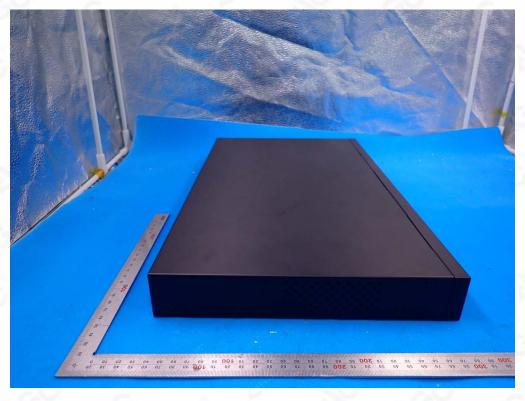
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BACK VIEW OF EUT



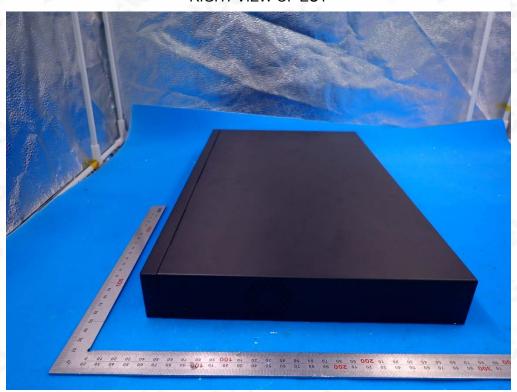
LEFT VIEW OF EUT



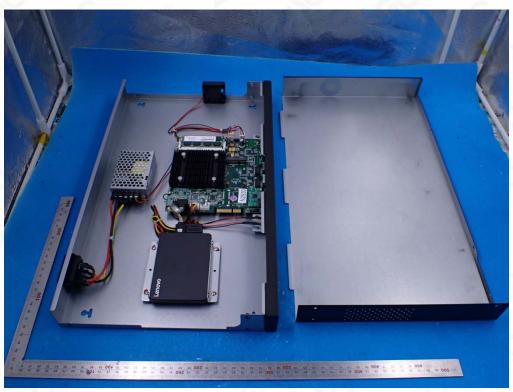
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RIGHT VIEW OF EUT



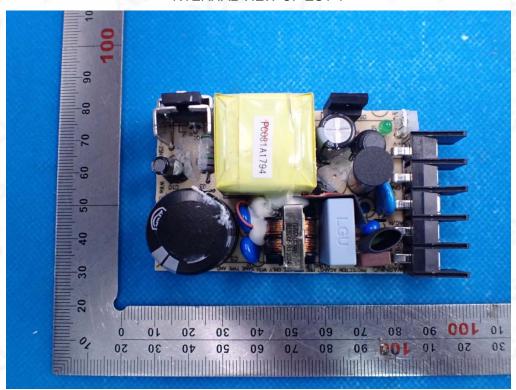
OPEN VIEW OF EUT



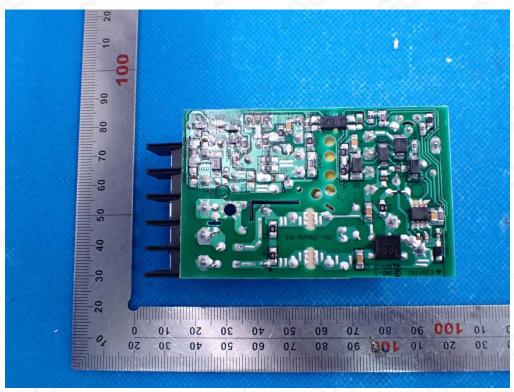
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NTERNAL VIEW OF EUT-1



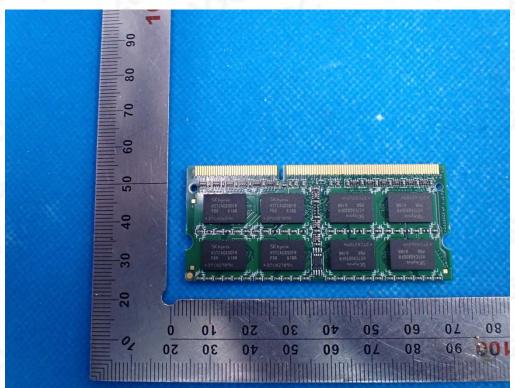
INTERNAL VIEW OF EUT-2



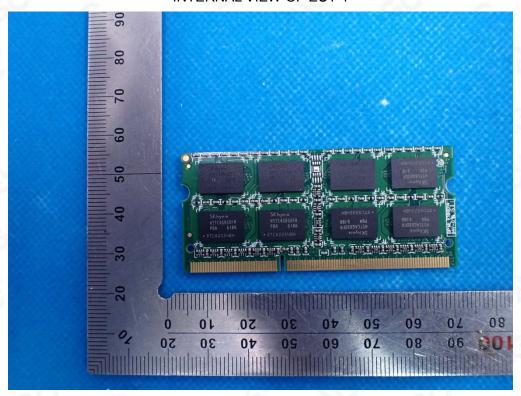
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INTERNAL VIEW OF EUT-3



INTERNAL VIEW OF EUT-4



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INTERNAL VIEW OF EUT-5



INTERNAL VIEW OF EUT-6



----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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