EMC TEST REPORT

The device described below is tested by Dongguan Nore Testing Center Co., Ltd. to determine the maximum emission levels emanating from the device, the severe levels which the device can endure and E.U.T.'s performance criterion. The test results are contained in this test report. Dongguan Nore Testing Center Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

Applicant/Manufacturer	:	American Power Conversion Holdings Inc.
Address	:	3F No. 205, Sec. 3, Beixin Rd., 231 Xindian Dist., New Taipei City, Taiwan
Factory	:	VOLTRONIC POWER TECHNOLOGY CORP.
Address	:	1-4F, Building 5, YuSheng lndustrial Park, No.467, Section Xixiang, National Highway 107, Xixiang, Bao An District, Shenzhen, Guangdong, P.R. China
E.U.T.	:	UPS
Brand Name	:	APC by Schneider Electric
Model No.	:	abc3KIde(a=SRV or SPV, b=nil, c=PM, d=L, e=-AR, -GR, -RS, -SP, -KR, -BR, -CN, -AZ or nil; For variables a, b, c, d and e refer to the test report page 9 for details) External battery cabinet : ab72BP-9A(a=SRV or SPV, b=nil; For variables a and b refer to the test report page 9 for details)
Measurement Standard	:	EN 62040-2: 2006+AC: 2006, Equate test limit with IEC 62040-2: 2016 EN 61000-3-2: 2014/ IEC 61000-3-2: 2014, EN 61000-3-3: 2013/ IEC 61000-3-3: 2013, (EN 61000-4-2: 2009/ IEC 61000-4-2: 2008, EN 61000-4-3: 2006+A2: 2010/ IEC 61000-4-3: 2010, EN 61000-4-4: 2012/ IEC 61000-4-4: 2012, EN 61000-4-5: 2014/ IEC 61000-4-5: 2014, EN 61000-4-6: 2014/ IEC 61000-4-6: 2013, EN 61000-4-8: 2010/ IEC 61000-4-8: 2009, EN 61000-4-11: 2004/ IEC 61000-4-11: 2004, EN 61000-2-2: 2002/IEC 61000-2-2: 2002)
Date of Receiver	:	September 21, 2018
Date of Test	:	September 22, 2018 to October 16, 2018
Date of Report	:	October 17, 2018

This Test Report is Issued Under the Authority of :

Prepared by	Approved & Authorized Signer
Bowen Zhu / Engineer	Iori Fan / Manager

This report shows that the E.U.T. is technically compliant with the EN 62040-2 and EN 61000-3-2,EN61000-3-3. This report applies to above tested sample only and shall not be reproduced in part without written approval of Dongguan Nore Testing Center Co., Ltd.

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Revision History of This Test Report

Report Number	Description	Issued Date
NTC1706675EV01	Initial Issue	2018-10-17

1. SUMMARY OF TEST RESULTS

The E.U.T. has been tested according to the following specifications:

EMISSION			
Standard	**Test Type**	**Result**	**Remarks**
EN 62040-2: 2006+AC: 2006/ IEC 62040-2: 2016	Mains Terminal Disturbance Voltage Test	PASS	Uncertainty: 2.7dB
	Radiated Emission Test	PASS	Uncertainty: 3.4dB
EN 61000-3-2: 2014/ IEC 61000-3-2: 2014	Harmonic current emission	PASS	Meets the Requirements.
EN 61000-3-3: 2013/ IEC 61000-3-3: 2013	Voltage fluctuations&flicker	PASS	Meets the requirements.

IMMUNITY(EN 62040-2: 2006+AC: 2006/IEC 62040-2:2016)			
Standard	**Test Type**	**Result**	**Remarks**
EN 61000-2-2: 2002/ IEC 61000-2-2: 2002	Low frequency signals test	PASS	Meets the requirements of Performance Criterion A
EN 61000-4-2: 2009/ IEC 61000-4-2: 2008	Electrostatic discharge immunity test	PASS	Meets the requirements of Performance Criterion B
EN 61000-4-3: 2006+A2:2010/ IEC 61000-4-3:2010	Radiated, radio-frequency, electromagnetic field immunity test	PASS	Meets the requirements of Performance Criterion A
EN 61000-4-4: 2012/ IEC 61000-4-4:2012	Electrical fast transient/ burst immunity test	PASS	Meets the requirements of Performance Criterion B
EN 61000-4-5: 2014/ IEC 61000-4-5: 2014	Surge immunity test	PASS	Meets the requirements of Performance Criterion B
EN 61000-4-6: 2014/ IEC 61000-4-6: 2013	Injected Currents immunity test	PASS	Meets the requirements of Performance Criterion A
EN 61000-4-8: 2010/ EN 61000-4-8: 2009	Magnetic Field immunity test	PASS	Meets the requirements of Performance Criterion A
EN 61000-4-11: 2004/ IEC 61000-4-11: 2004	Voltage Dips and Interruptions	PASS	Meets the requirements of Performance Criterion B

2. GENERAL INFORMATION

2.1 Details of E.U.T.

E.U.T.	:	UPS
Model No.	:	abc3KIde(a=SRV or SPV, b=nil, c=PM, d=L, e=-AR, -GR, -RS, -SP, -KR, -BR, -CN, -AZ or nil; For variables a, b, c, d and e refer to the test report page 9 for details) External battery cabinet : ab72BP-9A(a=SRV or SPV, b=nil; For variables a and b refer to the test report page 9 for details)
WARNING	:	This is a category C2 Uninterruptible Power Supply product. In a residential environment, this product may cause radio interference, in which case the user may be required to take additional measures.
Brand Name	:	APC by Schneider Electric
Rating	:	Input: AC 220-240V, 50-60Hz,16A max Output: AC 220-240V,50-60Hz 3.0kVA/2.4kW,13.6A max, Icc :1kA
Test Voltage	:	AC 230V/50Hz, DC 72V External battery
Cable	:	None
Description of model difference	:	See the next page for details
Remark	:	None

UPS model different:

Component Model	Input rating	Output rating	Outlet	Battery voltage	Dimension (W x H x D) (mm)	LOGO
SRVPM3KIL	220-240Vac; 50-60Hz; 16A max	220-240Vac; 50-60Hz; 13.6A max; 3kVA, 2.4kW	IEC type outlet	72Vdc	145mm x 238mm x 400mm	APC by Schneider Electric
SRVPM3KIL -AR			AR type outlet			
SRVPM3KIL -BR			BR type outlet			
SPVPM3KIL-CN			CN type outlet			
SRVPM3KIL -AZ			AZ type outlet			
SRVPM3KIL -GR **SRVPM3KIL -RS** **SRVPM3KIL -SP** **SRVPM3KIL -KR**			Schuko type outlet			

External battery cabinet list:

Model	SRV72BP-9A
Enclosure dimension WxHxD (mm)	190mm x 336mm x 425mm
Battery	12
Capacity	72VDC/18Ah
LOGO	APC by Schneider Electric

Model type: abc3Klde;ab72BP-9A		
Variable:	Range of variable:	Content:
a	SRV or SPV	a indicates different model name design, no affect safety.
b	nil	b indicates different product logo used on marking label, no affect safety, see page 8 for details.
c	PM	c indicates batteries configuration for UPS: PM means the UPS without internal batteries and without EBM;
d	L	d indicates different unit construction with or without internal batteries: L means long-term UPS type without internal batteries.
e	-AR, -GR, -RS, -SP, -KR, -BR, -CN, -AZ or nil	e indicates different socket outlet type used: -AR means Argentina type outlet used; -GR, -RS, -SP, -KR means Schuko type outlet used; -BR means Brazil type outlet used; -CN means Chinese type outlet used; -AZ means Australian type outlet used; nil means IEC type outlet used;

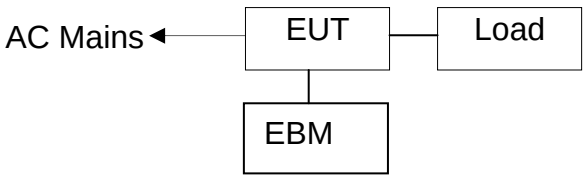
2.2 Description of Support Device

None

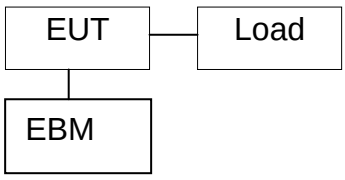
2.3 Block Diagram of Test Setup

Block diagram of connection between the E.U.T. and simulators

(1) Normal operation mode(Full Load)



(2) Stored energy operation mode(Full Load)



2.4 Test Facility

Site Description

EMC Lab	:	Listed by CNAS, November 02, 2016 The certificate is valid until August 13, 2024 The Laboratory has been assessed and proved to be in compliance with CNAS/CL01 The Certificate Registration Number is L5795. Listed by FCC, July 03, 2014 The Certificate Number is 665078. Listed by Industry Canada, June 08, 2017 The Certificate Registration Number. Is 46405-9743
Name of Firm	:	Dongguan Nore Testing Center Co., Ltd. (Dongguan NTC Co., Ltd.)
Site Location	:	Building D, Gaosheng Science & Technology Park, Zhouxi Longxi Road, Nancheng District, Dongguan City, Guangdong Province, China

2.5 Abnormalities from Standard Conditions

None

3. MEASURING DEVICES AND TEST EQUIPMENT

3.1 For Mains terminals Disturbance Voltage Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI	101152	Mar. 08, 2018	1 Year
2.	L.I.S.N	Rohde & Schwarz	ENV 216	101317	Mar. 08, 2018	1 Year
3.	L.I.S.N	Schwarzbeck	NNLK8129	8129-212	Mar. 22, 2018	1 Year
4.	RF Switching Unit	Compliance Direction Systems Inc.	RSU-M2	38311	Mar. 08, 2018	1 Year
5.	Pulse Limiter	MTS-systemtechnik	MTS-IMP-136	261115-01 0-0022	Mar. 08, 2018	1 Year

3.2 For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI7	100837	Mar. 08, 2018	1 Year
2.	Antenna	Schwarzbeck	VULB9162	9162-010	Mar. 22, 2018	1 Year
3.	Positioning Controller	UC	UC 3000	N/A	N/A	N/A
4.	Color Monitor	SUNSPO	SP-140A	N/A	N/A	N/A
5.	Single Phase Power Line Filter	SAEMC	PF201A-32	110210	N/A	N/A
6.	3 Phase Power Line Filter	SAEMC	PF401A-200	110318	N/A	N/A
7.	DC Power Filter	SAEMC	PF301A-200	110245	N/A	N/A
8.	Cable	Huber+Suhner	CBL2-NN-9M	22390001	Mar. 08, 2018	1 Year
9.	Cable	Huber+Suhner	CIL02	N/A	Mar. 08, 2018	1 Year
10.	Power Amplifier	HP	HP 8447D	1145A00203	Mar. 08, 2018	1 Year

3.3 For Electrostatic Discharge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	TESEQ	NSG 437	432	Mar. 22, 2018	1 Year

3.4 For Harmonic/Flicker Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Power Frequency Test System	California Instruments	CTS	72846	Mar. 08, 2018	1 Year
2.	Software	California Instruments	CTS30	N/A	N/A	N/A

3.5 For RF Electromagnetic Field Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	RF Power Meter	ESE	4242	13984	Nov. 04, 2017	1 Year
2.	Power Amplifier	TESEQ	CBA 1G-150	T44029	N/A	N/A
3.	Signal Generator	Agilent	N5181A	MY50142530	Nov. 01, 2017	1 Year
4.	Power Sensor	ESE	51011EMC	35716	Nov. 04, 2017	1 Year
5.	Antenna	Schwarzbeck	VULB9162	9162-010	Mar. 22, 2018	1 Year

3.6 For Electrical Fast Transient /Burst Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Burst Tester	EM TEST	UCS 500N	V1104108683	Mar. 08, 2018	1 Year
2.	Coupling Clamp	EM TEST	HFK	0311-94	Mar. 08, 2018	1 Year
3.	Test Soft	EM TEST	lec. control	N/A	N/A	N/A

3.7 For Surge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Surge Tester	EM TEST	UCS 500N	V1104108683	Mar. 08, 2018	1 Year
2.	Test Soft	EM TEST	lec. control	N/A	N/A	N/A

3.8 For Injected Currents Immunity Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	C/STest System	HAEFELY	WinPAMP	NSEMC002	N/A	N/A
2.	CDN	FRANNOKIA	CDN-M2+M3	A2210150	Mar. 22, 2018	1 Year

3.9 For Magnetic Field Immunity Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Test Software	N/A	N/A	N/A	N/A	N/A
2.	Magnetic Field Tester	HAEFELY	MAG100.1	150579	Oct.18, 2018	1 Year

3.10 For Low Frequency Signal Immunity Test

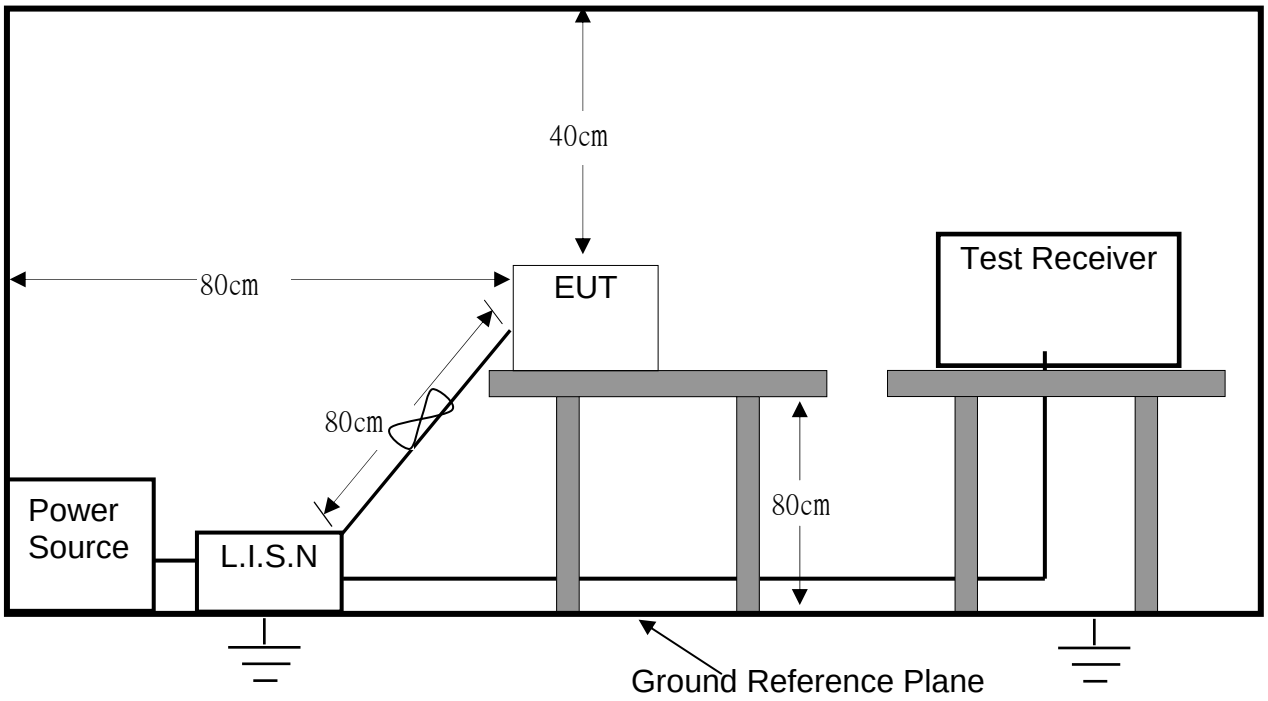
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Programmable AC Source	CHROMA	6530	N/A	Sep. 01, 2018	1 Year

3.11 For Voltage Dips And Interruptions Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Dips Tester	EM TEST	UCS500N	V1104108683	Mar. 08, 2018	1 Year
2.	Test Soft	EM TEST	lec.control	N/A	N/A	N/A
3.	Dips Modulator	EM TEST	V4780S2	0111-11	Mar. 08, 2018	1 Year

4. MAINS TERMINAL DISTURBANCE VOLTAGE MEASUREMENT

4.1.Block Diagram of Test Setup



4.2.Limit of Mains Terminal Disturbance voltage measurement

Test Standard: EN 62040-2 Category C2
Equate test limit with IEC 62040-2: 2016

Limits of mains terminal interference voltage frequency range 0.15 MHz to 30 MHz for Category C2 Uninterruptible Power Supply equipment.

Frequency range MHz	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50[a]	79	66
0.50 to 5[b]	73	60
5 to 30	73	60
[a] The limit decreases linearly with the logarithm of the frequency. [b] The lower limit shall apply at the transition frequency.		

4.3.Test Procedure

The E.U.T. is put on the 0.8 m high table and connected to the AC mains through a Artificial Mains Network (AMN). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the EN 62040-2 regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESCI) is set at 9 KHz.

4.4.Operating Condition of E.U.T.

4.4.1 Setup the E.U.T. and simulators as shown in Section 2.3.

4.4.2 Turn on the power of all equipments.

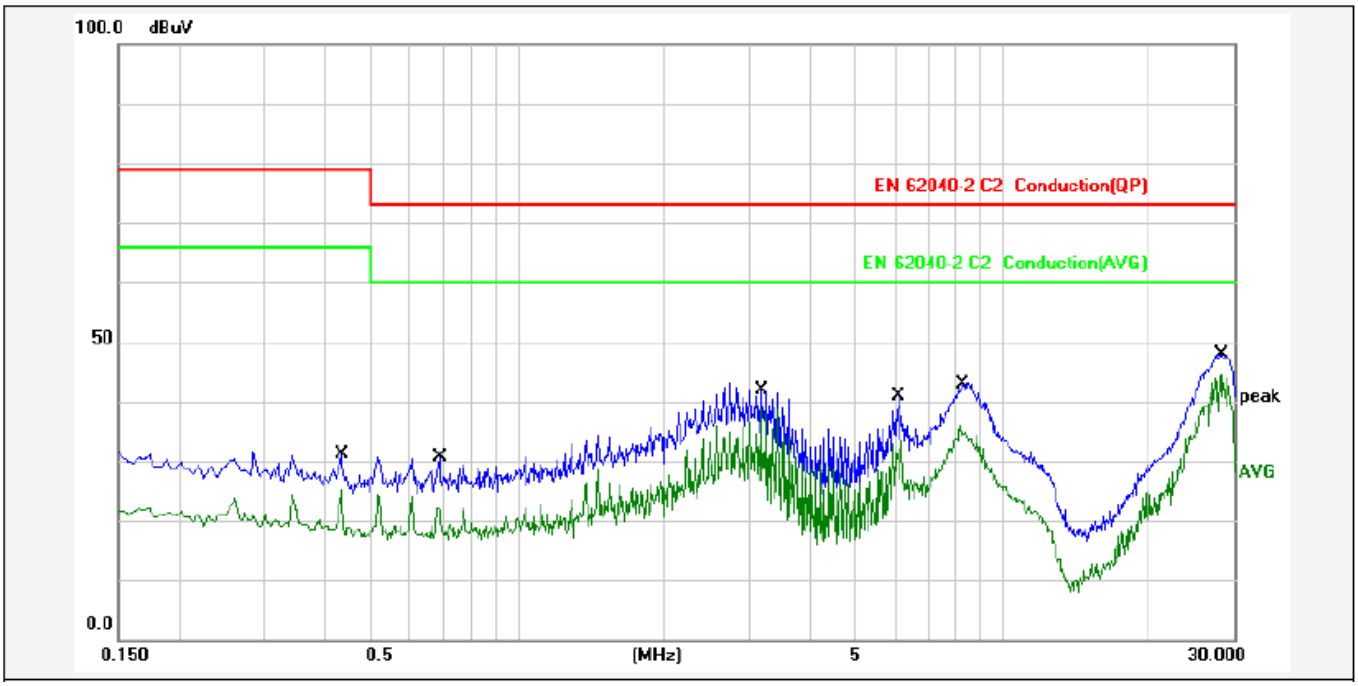
4.4.3 Let the E.U.T. work in test modes (Normal operation mode, Stored energy operation mode) and test it.

4.5.Mains Terminal Disturbance Voltage Test Results

PASS.

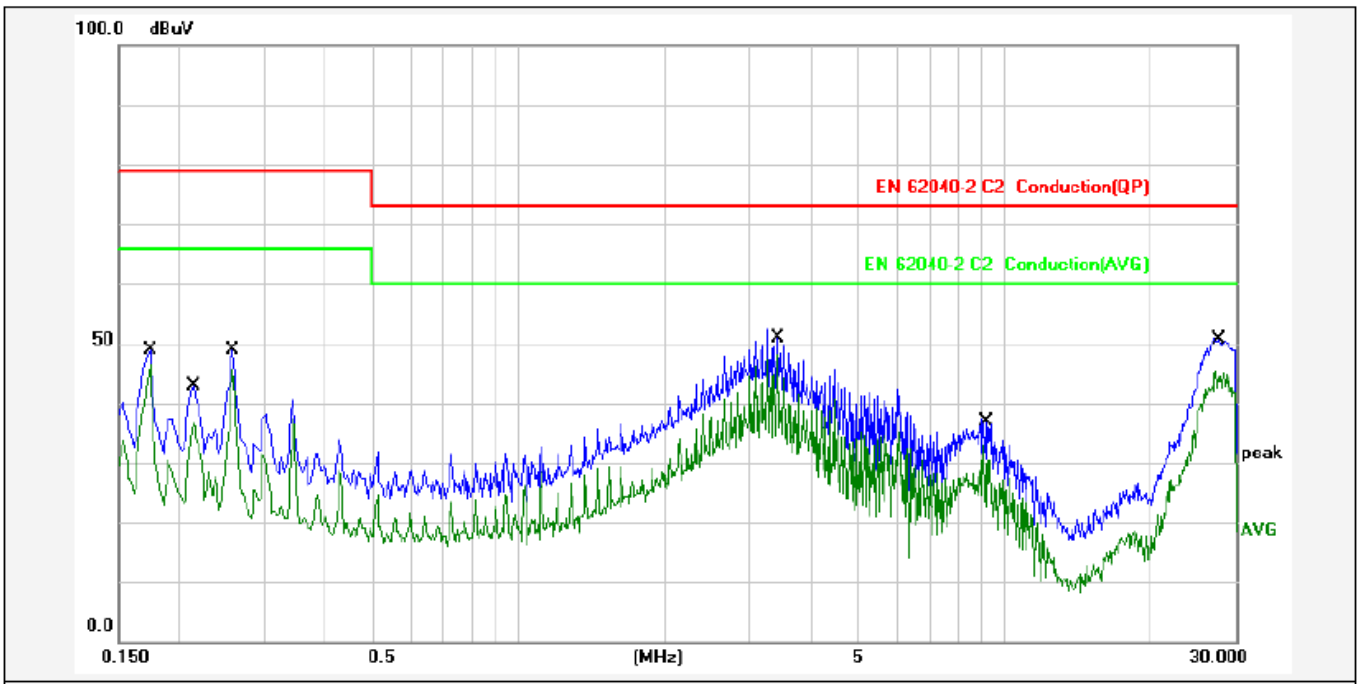
Please refer to the following pages.

E.U.T :	UPS	Model Name :	abc3KIde
Temperature :	26° C	Relative Humidity :	55 %
Pressure :	1006 hPa	Test Voltage :	DC 72V
Test Mode :	Stored Energy operation mode	Phase:	Line



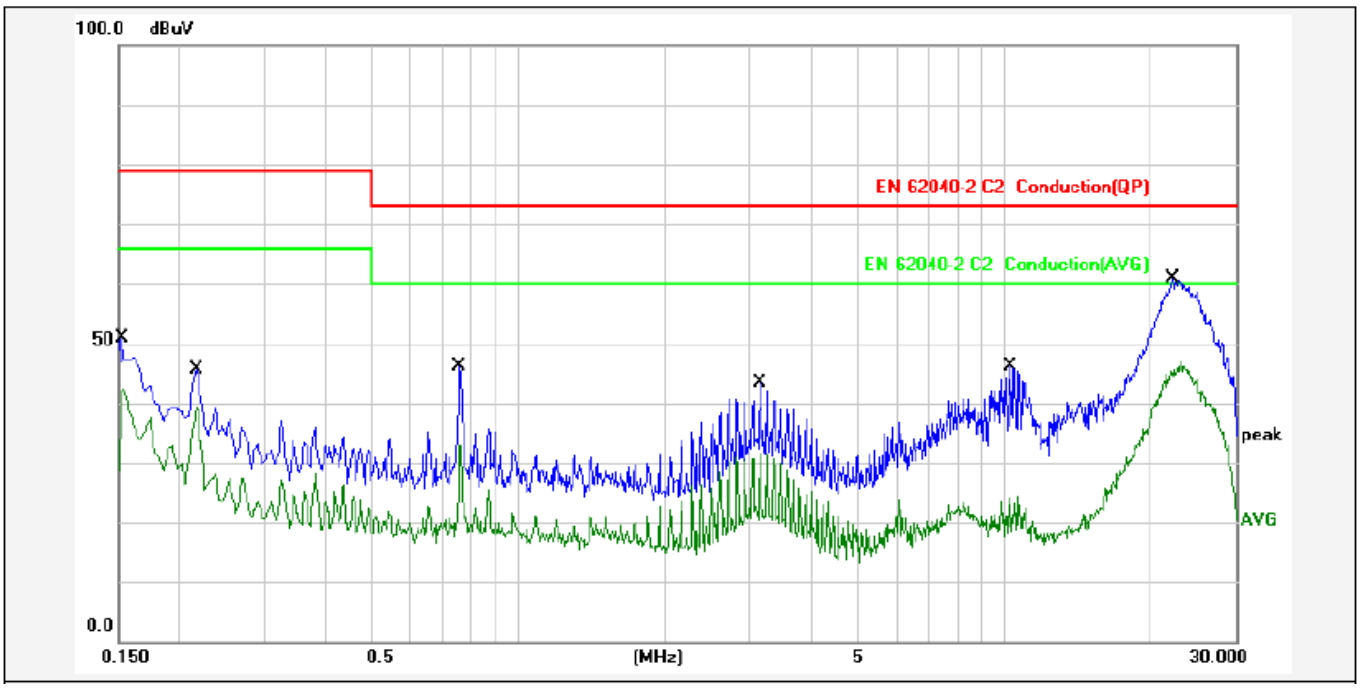
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.4339	6.30	24.83	31.13	79.00	-47.87	QP	P	
2	0.4339	6.30	18.71	25.01	66.00	-40.99	AVG	P	
3	0.6860	6.23	24.49	30.72	73.00	-42.28	QP	P	
4	0.6860	6.23	15.84	22.07	60.00	-37.93	AVG	P	
5	3.1819	6.22	36.80	43.02	73.00	-29.98	QP	P	
6	3.1819	6.22	32.29	38.51	60.00	-21.49	AVG	P	
7	6.1097	6.31	34.51	40.82	73.00	-32.18	QP	P	
8	6.1097	6.31	26.98	33.29	60.00	-26.71	AVG	P	
9	8.1777	6.34	36.78	43.12	73.00	-29.88	QP	P	
10	8.1777	6.34	29.44	35.78	60.00	-24.22	AVG	P	
11	28.2778	6.54	41.32	47.86	73.00	-25.14	QP	P	
12	28.2778	6.54	37.96	44.50	60.00	-15.50	AVG	P	

E.U.T :	UPS	Model Name :	abc3KIde
Temperature :	26° C	Relative Humidity :	55 %
Pressure :	1006 hPa	Test Voltage :	DC 72V
Test Mode :	Stored Energy operation mode	Phase:	Neutral



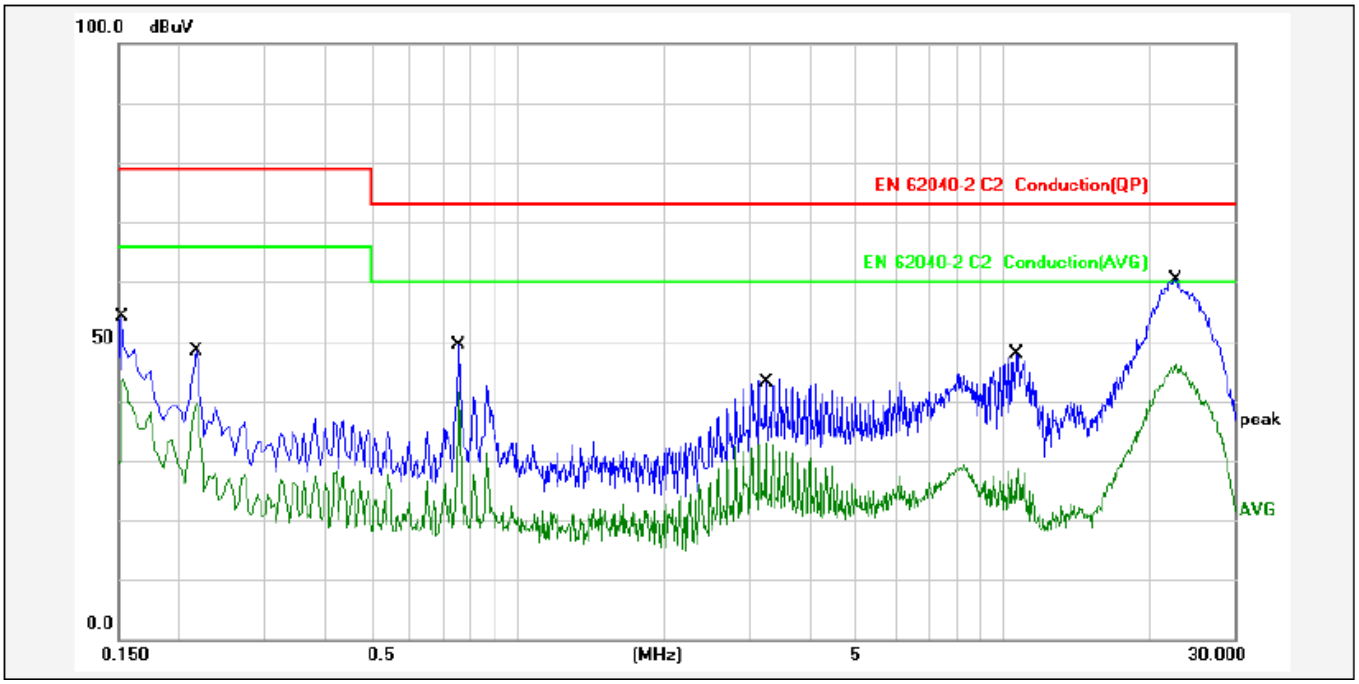
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1739	6.56	42.24	48.80	79.00	-30.20	QP	P	
2	0.1739	6.56	39.76	46.32	66.00	-19.68	AVG	P	
3	0.2139	6.52	36.30	42.82	79.00	-36.18	QP	P	
4	0.2139	6.52	30.14	36.66	66.00	-29.34	AVG	P	
5	0.2580	6.52	42.38	48.90	79.00	-30.10	QP	P	
6	0.2580	6.52	39.11	45.63	66.00	-20.37	AVG	P	
7	3.4300	6.22	46.12	52.34	73.00	-20.66	QP	P	
8	3.4300	6.22	41.80	48.02	60.00	-11.98	AVG	P	
9	9.0818	6.35	31.02	37.37	73.00	-35.63	QP	P	
10	9.0818	6.35	26.51	32.86	60.00	-27.14	AVG	P	
11	27.3939	6.51	44.32	50.83	73.00	-22.17	QP	P	
12	27.3939	6.51	38.94	45.45	60.00	-14.55	AVG	P	

E.U.T :	UPS	Model Name :	abc3KIde
Temperature :	26° C	Relative Humidity :	55 %
Pressure :	1006 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	Normal operation mode	Phase:	Neutral



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1501	6.60	39.00	45.60	79.00	-33.40	QP	P	
2	0.1501	6.60	35.50	42.10	66.00	-23.90	AVG	P	
3	0.2180	6.52	39.10	45.62	79.00	-33.38	QP	P	
4	0.2180	6.52	32.81	39.33	66.00	-26.67	AVG	P	
5	0.7580	6.25	39.89	46.14	73.00	-26.86	QP	P	
6	0.7580	6.25	26.73	32.98	60.00	-27.02	AVG	P	
7	3.1460	6.22	37.05	43.27	73.00	-29.73	QP	P	
8	3.1460	6.22	25.45	31.67	60.00	-28.33	AVG	P	
9	10.3139	6.35	39.82	46.17	73.00	-26.83	QP	P	
10	10.3139	6.35	18.12	24.47	60.00	-35.53	AVG	P	
11	22.2900	6.39	54.56	60.95	73.00	-12.05	QP	P	
12	22.2900	6.39	40.45	46.84	60.00	-13.16	AVG	P	

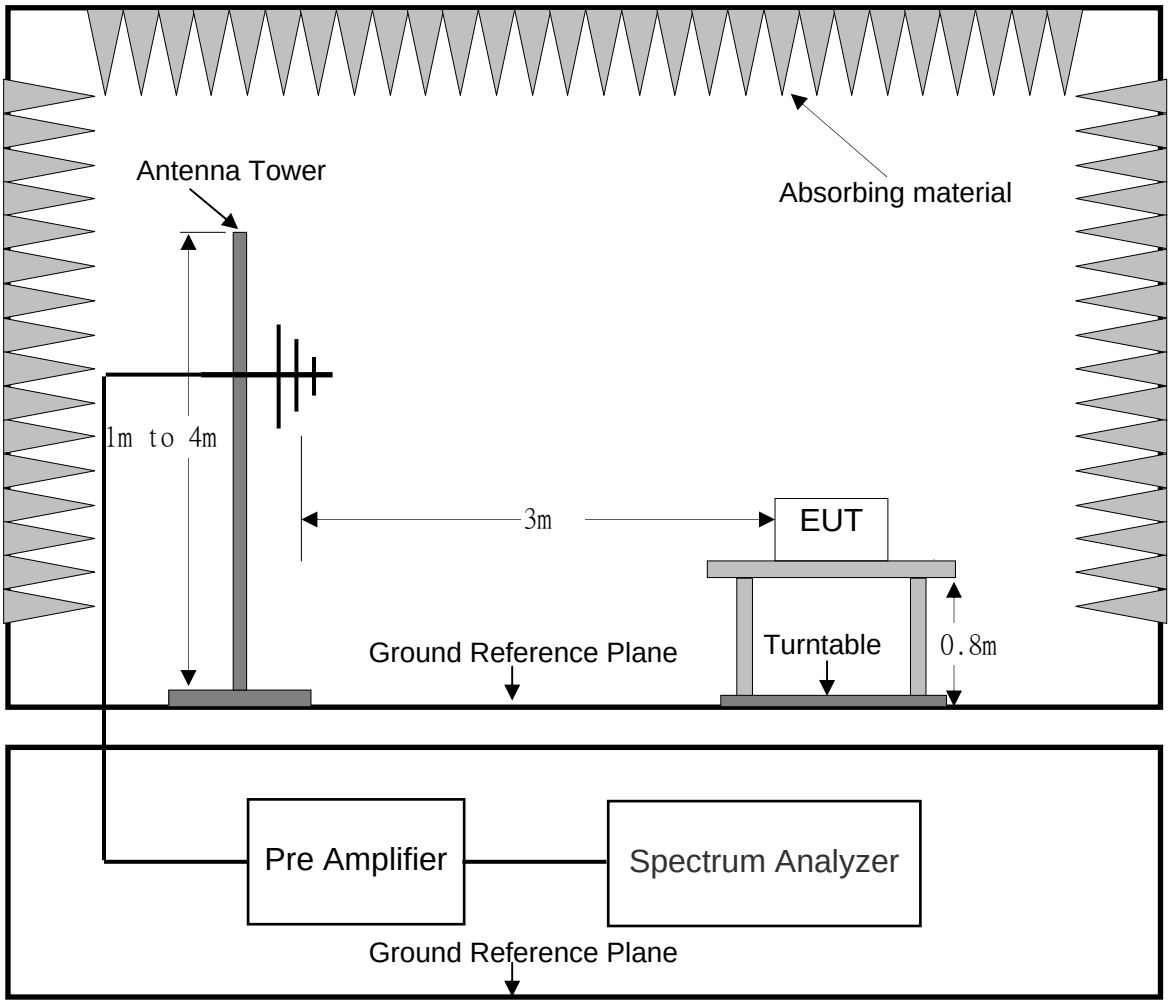
E.U.T :	UPS	Model Name :	abc3KIde
Temperature :	26° C	Relative Humidity :	55 %
Pressure :	1006 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	Normal operation mode	Phase:	Line



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1501	6.46	38.64	45.10	79.00	-33.90	QP	P	
2	0.1501	6.46	35.34	41.80	66.00	-24.20	AVG	P	
3	0.2180	6.40	41.97	48.37	79.00	-30.63	QP	P	
4	0.2180	6.40	33.14	39.54	66.00	-26.46	AVG	P	
5	0.7580	6.33	43.06	49.39	73.00	-23.61	QP	P	
6	0.7580	6.33	35.16	41.49	60.00	-18.51	AVG	P	
7	3.2460	6.32	37.26	43.58	73.00	-29.42	QP	P	
8	3.2460	6.32	26.53	32.85	60.00	-27.15	AVG	P	
9	10.6339	6.35	41.58	47.93	73.00	-25.07	QP	P	
10	10.6339	6.35	23.05	29.40	60.00	-30.60	AVG	P	
11	22.7139	6.60	53.75	60.35	73.00	-12.65	QP	P	
12	22.7139	6.60	39.51	46.11	60.00	-13.89	AVG	P	

5. RADIATED EMISSION MEASUREMENT

5.1 Block Diagram of Test



5.2 Limit of Radiated Emission Measurement

Test Standard: EN 62040-2 Category C2
Equate test limit with IEC 62040-2: 2016

Limits for radiated disturbance at a measuring distance of 3m

Frequency range MHz	Quasi-peak limits dB(uV/m)		
	Category C1	Category C2	Category C3
30 to 230	40	50	60
230 to 1000	47	57	70
Note: The lower limit shall apply at the transition frequency.			

5.3 Test Procedure

E.U.T. and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. E.U.T. is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to EN 62040-2 on radiated emission measurement.
The bandwidth of the EMI test receiver (R&S ESCI7) is set at 120 KHz.
The frequency range from 30 MHz to 1000 MHz is checked.

5.4 Operating Condition of E.U.T.

5.4.1 Setup the E.U.T. and simulators as shown in Section 2.3.

5.4.2 Turn on the power of all equipments.

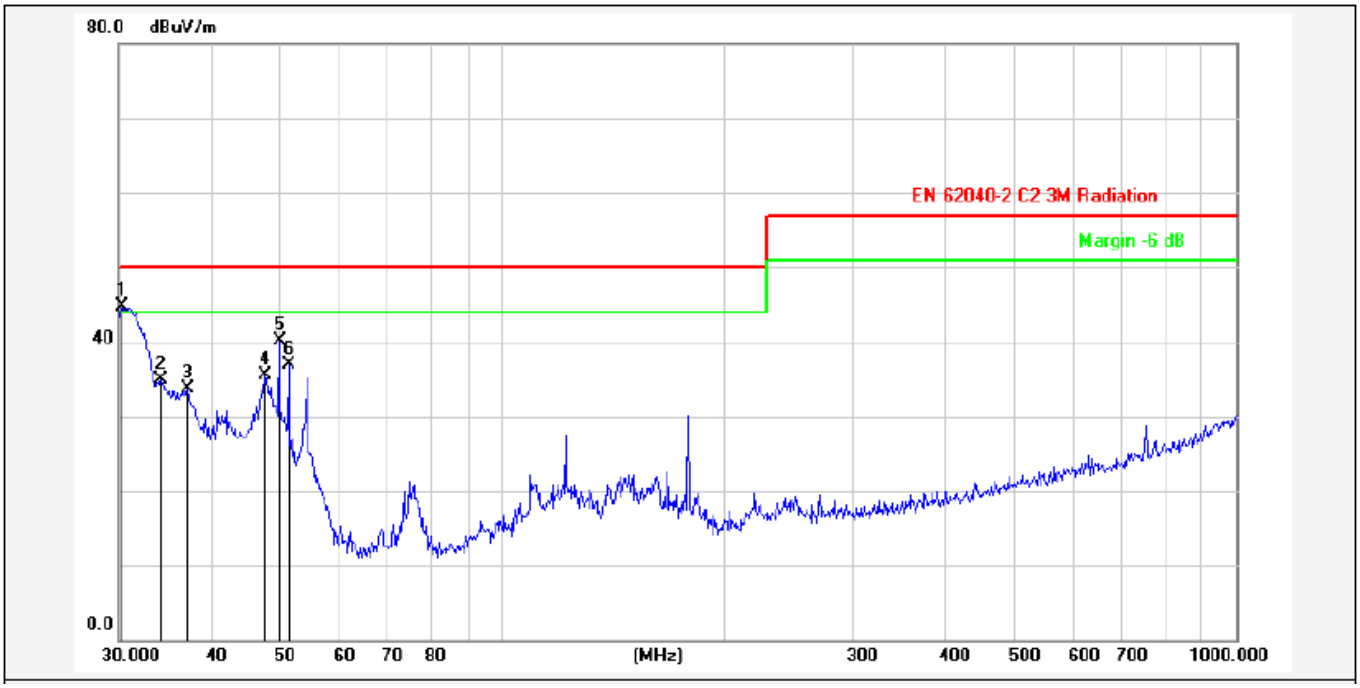
5.4.3 Let the E.U.T. work in test modes (Normal operation mode, Stored energy operation mode) and test it.

5.5 Radiated Emission Measurement Result

PASS.

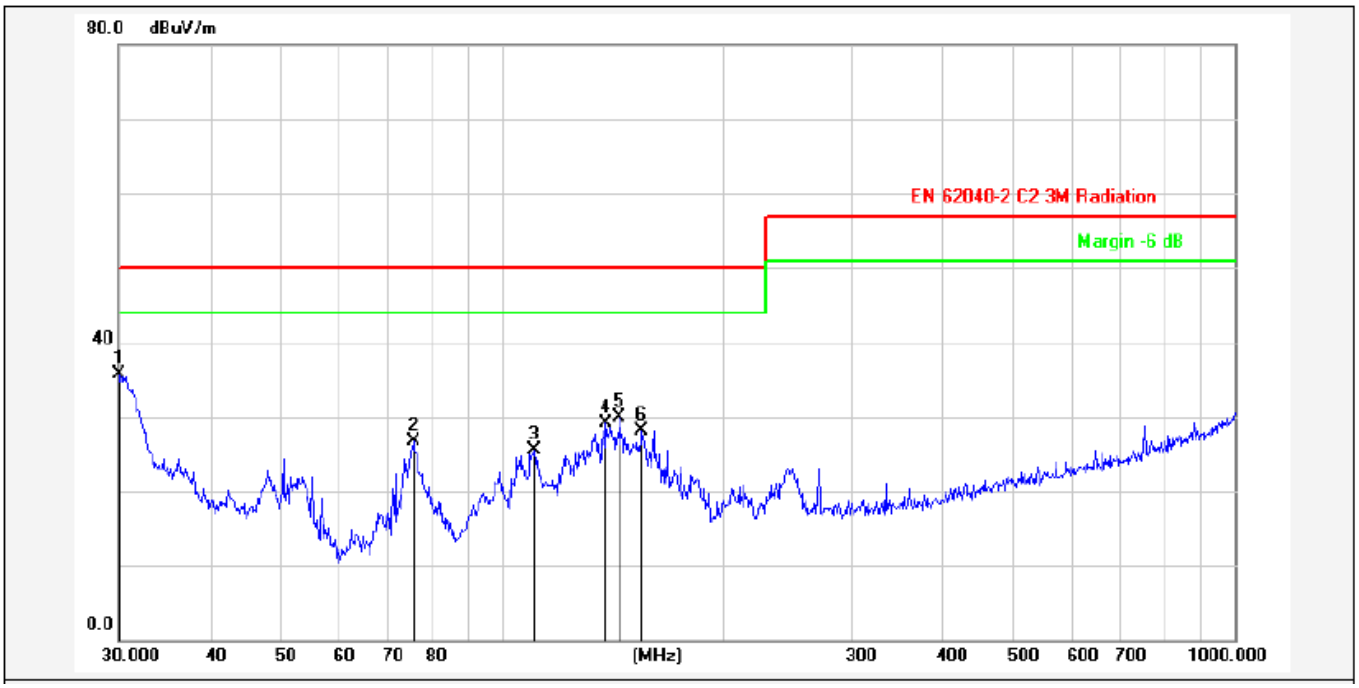
Please refer to the following pages.

E.U.T :	UPS	Model Name :	abc3KIde
Temperature :	25° C	Relative Humidity :	60 %
Pressure :	1006 hPa	Test Voltage :	DC 72V
Test Mode :	Stored Energy operation mode	Polarization:	Vertical



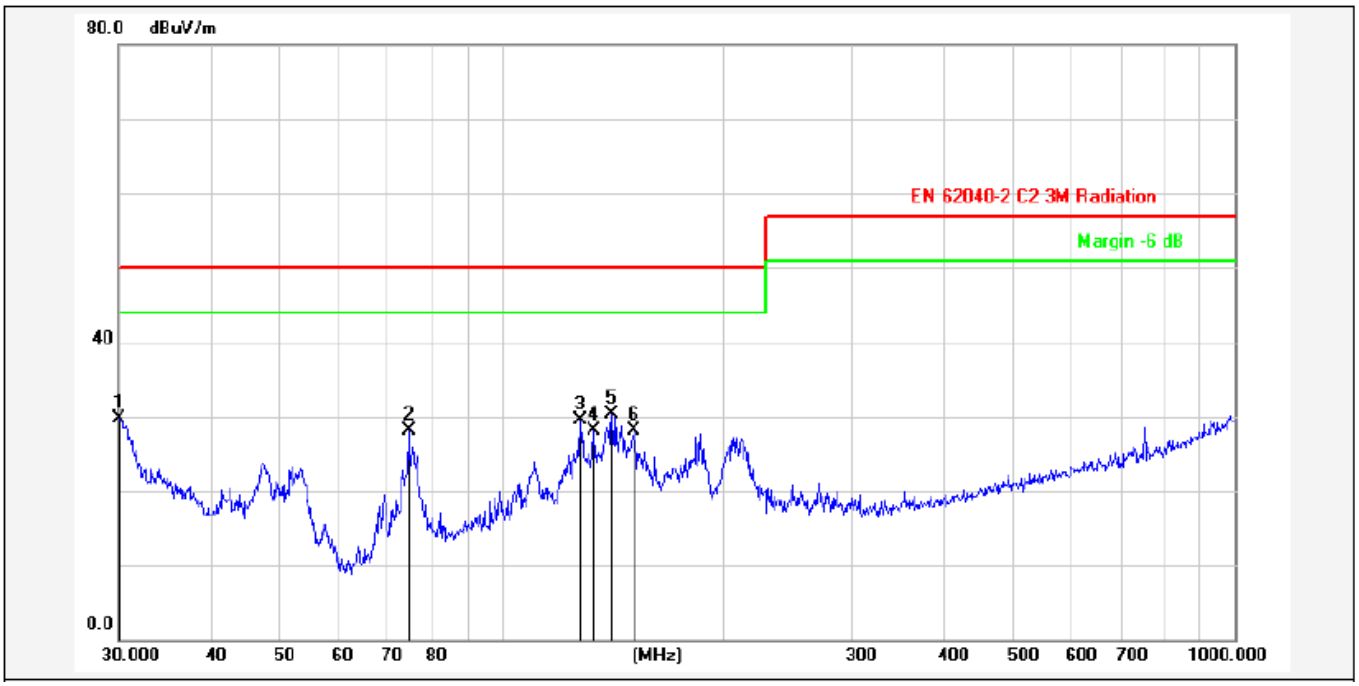
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	30.3172	-3.50	48.15	44.65	50.00	-5.35	QP			P	
2	34.2760	-4.75	39.67	34.92	50.00	-15.08	QP			P	
3	37.2854	-5.69	39.39	33.70	50.00	-16.30	QP			P	
4	47.4917	-10.04	45.53	35.49	50.00	-14.51	QP			P	
5	49.7066	-11.06	51.14	40.08	50.00	-9.92	QP			P	
6	51.1209	-11.48	48.38	36.90	50.00	-13.10	QP			P	

E.U.T :	UPS	Model Name :	abc3KIde
Temperature :	25° C	Relative Humidity :	60 %
Pressure :	1006 hPa	Test Voltage :	DC 72V
Test Mode :	Stored Energy operation mode	Polarization:	Horizontal



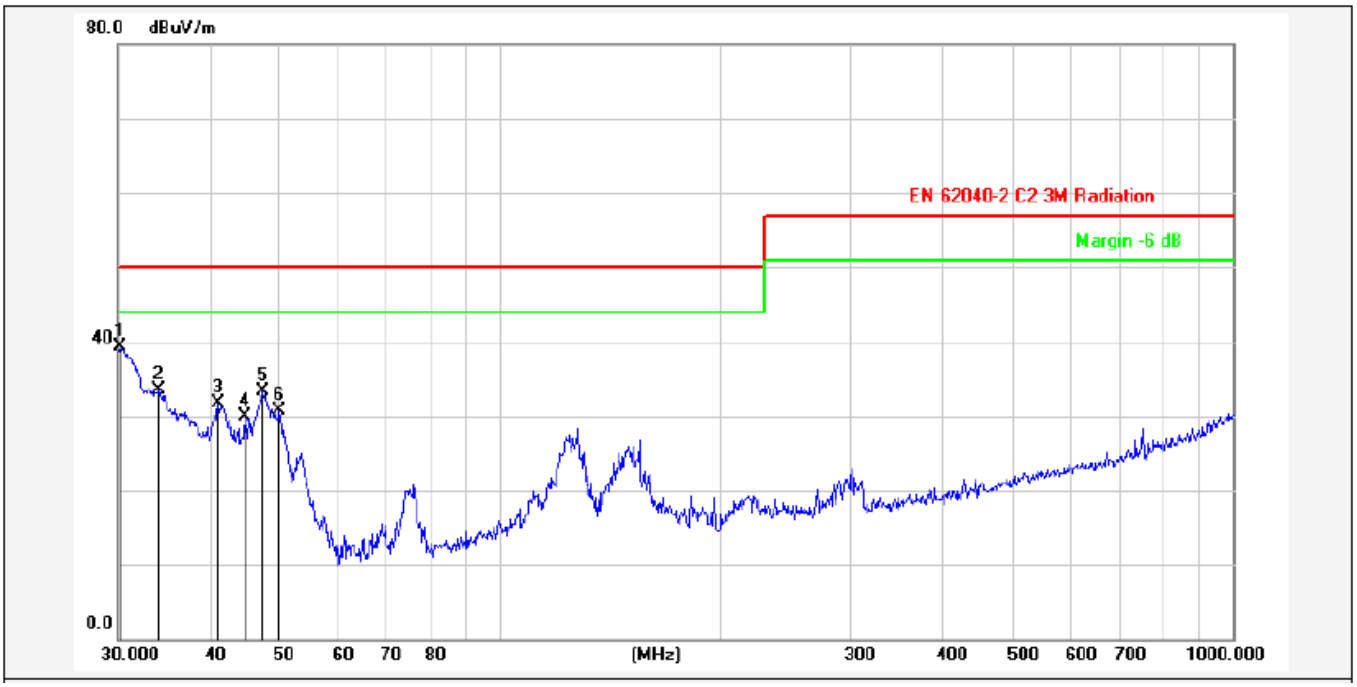
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	30.1054	-0.73	36.37	35.64	50.00	-14.36	QP			P	
2	75.7114	-11.30	38.08	26.78	50.00	-23.22	QP			P	
3	110.9571	-6.01	31.50	25.49	50.00	-24.51	QP			P	
4	138.8735	-5.79	34.81	29.02	50.00	-20.98	QP			P	
5	144.8418	-6.09	35.96	29.87	50.00	-20.13	QP			P	
6	155.3644	-6.57	34.72	28.15	50.00	-21.85	QP			P	

E.U.T :	UPS	Model Name :	abc3KIde
Temperature :	25° C	Relative Humidity :	60 %
Pressure :	1006 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	Normal operation mode	Polarization:	Horizontal



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	30.1053	-0.73	30.38	29.65	50.00	-20.35	QP			P	
2	74.6568	-11.44	39.46	28.02	50.00	-21.98	QP			P	
3	128.1129	-5.41	34.98	29.57	50.00	-20.43	QP			P	
4	133.6188	-5.53	33.58	28.05	50.00	-21.95	QP			P	
5	141.3296	-5.91	36.28	30.37	50.00	-19.63	QP			P	
6	151.5972	-6.42	34.49	28.07	50.00	-21.93	QP			P	

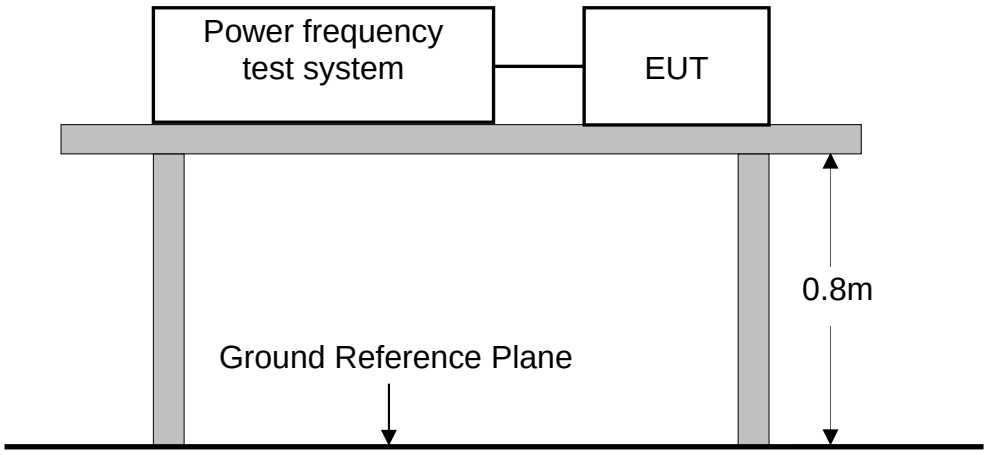
E.U.T :	UPS	Model Name :	abc3KIde
Temperature :	25° C	Relative Humidity :	60 %
Pressure :	1006 hPa	Test Voltage :	AC 230V/50Hz
Test Mode :	Normal operation mode	Polarization:	Vertical



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	30.2111	-3.47	42.69	39.22	50.00	-10.78	QP			P	
2	34.1561	-4.71	38.22	33.51	50.00	-16.49	QP			P	
3	41.1320	-7.08	38.83	31.75	50.00	-18.25	QP			P	
4	44.7433	-8.76	38.71	29.95	50.00	-20.05	QP			P	
5	47.3255	-9.95	43.24	33.29	50.00	-16.71	QP			P	
6	49.8814	-11.14	41.84	30.70	50.00	-19.30	QP			P	

6. HARMONIC CURRENT EMISSION TEST

6.1 Block Diagram of Test Setup



6.2 Limits of Harmonics current measurement

Test Standard: EN 61000-3-2: 2014 / IEC 61000-3-2: 2014

Limits for Class A equipment	
Harmonics Order n	Max. permissible harmonics current A
Odd harmonics	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
15<=n<=39	0.15×15/n
Even harmonics	
2	1.08
4	0.43
6	0.30
8<=n<=40	0.23×8/n

Limits for Class D equipment		
Harmonics Order n	Max. permissible harmonics current per watt mA/W	Max. permissible harmonics current A
3	3.4	2.30
5	1.9	1.14
7	1.0	0.77
9	0.5	0.40
11	0.35	0.33
13	0.30	0.21
15<=n<=39	3.85/n	0.15×15/n

For the following categories of equipment limits are not specified in this edition of the standard.
Note 1: Equipment with a rated power of 75W or less, other than lighting equipment.

6.3 Test Procedure

The E.U.T. was put on the top of a wooden table 0.8m above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.

The E.U.T. is classified as follows:
Class A:
Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment ,equipment not specified in one of the three other classes.
Class B:
Portable tools; Arc welding equipment which is not professional equipment.
Class C:
Lighting equipment.
Class D:
Equipment having a specified power less than or equal to 600W of the following types: Personal computers and personal computer monitors and television receivers.

6.4 Operating Condition of E.U.T.

6.4.1 Setup the E.U.T. and simulators as shown in Section 2.3.

6.4.2 Turn on the power of all equipments.

6.4.3 Let the E.U.T. work in test mode (Normal operation mode) and test it.

6.5 Test Results

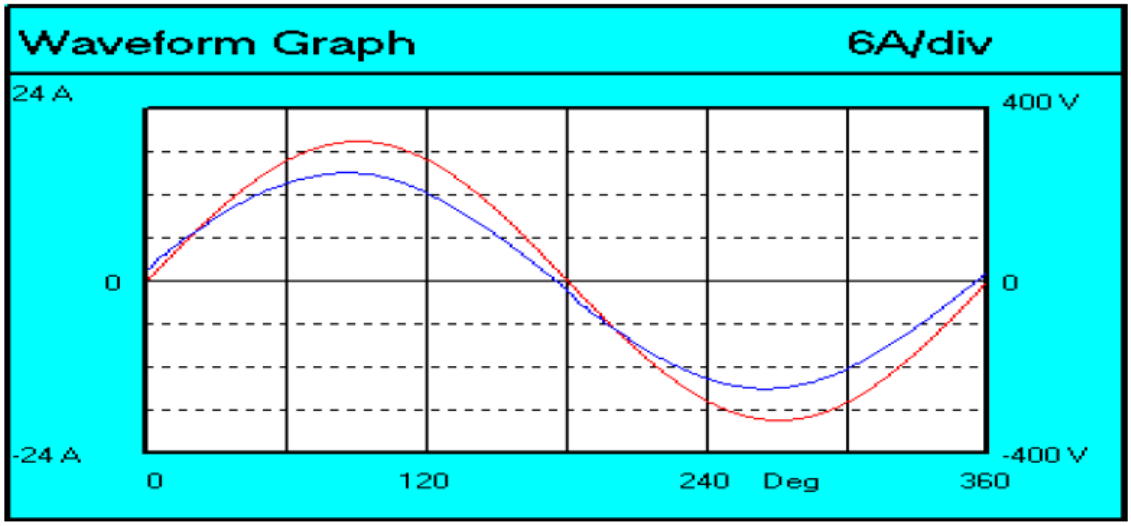
PASS.

Please refer to the following pages.

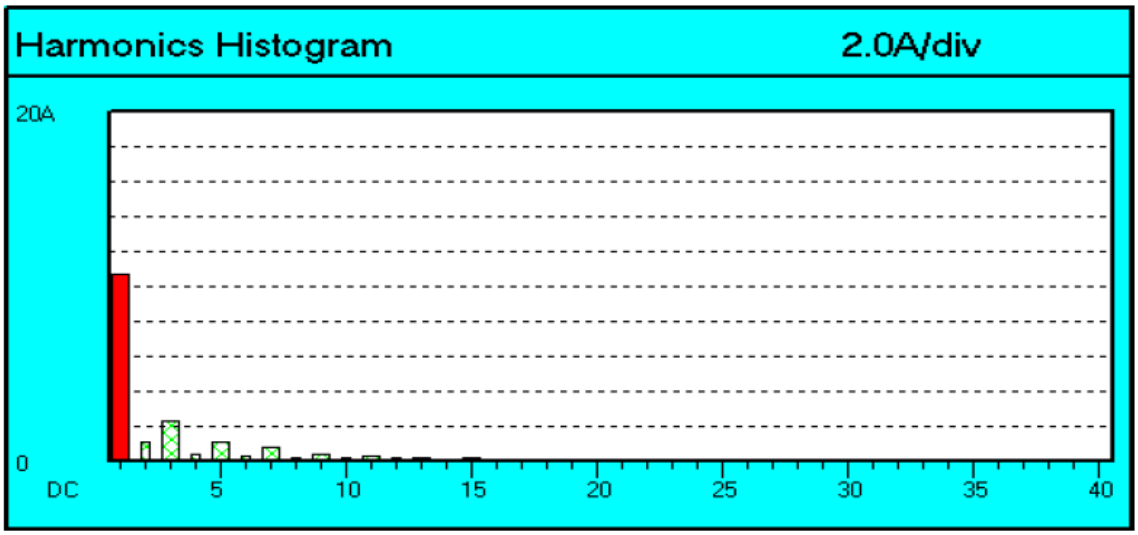
Harmonics – Class-A per Ed. 3.2 (2009)(Run time)

Report Number : NTC1706675EV01
Tested On : 28 September 2018 13:41 for 150 Seconds.
Equipment Under Test : UPS
Serial Number : abc3KIde
Tested by : Zeng

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Current Test Result Summary (Run time)

Report Number : NTC1706675EV01
Tested On : 28 September 2018 13:41 for 150 Seconds.
Equipment Under Test : UPS
Serial Number : abc3KIde
Tested by : Zeng
Supply Voltage : 230.0 Vrms 325.1 Vpk Frequency : 50.00 Hz
Supply Meets EN Requirements
Load Power : 2.441 kW Power Factor 0.995
Load Current : 10.7 Arms 15.1 Apk Crest Factor 1.410
THC(A):0.11 I-THD(%):1.0
Limits Applied : EN61000-3-2:2014 Class A Limits Apply.

Harmonic Number	Limit Current Amp	Average (filtered) Amp	% Limit	max. Value (Filtered) Amp	% Limit	Assessment
Fundamental :		10.659				
2 :	1.080	0.059	5.5	0.088	8.1	Pass
3 :	2.300	0.092	4.0	0.121	5.3	Pass
4 :	0.430	0.031	7.2	0.048	11.2	Pass
5 :	1.140	0.079	6.9	0.092	8.1	Pass
6 :	0.300	0.019	6.3	0.028	9.3	Pass
7 :	0.770	0.040	5.2	0.049	6.4	Pass
8 :	0.230	0.014	6.1	0.019	8.3	Pass
9 :	0.400	0.032	8.0	0.040	10.0	Pass
10 :	0.184	0.011	6.0	0.019	10.3	Pass
11 :	0.330	0.028	8.5	0.036	10.9	Pass
12 :	0.153	0.009	5.9	0.018	11.8	Pass
13 :	0.210	0.017	8.1	0.022	10.5	Pass
14 :	0.131	0.008	6.1	0.013	9.9	Pass
15 :	0.150	0.014	9.3	0.023	15.3	Pass
16 :	0.115	0.008	7.0	0.010	8.7	Pass
17 :	0.132	0.014	10.6	0.017	12.9	Pass
18 :	0.102	0.007	6.9	0.012	11.8	Pass
19 :	0.118	0.010	8.5	0.012	10.2	Pass
20 :	0.092	0.007	7.6	0.010	10.9	Pass
21 :	0.107	0.011	10.3	0.015	14.0	Pass
22 :	0.084	0.007	8.3	0.008	9.5	Pass
23 :	0.098	0.011	11.2	0.015	15.3	Pass
24 :	0.077	0.006	7.8	0.007	9.1	Pass
25 :	0.090	0.009	10.0	0.010	11.1	Pass
26 :	0.071	0.005	7.0	0.008	11.3	Pass
27 :	0.083	0.011	13.3	0.013	15.7	Pass
28 :	0.066	0.005	7.6	0.007	10.6	Pass
29 :	0.078	0.012	15.4	0.016	20.5	Pass
30 :	0.061	0.005	8.2	0.007	11.5	Pass
31 :	0.073	0.009	12.3	0.013	17.8	Pass
32 :	0.057	0.005	8.8	0.006	10.5	Pass
33 :	0.068	0.009	13.2	0.011	16.2	Pass
34 :	0.054	0.005	9.3	0.007	13.0	Pass
35 :	0.064	0.008	12.5	0.009	14.1	Pass
36 :	0.051	0.005	9.8	0.007	13.7	Pass
37 :	0.061	0.007	11.5	0.010	16.4	Pass
38 :	0.048	0.005	10.4	0.006	12.5	Pass
39 :	0.058	0.008	13.8	0.009	15.5	Pass
40 :	0.046	0.005	10.9	0.007	15.2	Pass
21 - 39 :	0.251	0.030	12.0	0.039	15.5	POHC

Voltage Source Verification Data (Run time)

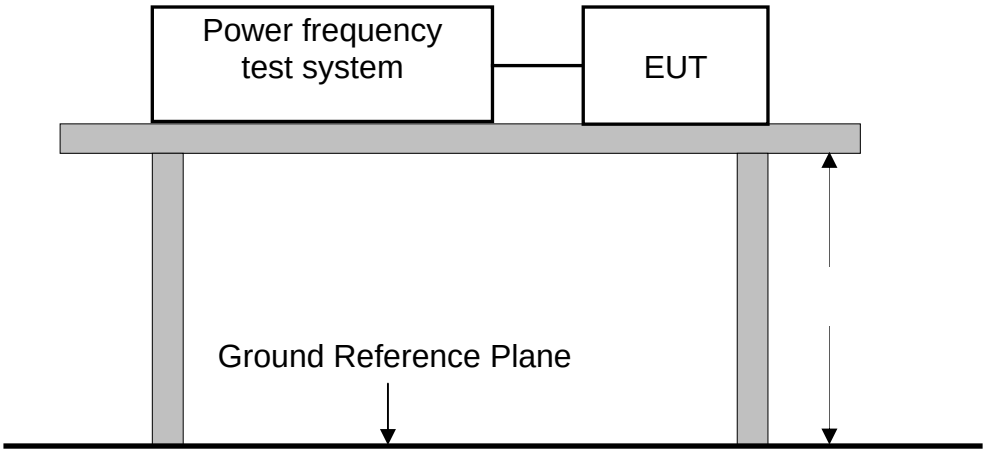
Report Number : NTC1706675EV01
Tested On : 28 September 2018 13:41 for 150 Seconds.
Equipment Under Test : UPS
Serial Number : abc3KIde
Tested by : Zeng

	Nominal	Measured Low	Measured High	Deviation	Allowed Deviation	Result
Supply Voltage	: 230	229.19	229.72	-0.81	4.60	PASS
Supply Frequency	: 50	49.99	50.00	-0.01	0.25	PASS
Crest Phase	: 90.0	89.1	90.6	-0.9	3.0	PASS
Crest Factor	: 1.414	1.412	1.415	-0.002	-0.014/+0.006	PASS
Fundamental Voltage	: 229.30	-	-	-	-	-

Harmonic	Harmonic Voltage	Harmonic Ratio	Limit	Result
2	0.14	0.091	0.20	PASS
3	0.14	0.167	0.90	PASS
4	0.03	0.046	0.20	PASS
5	0.05	0.066	0.40	PASS
6	0.04	0.036	0.20	PASS
7	0.05	0.060	0.30	PASS
8	0.02	0.013	0.20	PASS
9	0.02	0.027	0.20	PASS
10	0.01	0.008	0.10	PASS
11	0.02	0.019	0.10	PASS
12	0.01	0.008	0.10	PASS
13	0.01	0.019	0.10	PASS
14	0.00	0.005	0.10	PASS
15	0.01	0.014	0.10	PASS
16	0.00	0.006	0.10	PASS
17	0.01	0.009	0.10	PASS
18	0.00	0.003	0.10	PASS
19	0.01	0.009	0.10	PASS
20	0.00	0.003	0.10	PASS
21	0.00	0.008	0.10	PASS
22	0.00	0.003	0.10	PASS
23	0.00	0.008	0.10	PASS
24	0.00	0.003	0.10	PASS
25	0.01	0.008	0.10	PASS
26	0.00	0.003	0.10	PASS
27	0.00	0.009	0.10	PASS
28	0.00	0.003	0.10	PASS
29	0.01	0.009	0.10	PASS
30	0.00	0.003	0.10	PASS
31	0.01	0.009	0.10	PASS
32	0.00	0.003	0.10	PASS
33	0.01	0.009	0.10	PASS
34	0.00	0.003	0.10	PASS
35	0.01	0.009	0.10	PASS
36	0.00	0.003	0.10	PASS
37	0.01	0.009	0.10	PASS
38	0.00	0.003	0.10	PASS
39	0.01	0.009	0.10	PASS
40	0.00	0.003	0.10	PASS

7.VOLTAGE FLUCTUATIONS&FLICKER TEST

7.1 Block Diagram of Test Setup



7.2 Limits of Voltage Fluctuations&Flicker Measurement

Test Standard:EN 61000-3-3:2013 / IEC 61000-3-3: 2013

Test Item	Limit
P_{st}(Short-term flicker indicator.)	1.0
P_{lt}(Long-term flicker indicator.)	0.65
$T_{d(t)}$(ms)(Maximum time that d(t)exceeds 3.3%)	500
d_{max}(%)(Maximum relative voltage change.)	4
d_c(%)(Relative steady-state voltage change)	3.3

7.3 Test Procedure

The E.U.T.was put on the top of a wooden table 0.8m above the ground and operated to produce the most unfavorable sequence of voltage changes under normal operating conditions.

7.4 Operating Condition of E.U.T.

7.4.1 Setup the E.U.T.and simulators as shown in Section 2.3.

7.4.2 Turn on the power of all equipments.

7.4.3 Let the E.U.T.work in test modes(Normal operation mode)and test it.

7.5 Test Results

PASS.

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

```
Report Number         : NTC1706675EV01
Tested On             : 28 September 2018 14:20 for 600 Seconds.
Equipment Under Test  : UPS
Serial Number         : abc3KIde
Tested by             : Zeng

Load Power            : 2.361 kW   2.381 kVA Power Factor  0.992
Load Current          : 10.5 Arms  14.1 Apk Crest Factor  1.345

EN 61000-3-3:2013 - Voltage reduction is positive

Voltage Variations
           Nominal Voltage: 230 Vrms
  Highest Half-cycle level:  +0.94%
   Lowest Half-cycle level:  +1.27%

                   d(max):  +0.12%          Limit: 4%     PASS
                   t(max):   0.00seconds    Limit: 500ms  PASS

   Steady State definition: >1000ms within +/- 0.2%
  Largest d(c) change down:  +0.15%
    Largest d(c) change up:  -0.09%
       Largest d(c) change:  +0.15%          Limit: 3.3%   PASS

Flicker
```

Pst Classifier		Plt Calculation	
Duration	Flicker	Interval	Pst
0.1%	0.02		
0.7%	0.02		
1.0%	0.02		
1.5%	0.02		
2.2%	0.02		
3%	0.02		
4%	0.02		
6%	0.02		
8%	0.02		
10%	0.02		
13%	0.01		
17%	0.01		
30%	0.01		
50%	0.01		
80%	0.00		

8. PERFORMANCE CRITERIA FOR IMMUNITY

The performance criteria are referred to the test standard: EN 62040-2/IEC 62040-2

Performance criteria for immunity tests

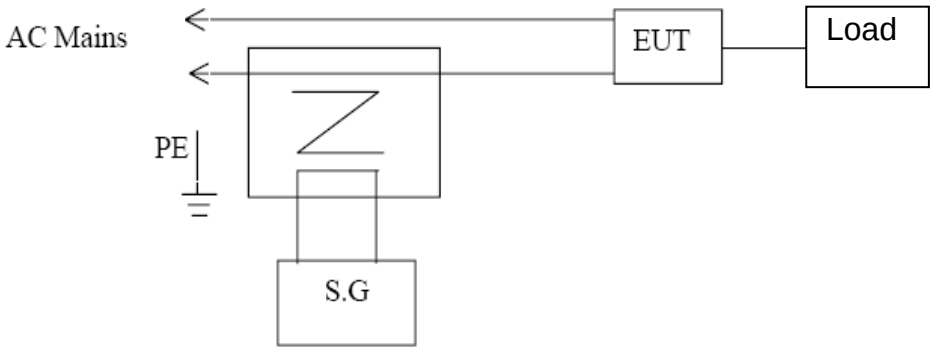
	Criterion A	Criterion B
Output characteristics	Voltage permitted to vary only within the steady-state characteristics applicable(100m sec limits in Figures 1,2 or 3 of IEC62040-3)	Voltage permitted to vary within the inverse time characteristics applicable (<100 m sec limits in Figures 1, 2 or 3 of IEC 62040-3)
External and internal indications and metering	Change only during test	Change only during test
Control signals to external devices	No change	Change only temporarily in consistency with the actual Uninterruptible Power Supply mode of operation
Mode of operation	No change	Change only temporarily

The tests shall be made with the Uninterruptible Power Supply in the following conditions:

---- rated input voltage;
---- normal mode of operation;
---- linear load at rated active output power or at light load according to IEC62040-3.

9. LOW FREQUENCY SIGNALS TEST

9.1 Block Diagram of Test Setup



9.2 Test Standard and Performance Criterion

EN 62040-2: 2006+AC: 2006 Category C2
(EN 61000-2-2: 2002/IEC 61000-2-2: 2002)

Performance criterion: **A**

9.3 Operating Condition of E.U.T.

9.3.1 Setup the E.U.T. and simulators as shown in Section 2.3.

9.3.2 Turn on the power of all equipments.

9.3.3 Let the E.U.T. work in test mode (Normal operation mode) and test it.

9.4 Test Results

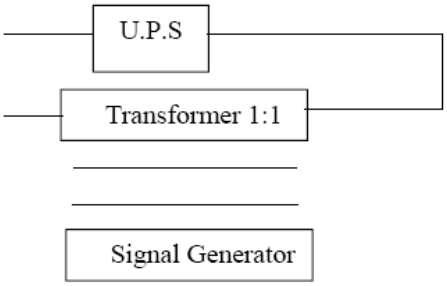
PASS.

Please refer to following page.

Low Frequency Signals Test Result

Ambient Condition:	Temp.: 25 ℃	R.H.: 52 %	Air Pressure: 101 kPa
Power Supply:	AC 230V 50Hz	Required Performance Criterion:	A
Tested mode:	Normal operation mode		
Frequency Range (Hz)	Position	Strength	**Result** (Performance Criterion)
140	See Fig.1	10V(rms) Sinusoidal	A
160			A
200			A
240			A
280			A
320			A
360			A

Note:

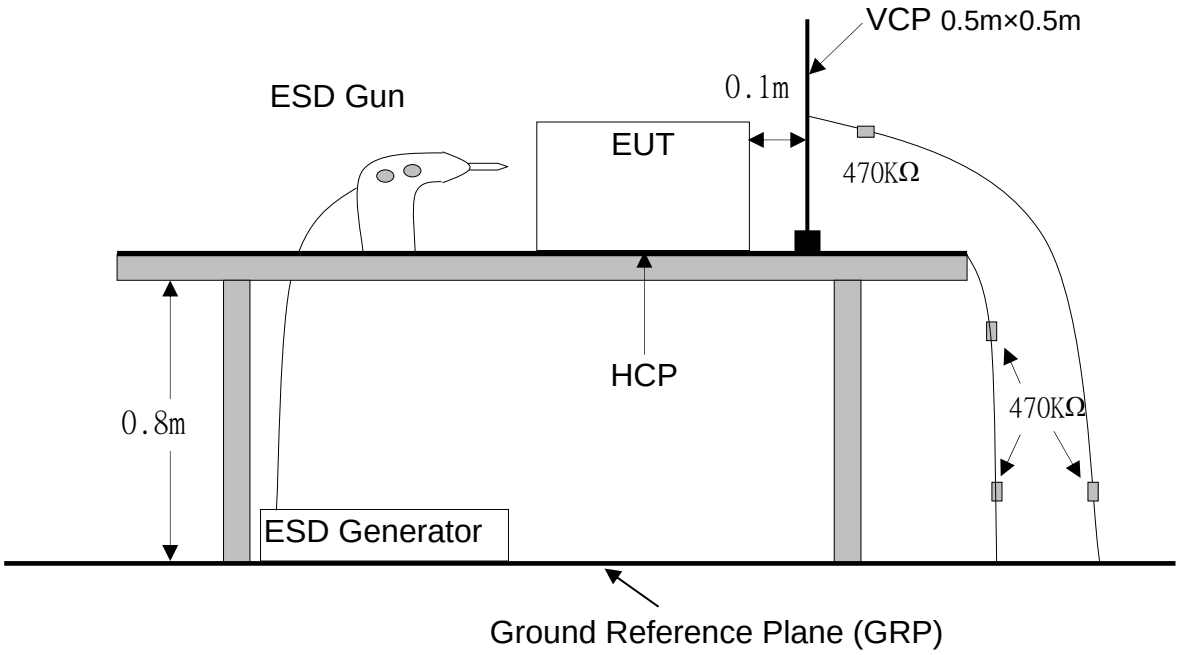


Test Equipment:
1. Isolation transformer
   Primary: Secondary=1:1
2. Signal Generator
   AC Source: 6530(CHROMA)

Test Engineer : Sance

10. ELECTROSTATIC DISCHARGE TEST

10.1 Block Diagram of Test Setup



10.2 Test Standard and Severity Levels

10.2.1 Test Standard:

EN 62040-2: 2006+AC: 2006 Category C2
(EN 61000-4-2: 2009/IEC 61000-4-2: 2008
Air Discharge: Severity Level: 3, ± 8KV;
Contact Discharge: Level: 2, ± 4KV)

10.2.2 Severity Levels:

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	±2	±2
2.	±4	±4
3.	±6	±8
4.	±8	±15
X	Special	Special

Performance criterion: **B**

10.3 Test Procedure

10.3.1 Air Discharge**:**

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the E.U.T.. After each discharge, the discharge electrode shall be removed from the E.U.T.. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed

10.3.2 Contact Discharge**:**

All the procedure shall be same as Section 10.3.1. except that the tip of the discharge electrode shall touch the E.U.T..

10.3.3 Indirect discharge for horizontal coupling plane

At least 10 single discharges(in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit(if applicable) of the E.U.T. and 0.1m from the front of the E.U.T.. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

10.3.4 Indirect discharge for vertical coupling plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the E.U.T.. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the E.U.T. are completely illuminated.

10.4 Test Results

PASS.

Please refer to the following page.

Electrostatic Discharge Test Results

Ambient Condition:	Temp.: 22 ℃	R.H.: 52 %	Air Pressure: 101 kPa
Power Supply:	AC 230V 50Hz, DC 72V	Required Performance Criterion:	B
Test Specifications:	±2, 4 kV Contact Discharge; ±2, 4, 8 kV Air Discharge For each point positive 10 times and negative 10 times		
Tested mode:	Normal operation mode, Stored energy operation mode		

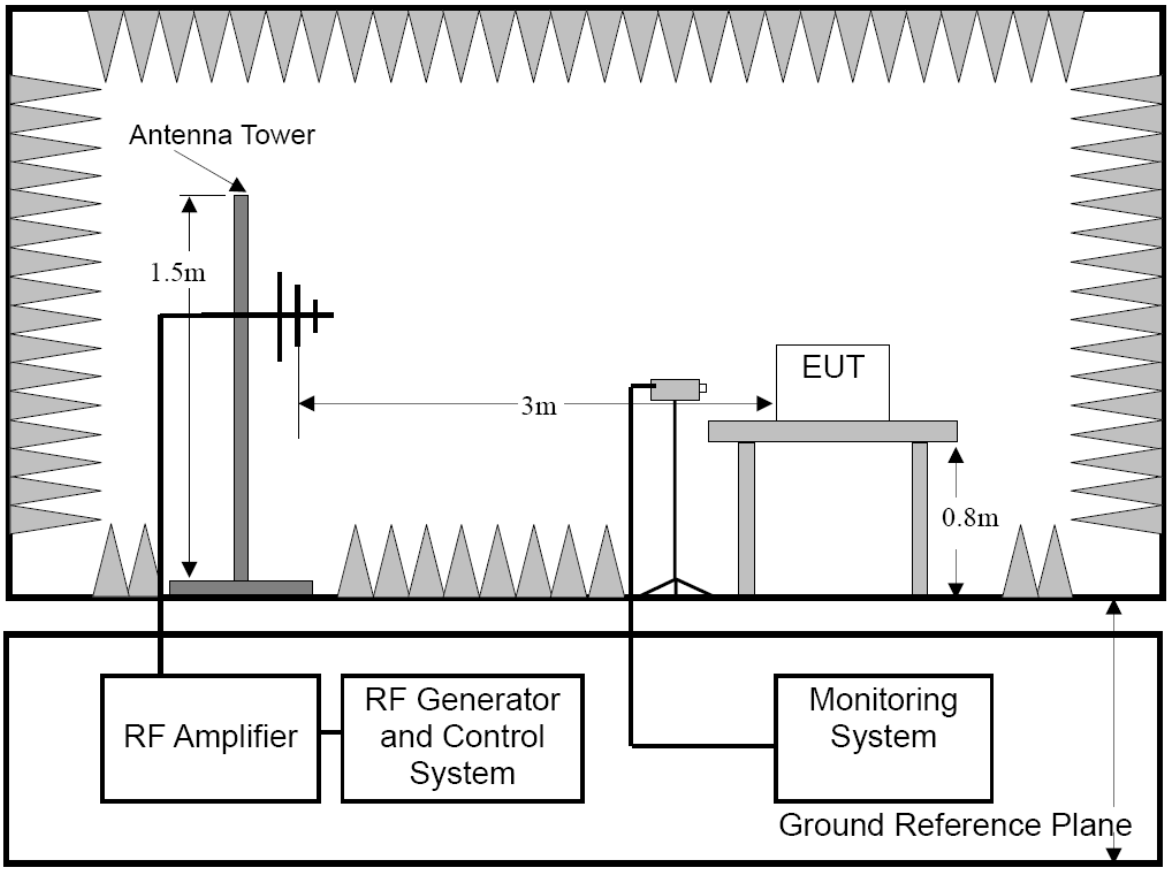
Test Point	**Kind** A-Air Discharge C-Contact Discharge	**Result** (Performance Criterion)
Screen	A	A
Metal	C	A
Indirect Discharge (HCP)	C	A
Indirect Discharge (VCP)	C	A

Note:

Test Equipment : ESD Tester (TESEQ, NSG 437) Test Engineer : Sance

11. RF FIELD STRENGTH SUSCEPTIBILITY TEST

11.1 Block Diagram of Test Setup



11.2 Test Standard and Severity Levels

11.2.1 Test Standard

EN 62040-2: 2006+AC: 2006 Category C2
(EN 61000-4-3: 2006+A2: 2010/IEC 61000-4-3: 2010,
Severity Level: 3, 10V / m)

11.2.2 Severity Levels

Level	Field Strength V/m
1.	1
2.	3
3.	10
X	Special

Performance Criterion : **A**

11.3 Test Procedure

The E.U.T. and its simulators are placed on a turn table which is 0.8 meter above ground. E.U.T. is set 3 meter away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of E.U.T. must be faced this transmitting antenna and measured individually.
All the scanning conditions are as follows **:**

Condition of Test	Remarks
1. Fielded Strength	10 V/m (Severity Level 3)
2. Radiated Signal	Modulated
3. Scanning Frequency	80 - 1000 MHz
4. Dwell time of radiated	0.0015 decade/s
5. Waiting Time	1 Sec.

11.4 Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

Ambient Condition:	Temp.: 22 ℃	R.H.: 52%	Air Pressure: 101 kPa	
Power Supply:	AC 230V 50Hz, DC 72V	Required Performance Criterion: A		
Test Specifications:	Modulation: 1kHz, 80%AM;	Step Size: 1%;	Dwell Time: 1s	
Tested mode:	Normal operation mode, Stored energy operation mode			
Frequency (MHz)	Level (V/m)	Antenna polarity	Side	Result (Performance Criterion)
80-1000	10	Horizontal	Front	A
			Left	A
			Right	A
			Back	A
		Vertical	Front	A
			Left	A
			Right	A
			Back	A
Note:				

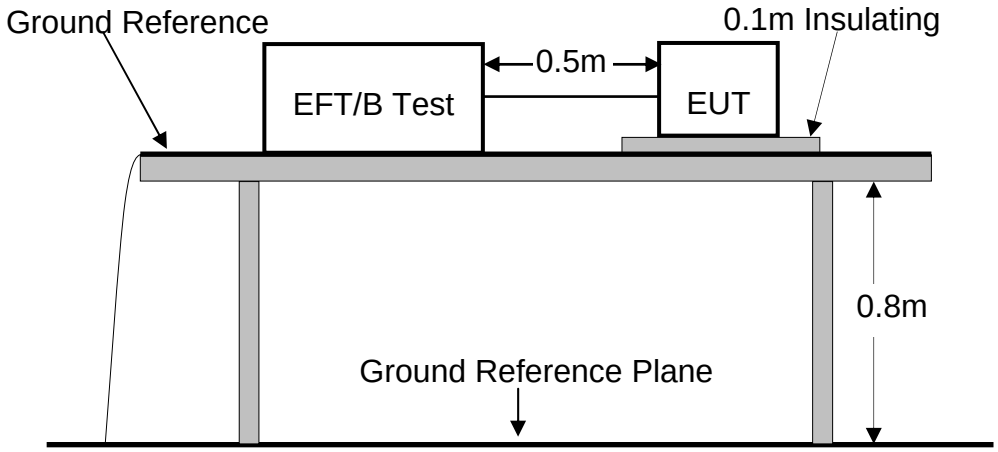
Test Equipment **:**

1. Signal Generator : N5181A (Agilent)
2. Power Amplifier : CBA 1G-150 (TESEQ)
3. Log.-Per. Antenna: VULB9162 (SCHWARZBECK)
4. RF Power Meter. Dual Channel : 4242 (ESE)
5. Power Sensor: 51011EMC (ESE)

Test Engineer : Sance

12. ELECTRICAL FAST TRANSIENT/BURST TEST

12.1 Block Diagram of Test Setup



12.2 Test Standard and Severity Levels

12.2.1 Test Standard

EN 62040-2: 2006+AC: 2006 Category C2
(EN 61000-4-4: 2012/IEC 61000-4-4: 2012,
Severity Level, Level 4: 4KV)

12.2.2 Severity level

Open circuit output test voltage and repetition rate of the impulses				
Level	On power port, PE		On I/O (Input/Output) Signal data and control ports	
	Voltage peak KV	Repetition rate KHz	Voltage peak KV	Repetition rate KHz
1.	0.5	5 or 100	0.25	5 or 100
2.	1.0	5 or 100	0.5	5 or 100
3.	2.0	5 or 100	1.0	5 or 100
4.	4.0	5 or 100	2.0	5 or 100
X	Special	Special	Special	Special

Note 1 Use of 5 KHz repetition rates is traditional; however, 100 KHz is closer to reality. Product committees should determine which frequencies are relevant for specific products or product types.

Note 2 With some products, there may be no clear distinction, between power ports and I/O ports, in which case it is up to product committees to make this determination for test purposes.

Note 3 “X” is an open level. The level has to be specified in the dedicated equipment specification.

Performance Criterion : **B**

12.3 Test Procedure

The E.U.T. is put on the table which is 0.8 meter high above the ground. This reference ground plane shall project beyond the E.U.T. by at least 0.1m on all sides and the minimum distance between E.U.T. and all other conductive structure, except the ground plane beneath the E.U.T., shall be more than 0.5m.

12.3.1 For input and output AC power ports**:**

The E.U.T. is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 minutes.

12.3.2 For signal lines ports**:**

It's unnecessary to test.

12.3.3 For DC ports**:**

It's unnecessary to test.

12.4 Test Result

PASS.

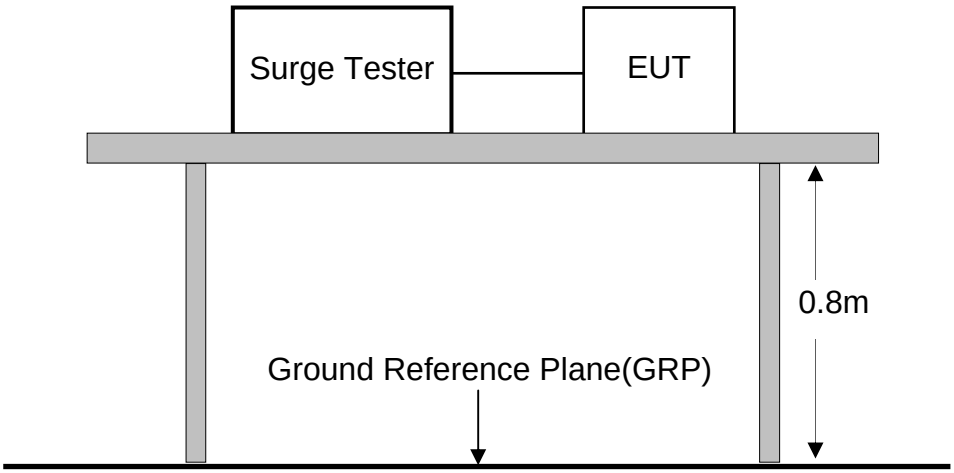
Please refer to the following page.

Electrical Fast Transient/Burst Test Results

Ambient Condition:	Temp.: 22 ℃	R.H.: 52 %	Air Pressure: 101 kPa
Power Supply:	AC 230V 50Hz	Required Performance Criterion: B	
Test Specifications:	Repetition Frequency: 5kHz; Duration: 15ms; Period: 300ms		
Test mode:	Normal operation mode		
Line : ☒ AC Mains ☐ Signal line ☐ DC line Coupling : ☒ Direct ☐ Capacitive			
Line (Input and output AC power ports)	**Test Voltage**	**Result** (Performance Criterion)	
L	±4KV	A	
N	±4KV	A	
PE	±4KV	A	
L、N	±4KV	A	
L、PE	±4KV	A	
N、PE	±4KV	A	
L、N、PE	±4KV	A	
Signal line	----	----	
DC line	----	----	
Note :			
Test Equipment : Burst Tester(EM TEST, UCS500N)		Test Engineer : Sance	

13. SURGE IMMUNITY TEST

13.1 Block Diagram of Test Setup



13.2 Test Standard and Severity Levels

13.2.1 Test Standard

EN 62040-2: 2006+AC: 2006 Category C2
(EN 61000-4-5: 2014/IEC 61000-4-5: 2014, Severity Level:
Line To Line, Level *: 6.0KV; Line To Earth, Level *: 6.0KV

13.2.2 Severity level

Severity Level	Open-Circuit Test Voltage KV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

Performance Criterion : **B**

13.3 Test Procedure

1. Set up the E.U.T. and test generator as shown on Section 13.1.
2. For line to line coupling mode, provide a 6.0KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to E.U.T. selected points.
3. At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
4. Different phase angles are done individually.
5. Record the E.U.T. operating situation during compliance test and decide the E.U.T. immunity criterion for above each test.

13.4 Test Result

PASS.

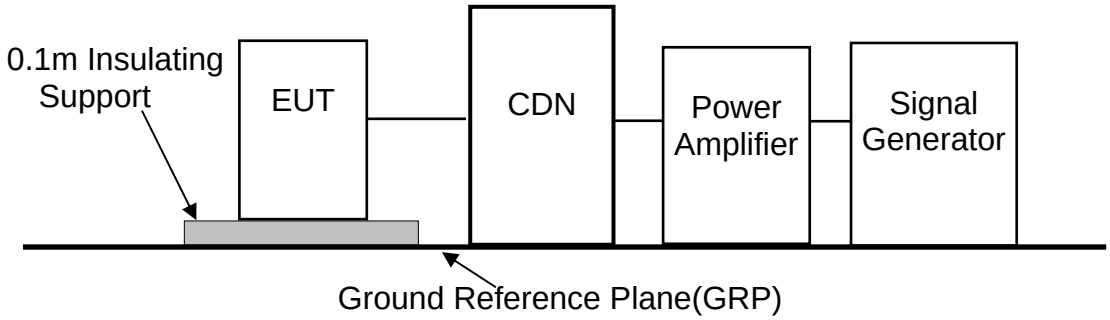
Please refer to the following page.

Surge Immunity Test Results

Ambient Condition:	Temp.: 22 ℃	R.H.: 52 %	Air Pressure: 101 kPa
Power Supply:	AC 230V 50Hz	Required Performance Criterion: B	
Test Specifications:	Voltage surge 1.2/50 us ; Current surge 8/20 us ; Five positive and five negative pulses each at 0°, 90°, 180° and 270°.		
Test mode:	Normal operation mode		
Line(AC Input)	**Phase Angle**	**Test Voltage**	**Result** (Performance Criterion)
L-N	0°, 90°, 180°, 270°	±6.0KV	B
L-PE	0°, 90°, 180°, 270°	±6.0KV	A
N-PE	0°, 90°, 180°, 270°	±6.0KV	A
Signal line	----	----	----
DC line	----	----	----
Note :			
Test Equipment : Surge Tester(EM TEST, UCS500N)		Test Engineer : Sance	

14. INJECTED CURRENTS SUSCEPTIBILITY TEST

14.1 Block Diagram of Test Setup



14.2 Test Standard and Severity Levels

14.2.1 Test Standard

EN 62040-2: 2006+AC: 2006 Category C2
(EN 61000-4-6: 2014/IEC 61000-4-6: 2013,
Severity Level 3: 10V (rms),0.15MHz ~ 80MHz)

14.2.2 Severity level

Level	Field Strength V
1. 2. 3. X	1 3 10 Special

Performance Criterion : **A**

14.3 Test Procedure

1. Set up the E.U.T., CDN and test generators as shown on Section 14.1.
2. Let the E.U.T. work in test mode and measure it.
3. The E.U.T. are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from E.U.T.. Cables between CDN and E.U.T. are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
4. The disturbance signal described below is injected to E.U.T. through CDN.
5. The E.U.T. operates within its operational mode(s) under intended climatic conditions after power on.
6. The frequency range is swept from 150 KHz to 80 MHz using 10V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
7. The rate of sweep shall not exceed $1.5*10^{-3}$decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
8. Recording the E.U.T. operating situation during compliance testing and decide the E.U.T. immunity criterion.

14.4 Test Result

PASS.

Please refer to the following page.

Injected Currents Susceptibility Test Results

Ambient Condition:	Temp.: 22 ℃	R.H.: 52 %	Air Pressure: 101 kPa
Power Supply:	AC 230V 50Hz	Required Performance Criterion: A	
Test Specifications:	Modulation : 1KHz, 80%AM, Step Size : 1%, Dwell Time : 1s		
Test mode:	Normal operation mode		
Test Port	Frequency (MHz)	Level(V)	Result (Performance Criterion)
AC Mains (Input, Output)	0.15~80	10	A
Note :			

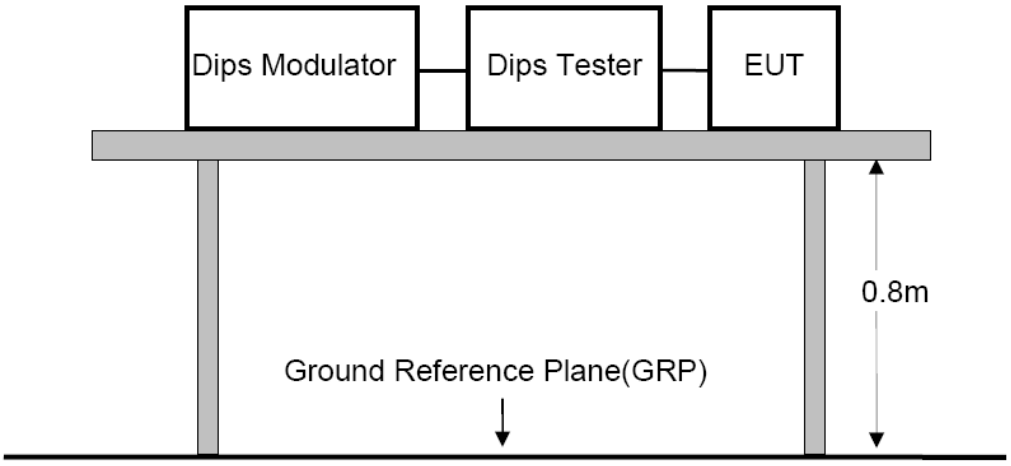
Test Equipment :

Signal Generator (HP, 8672A)
Signal Amplifier (HAEFELY, PAMP250)
Electromagnetic Injection Clamp (Luthi, EM101)

Test Engineer : Sance

15. VOLTAGE DIPS AND INTERRUPTIONS TEST

15.1 Block Diagram of Test Setup



15.2 Test Standard and Severity Levels

15.2.1 Test Standard

EN 62040-2
(EN 61000-4-11: 2004/IEC 61000-4-11: 2004)

15.2.2 Severity level

Test Level %U_T	Voltage dip and short interruptions %U_T	Duration (in period)
0	100	0.5 1 5 10 25 50 *
40	60	
70	30	

15.3 Test Procedure

1. Set up the E.U.T. and test generator as shown on Section 15.1.
2. The interruptions is introduced at selected phase angles with specified duration.
3. Record any degradation of performance.

15.4 Test Result

PASS.

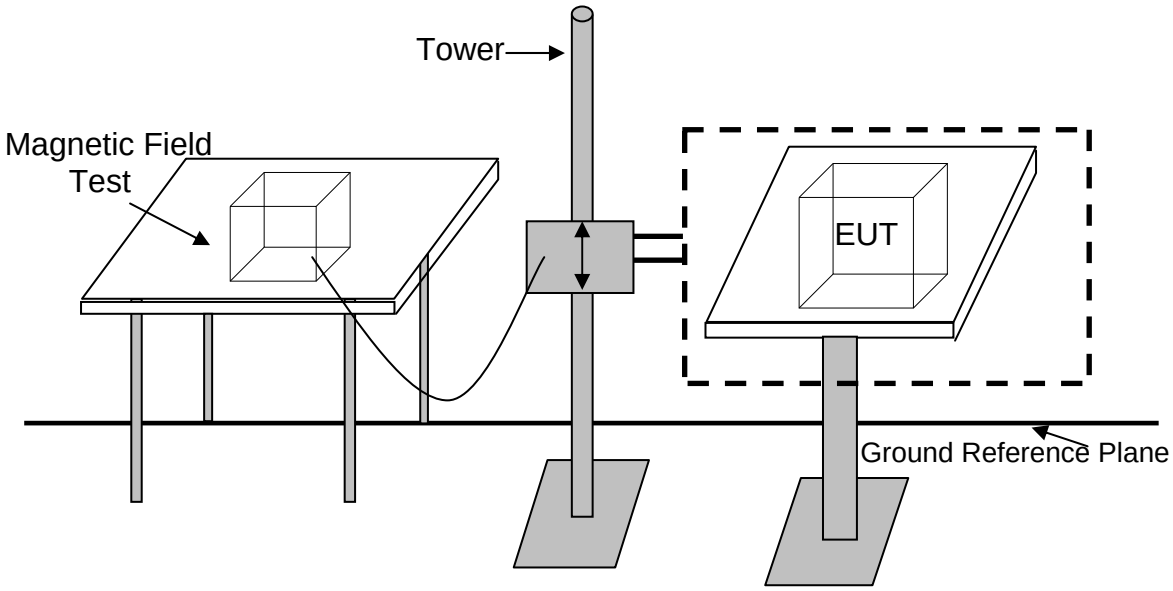
Please refer to the following page.

Voltage Dips And Interruptions Test Results

Ambient Condition:	Temp.: 25 ℃	R.H.: 54 %	Air Pressure: 101 kPa
Power Supply:	AC 230V 50Hz	Required Performance Criterion: B	
Test Specifications:	0%U_T, 0.5Cycle; 70%U_T, 25Cycle; 0%U_T,250Cycle		
Test mode:	Normal operation mode		
Test Level % UT	Duration (in period)	Result (Performance Criterion)	
0	0.5P	B	
70	25P	A	
0	250P	B	
Note : Performance Criterion B switch to Stored Energy operation mode			
Test Equipment : Dips Tester: EM TEST, UCS 500N		Test Engineer : Stan	

16. MAGNETIC FIELD IMMUNITY TEST

16.1 Block Diagram of Test Setup



16.2 Test Standard and Severity Levels

16.2.1 Test Standard

EN 62040-2: 2006+AC: 2006 Category C2
(EN 61000-4-8: 2010/IEC 61000-4-8: 2009, Severity Level 4: 30A/m)

16.2.2 Severity level

Level	Magnetic Field Strength A/m
1.	1
2.	3
3.	10
4.	30
5.	100
X	Special

Performance Criterion : **B**

16.3 Test Procedure

The E.U.T. is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.8m (high)table, this small table is also placed on a larger table, 0.1 m above the ground. X, Y and Z polarization of the induction coil are set on test, so that each side of the E.U.T. is affected by the magnetic field. Also can reach the same aim by change the position of the E.U.T..

16.4 Test Result

PASS.

Please refer to the following page.

Magnetic Field Immunity Test Results

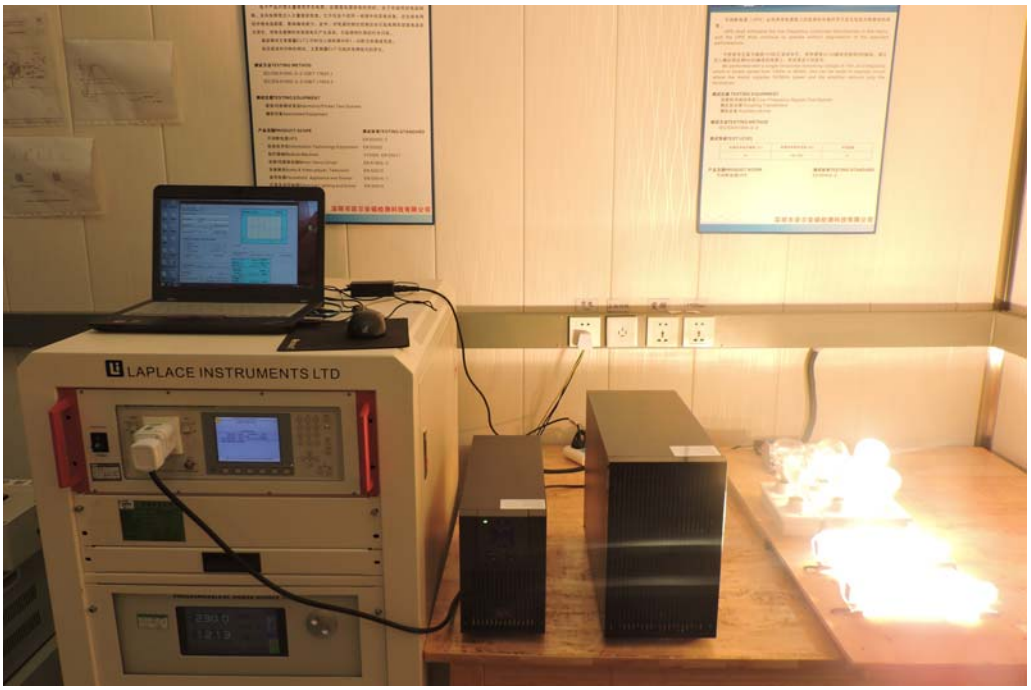
Ambient Condition:	Temp.: 22 ℃	R.H.: 52 %	Air Pressure: 101 kPa
Power Supply:	AC 230V 50Hz, DC 72V	Required Performance Criterion: B	
Test Specifications:	30A/m		
Test mode:	Normal operation mode, Stored energy operation mode		
Test Level	Testing Duration	Coil Orientation	Result (Performance Criterion)
30A/m	5 mins	X	A
30A/m	5 mins	Y	A
30A/m	5 mins	Z	A
Note :			
Test Equipment : Magnetic field test(HAEFELY, MAG100.1)		Test Engineer : Sance	

17. PHOTOGRAPH

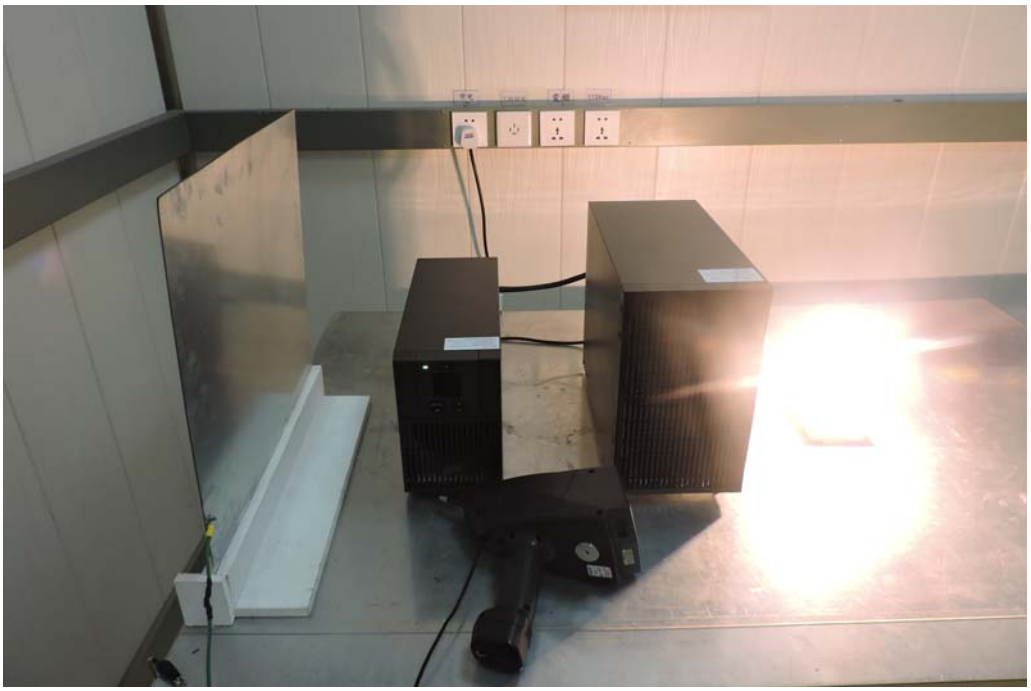
17.1 Photo of Conducted Emission Measurement

17.2 Photo of Radiation Emission Measurement

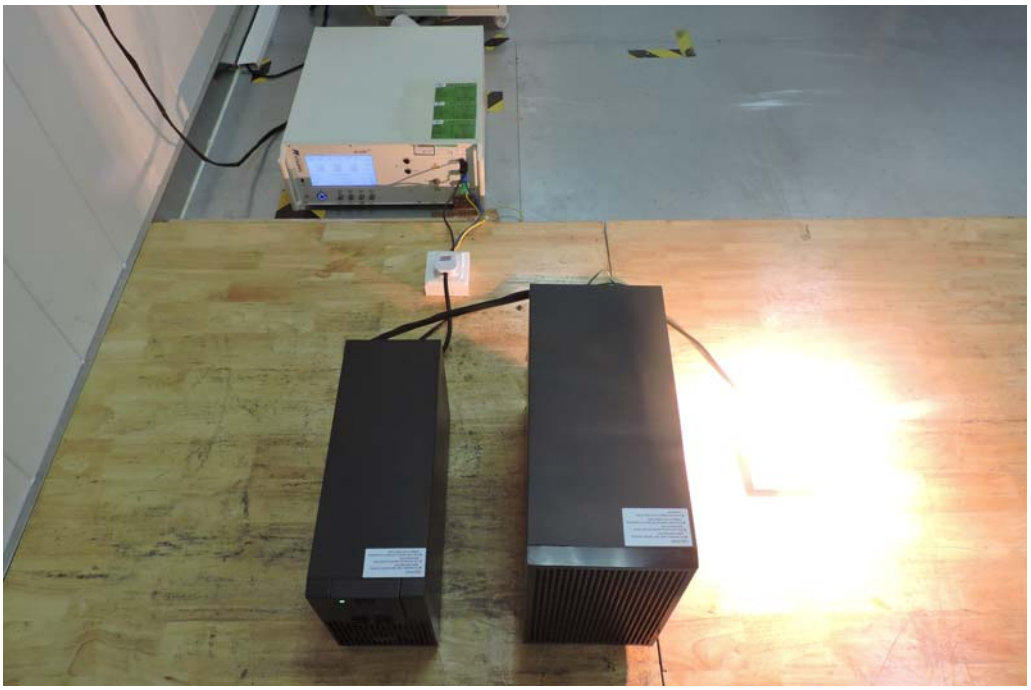
17.3 Photo of Harmonic /Flicker Measurement



17.4 Photo of Electrostatic Discharge Test



17.5 Photo of Electrical Fast Transient /Surge /Dips Test



APPENDIX I
(Photos of E.U.T.)

Figure 1
General Appearance of the E.U.T.

Figure 2
General Appearance of the E.U.T.

Figure 3
General Appearance of the E.U.T.

Figure 4
General Appearance of the E.U.T.

Figure 5
General Appearance of the E.U.T.

Figure 6
General Appearance of the E.U.T.

Figure 7
General Appearance of the E.U.T.

Figure 8
General Appearance of the E.U.T.

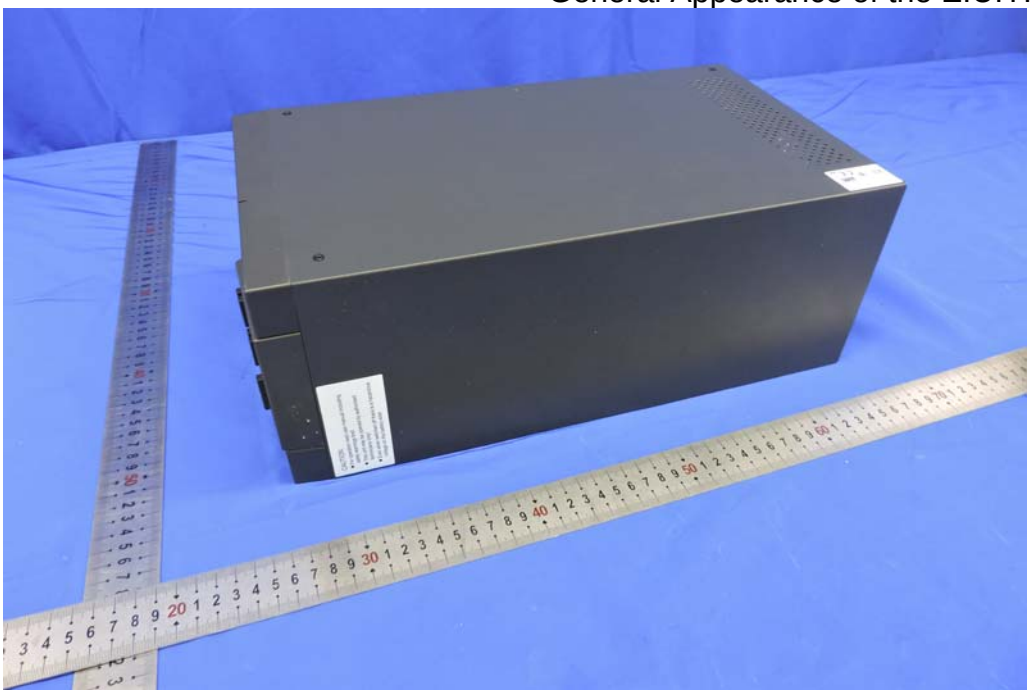


Figure 9
General Appearance of the E.U.T.

Figure 10
General Internal of the E.U.T.

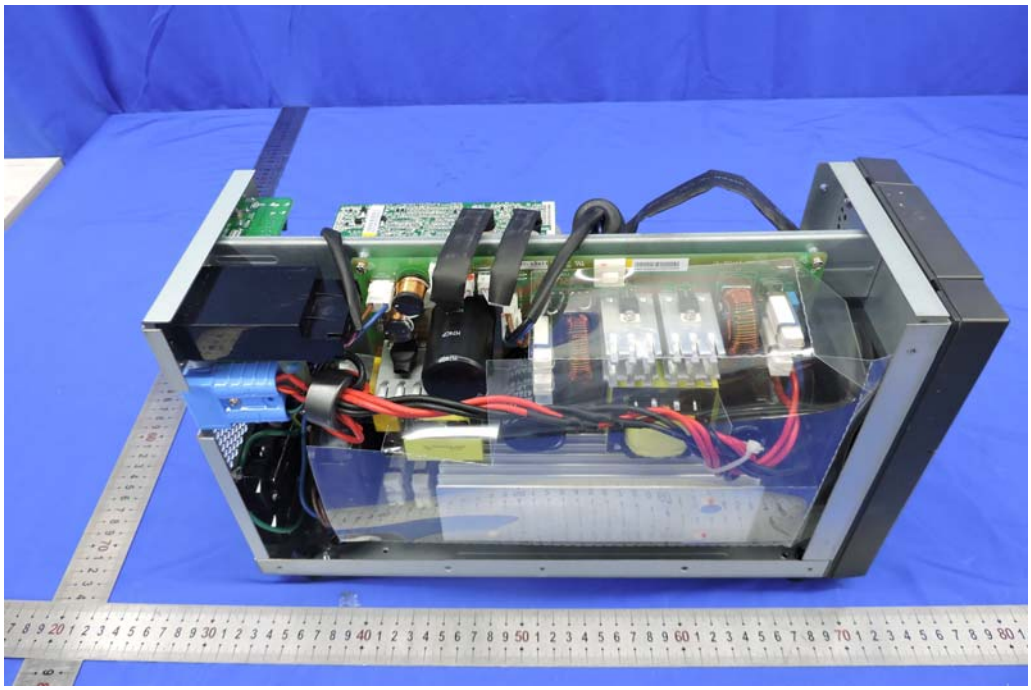


Figure 11
General Internal of the E.U.T.

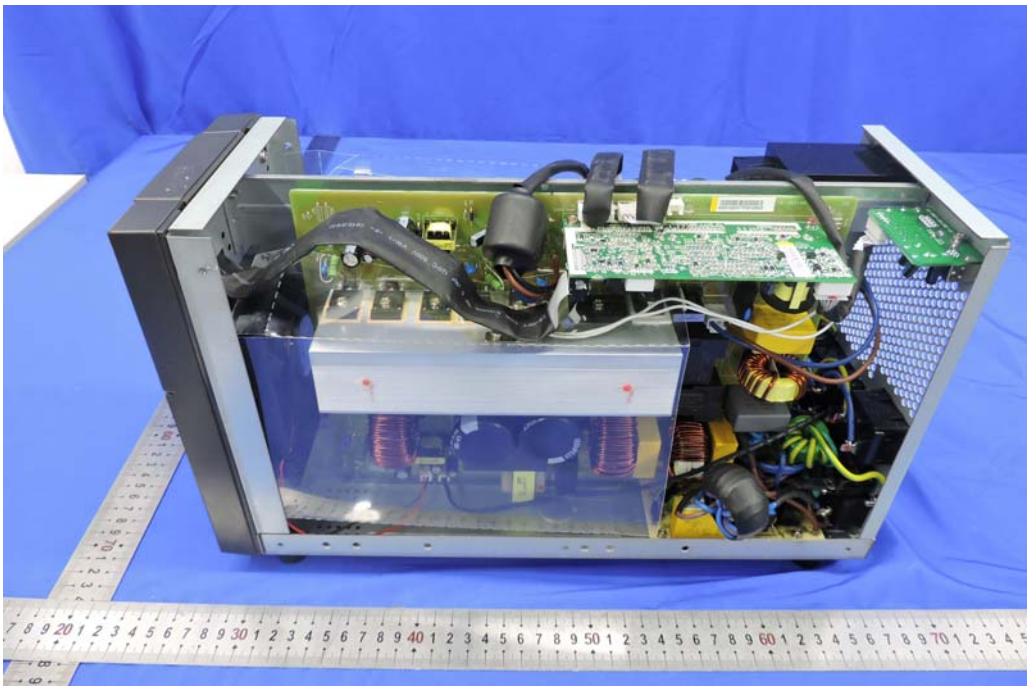


Figure 12
General Appearance of the PCB

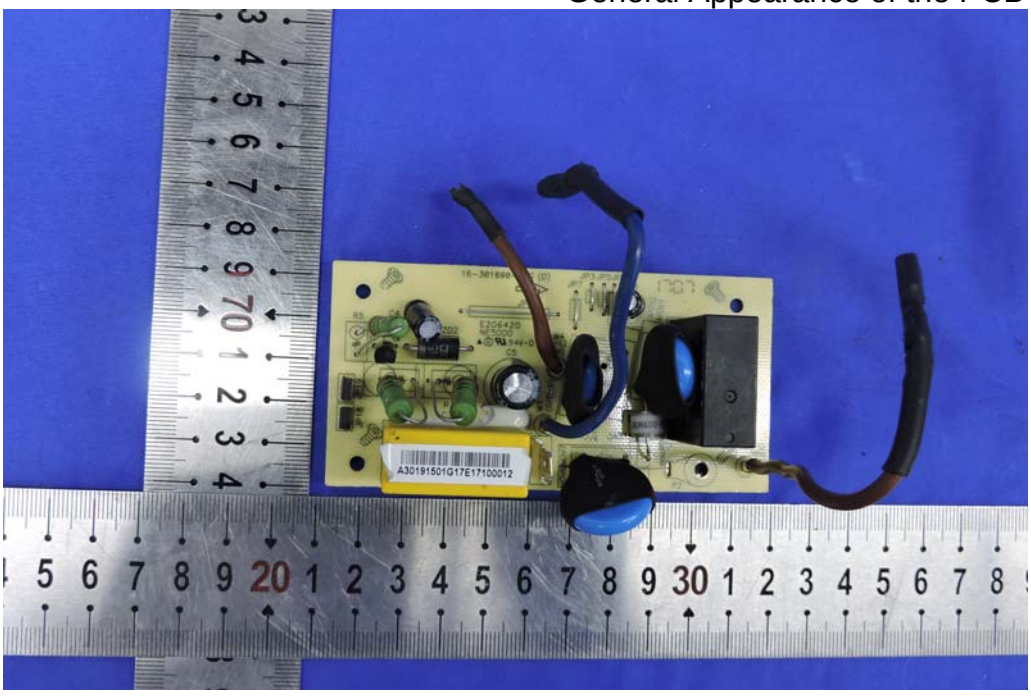


Figure 13
General Appearance of the PCB

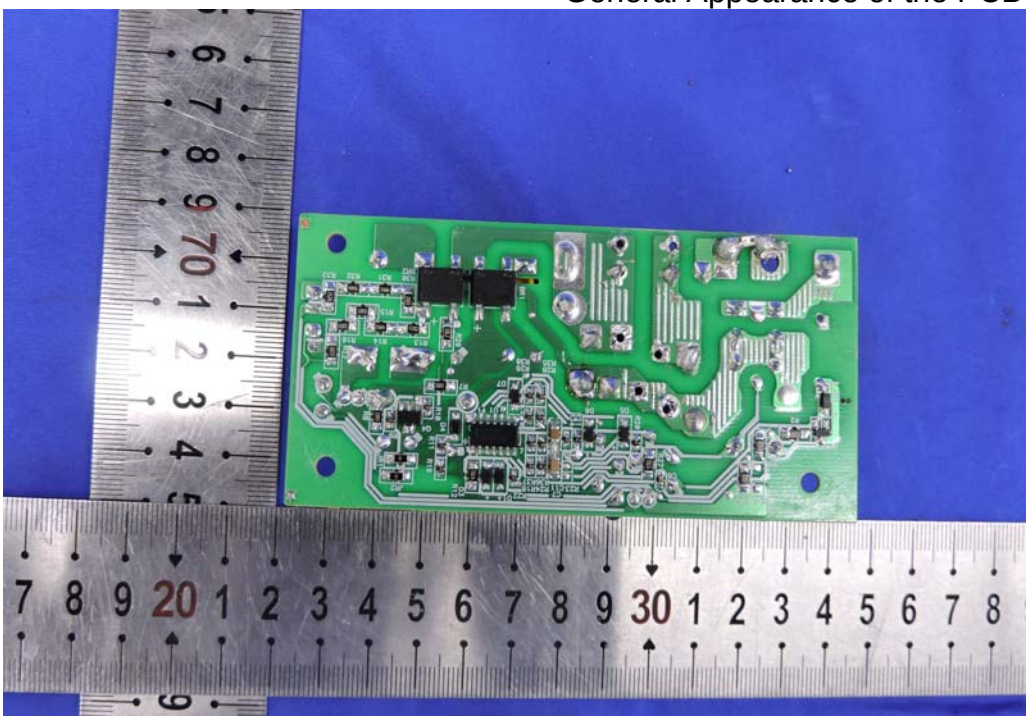


Figure 14
General Appearance of the PCB

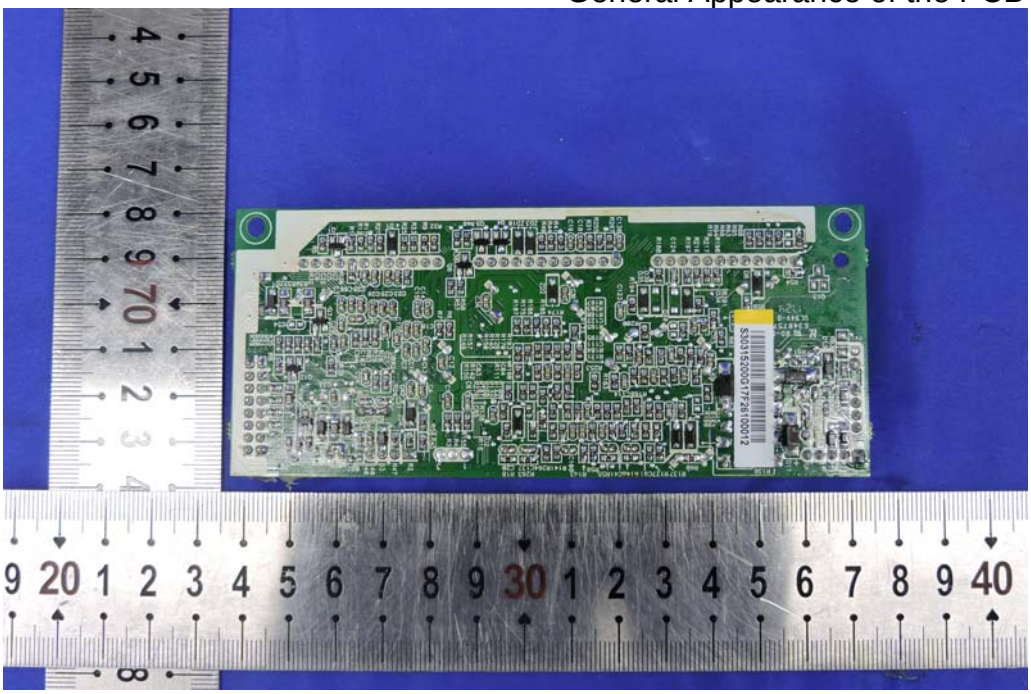


Figure 15
General Appearance of the PCB

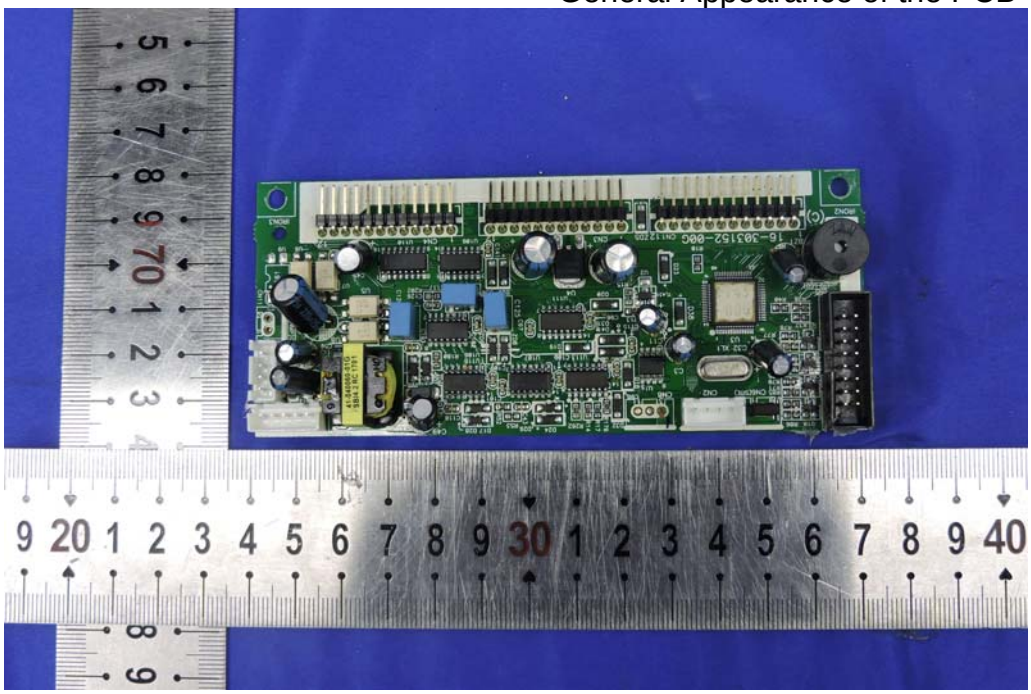


Figure 16
General Appearance of the PCB

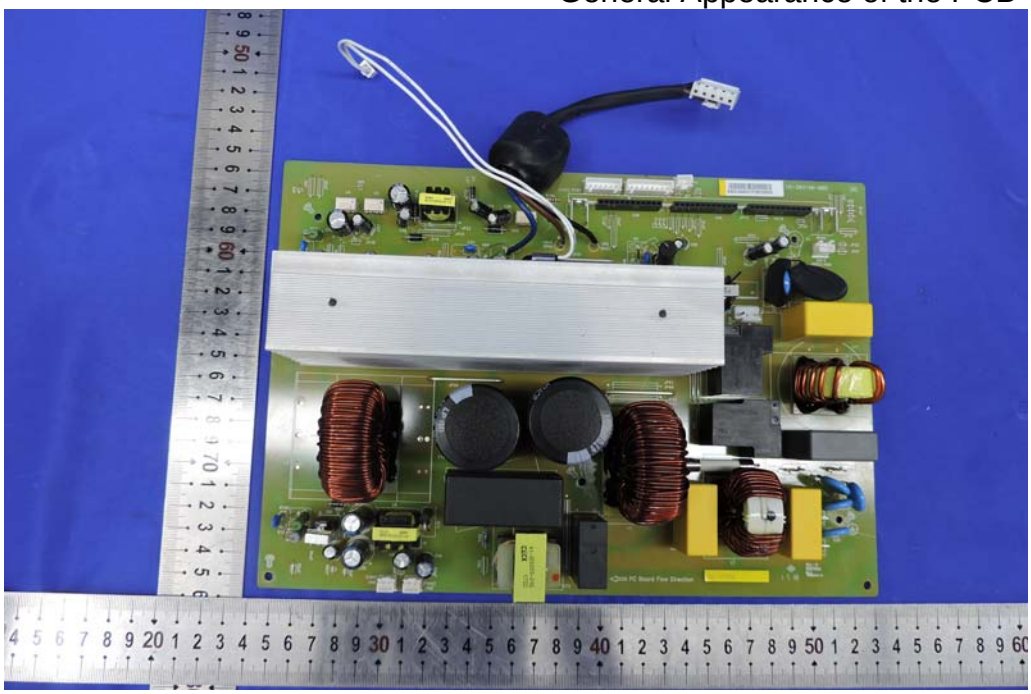


Figure 17
General Appearance of the PCB

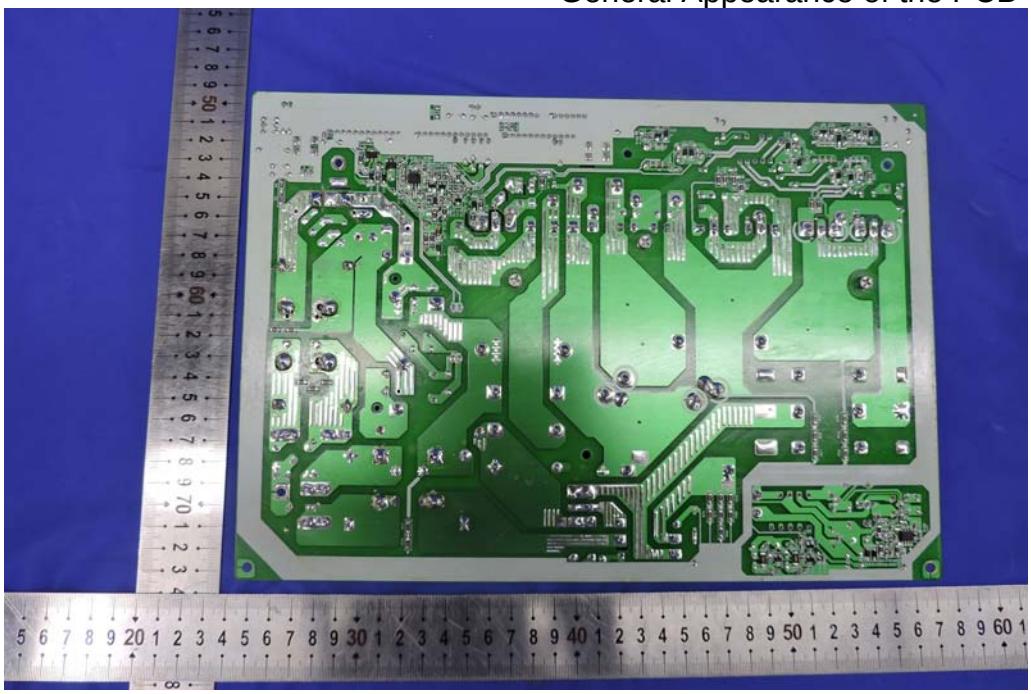


Figure 18
General Appearance of the PCB

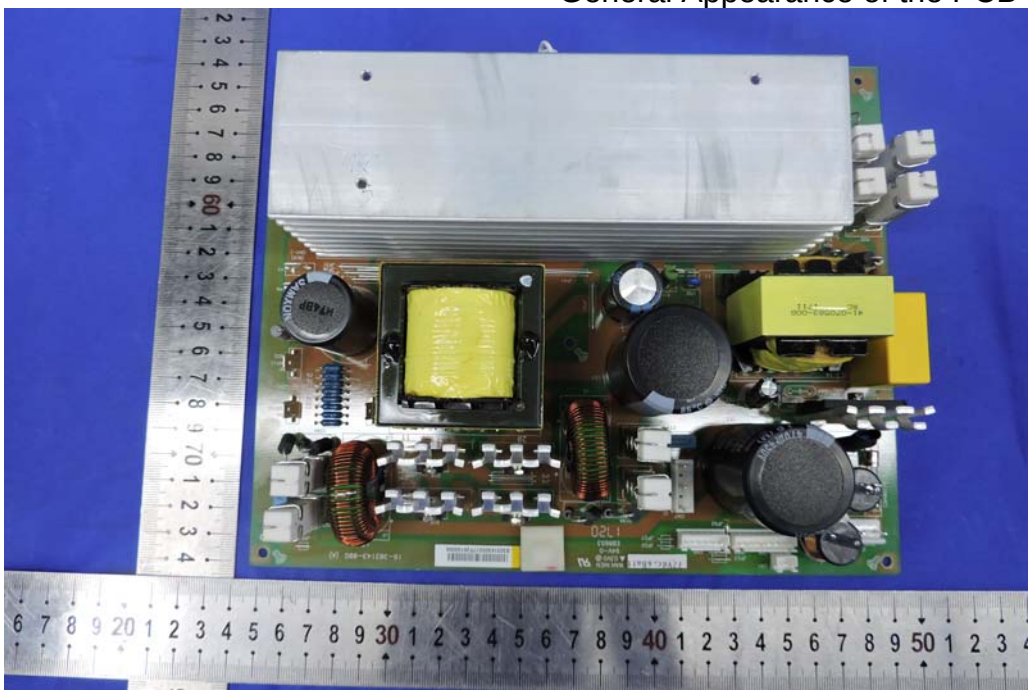


Figure 19
General Appearance of the DC FAN

Figure 20
General Appearance of the DC FAN

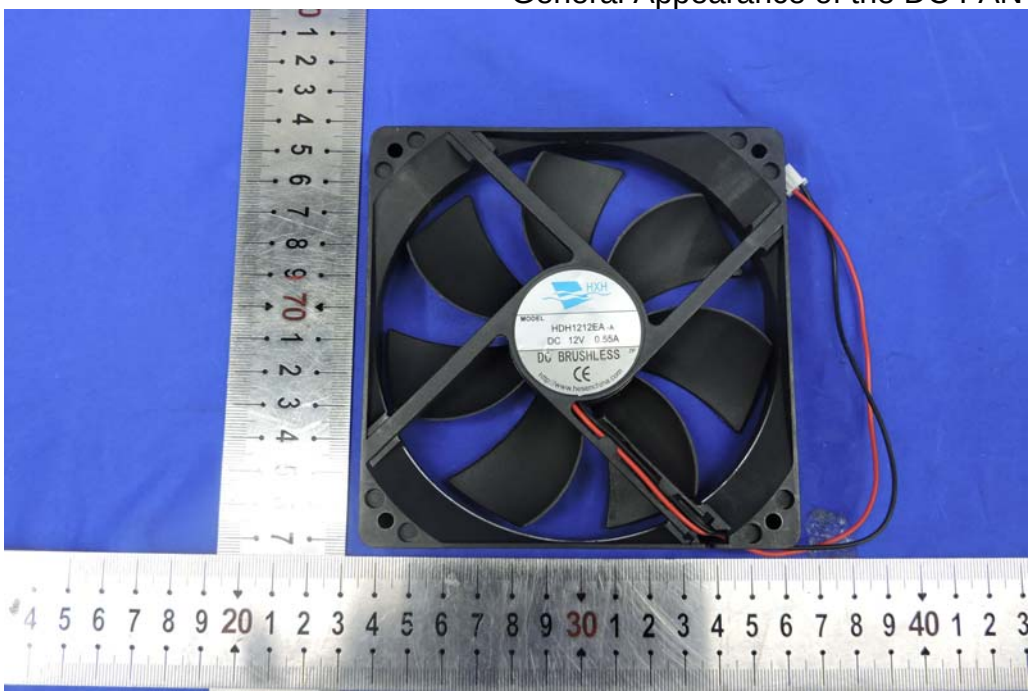


Figure 21
General Appearance of the Display

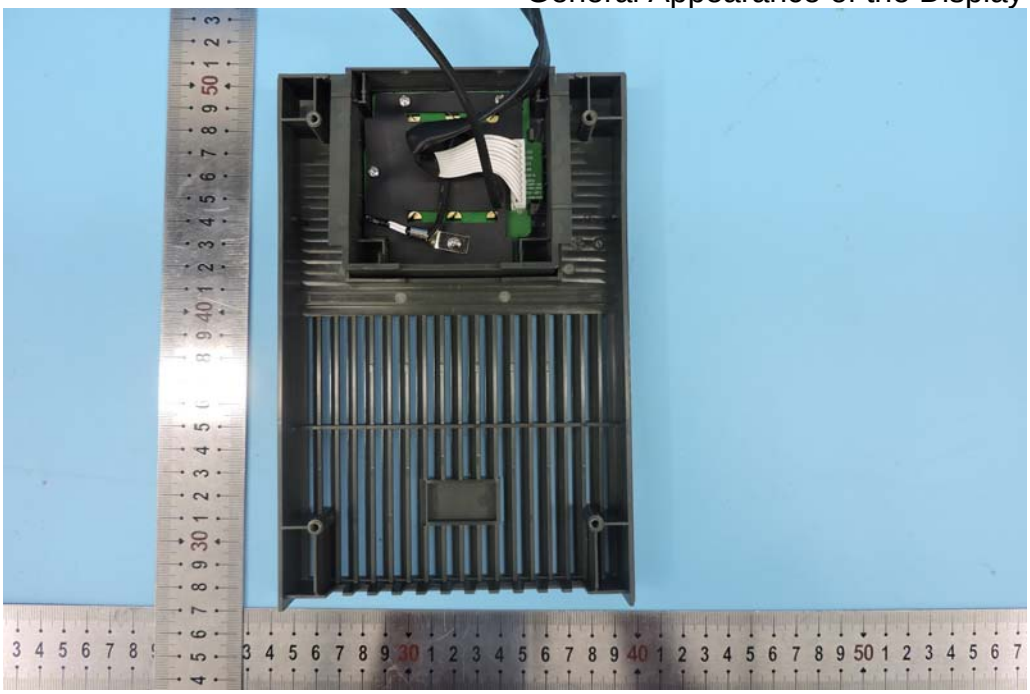


Figure 22
General Appearance of the Display

Figure 23
General Appearance of the PCB

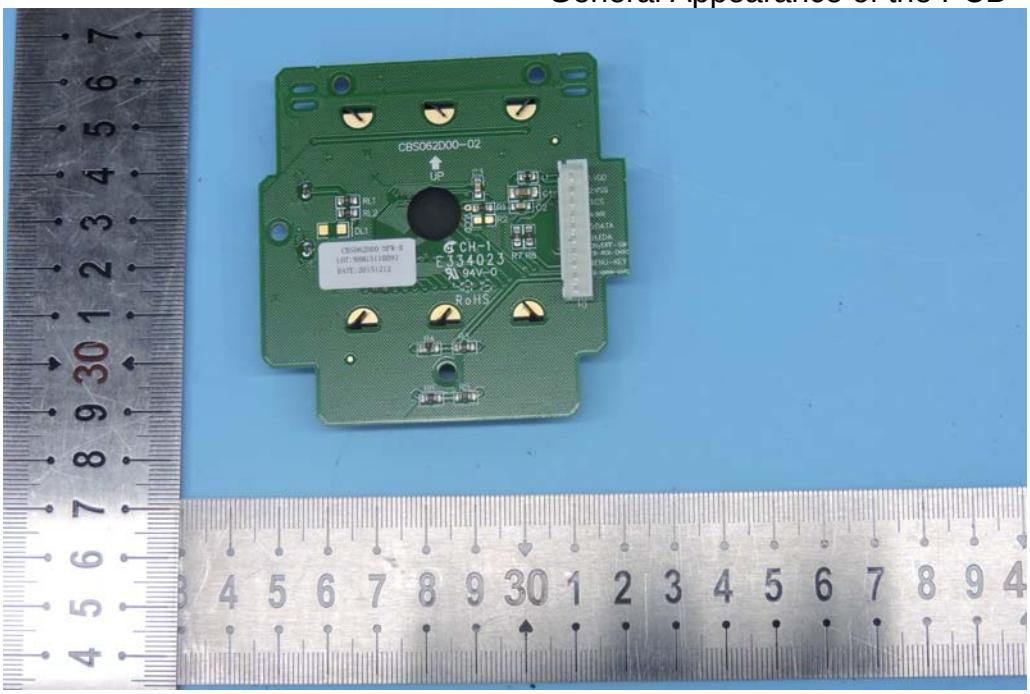


Figure 24
General Appearance of the PCB

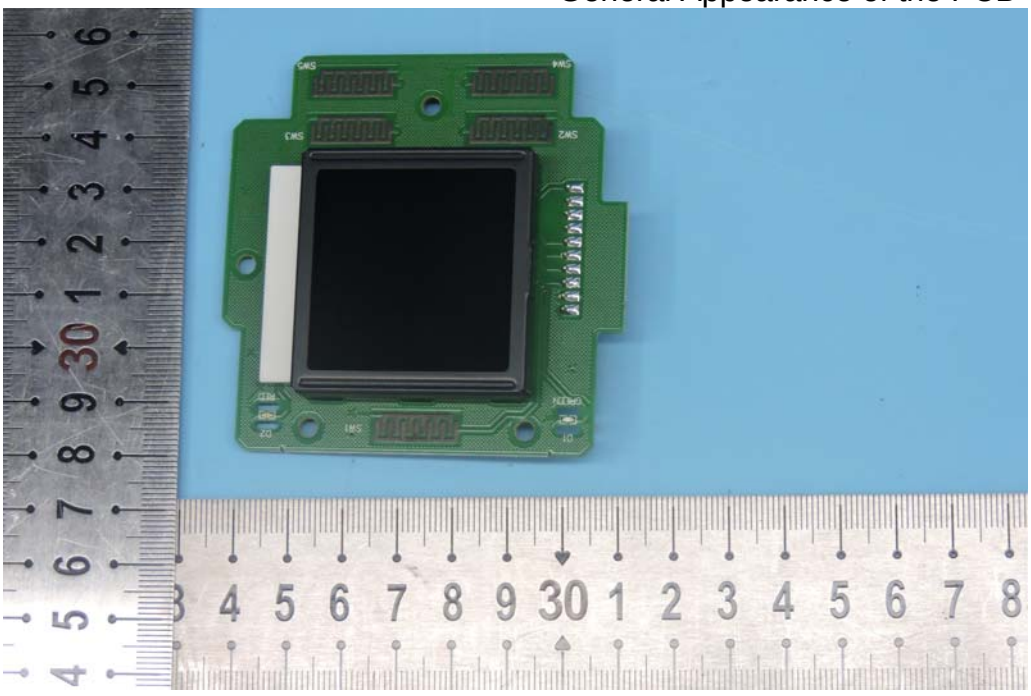


Figure 25
General Appearance of the PCB

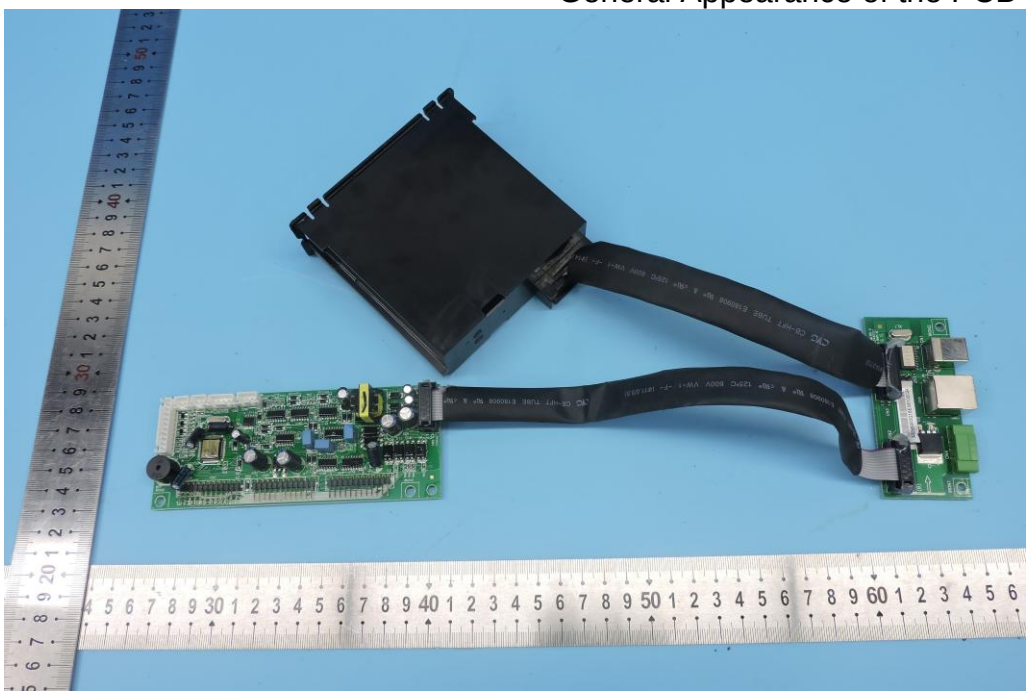


Figure 26
General Appearance of the PCB

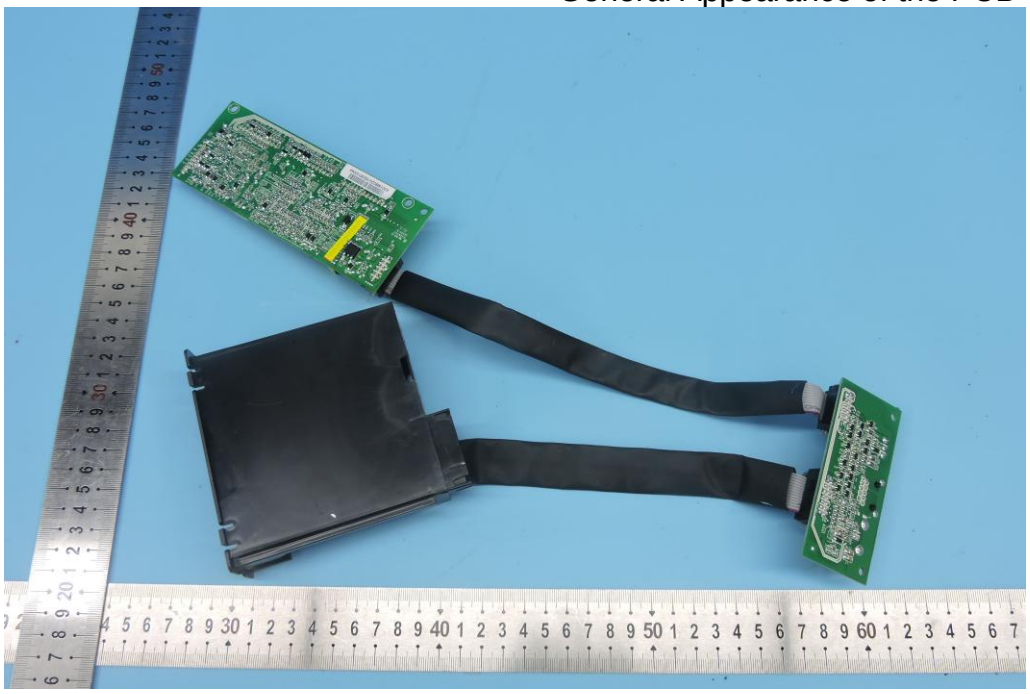


Figure 27
General Appearance of the EBM
M/N:ab72BP-9A(Trademark:APC)

Figure 28
General Appearance of the EBM

Figure 29
General Internal of the EBM

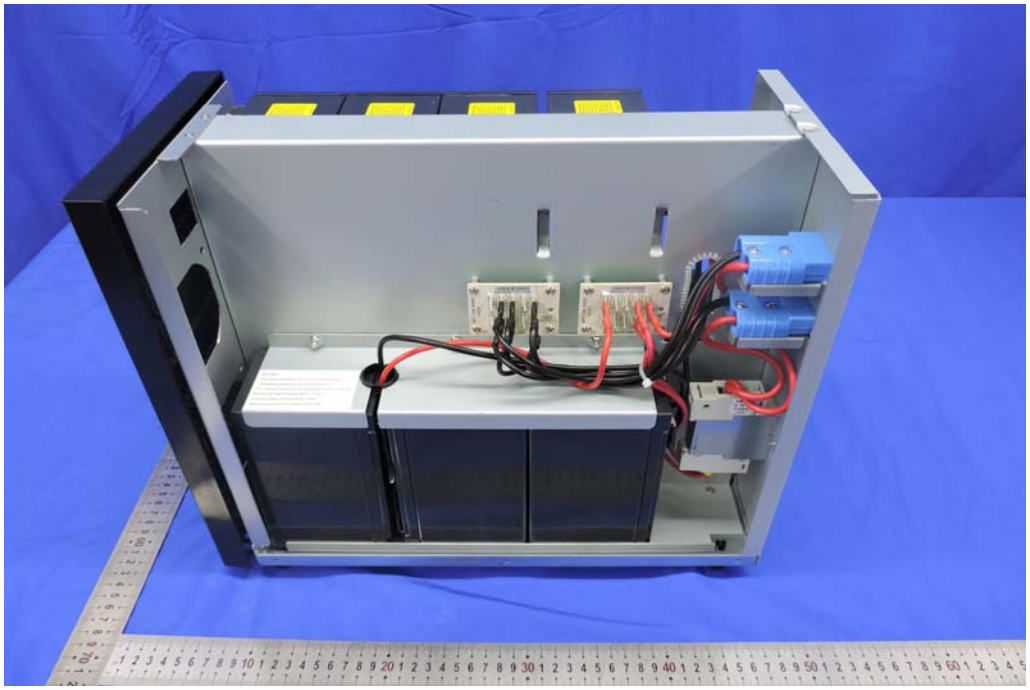
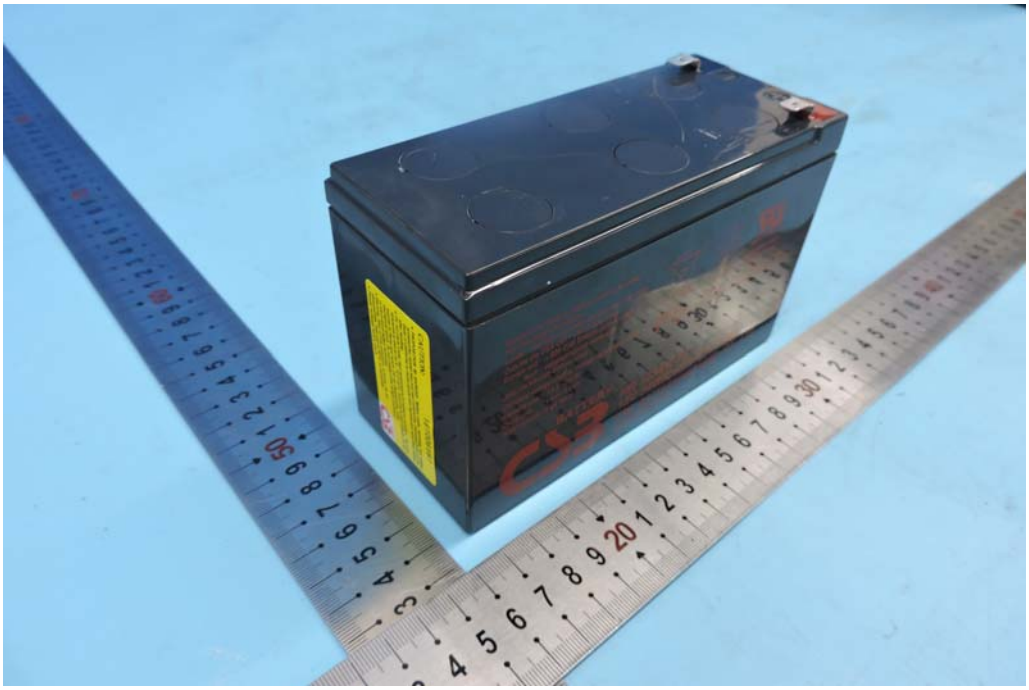


Figure 30
General Internal of the EBM

Figure 31
General Internal of the EBM



--- End of report ---