

EMC Measurement and Test Report

For

Shenzhen Hi-Link Electronic co.,Ltd

3F,5# Building,Minxing Industrial Park,MinKang Rd .Minzhi,Longhua

District,ShenZhen,China

Test Standards:	EN 55032:2012+AC:2013 EN 61000-3-2:2014 EN 61000-3-3:2013 <u>EN 55024:2010</u>
Product Description:	<u>AC-DC Module</u>
Tested Model:	<u>HLK-PM03</u>
Report No.:	<u>STR15128160E</u>
Tested Date:	<u>2015-12-18 to 2016-03-10</u>
Issued Date:	<u>2016-03-10</u>
Tested By:	<u>Scalpel Guo / Engineer</u> <i>Scalpel Guo</i>
Reviewed By:	<u>Silin Chen / EMC Manager</u> <i>Silin Chen</i>
Approved & Authorized By:	<u>Jandy so / PSQ Manager</u> <i>Jandyso</i>
Prepared By:	

Shenzhen SEM.Test Technology Co., Ltd.
1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road,
Bao'an District, Shenzhen, P.R.C. (518101)
Tel.: +86-755-33663308 Fax.: +86-755-33663309 Website: www.semtest.com.cn

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen SEM.Test Technology Co., Ltd.

TABLE OF CONTENTS

1. GENERAL INFORMATION	4
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT)	4
1.2 TEST STANDARDS	5
1.3 TEST METHODOLOGY	5
1.4 TEST FACILITY	5
1.5 EUT SETUP AND OPERATION MODE	6
1.6 PERFORMANCE CRITERIA FOR EMS	6
1.7 TEST EQUIPMENT LIST AND DETAILS	7
2. SUMMARY OF TEST RESULTS	8
3. CONDUCTED EMISSION	9
3.1 MEASUREMENT UNCERTAINTY	9
3.2 TEST PROCEDURE	9
3.3 BASIC TEST SETUP BLOCK DIAGRAM	9
3.4 ENVIRONMENTAL CONDITIONS	10
3.5 SUMMARY OF TEST RESULTS/PLOTS	10
3.6 CONDUCTED EMISSIONS TEST DATA	10
4. RADIATED EMISSION	13
4.1 MEASUREMENT UNCERTAINTY	13
4.2 TEST PROCEDURE	13
4.3 CORRECTED AMPLITUDE & MARGIN CALCULATION	14
4.4 ENVIRONMENTAL CONDITIONS	14
4.5 SUMMARY OF TEST RESULTS/PLOTS	14
5. HARMONIC CURRENT EMISSIONS	17
5.1 TEST PROCEDURE	17
5.2 TEST STANDARDS	17
5.3 HARMONIC CURRENT EMISSIONS TEST DATA	17
6. VOLTAGE FLUCTUATION AND FLICKER	23
6.1 TEST PROCEDURE	23
6.2 TEST STANDARDS	23
6.3 VOLTAGE FLUCTUATION AND FLICKER TEST DATA	23
7. ELECTROSTATIC DISCHARGES (ESD)	25
7.1 TEST PROCEDURE	25
7.2 ELECTROSTATIC DISCHARGE IMMUNITY TEST DATA	25
8. CONTINUOUS RADIATED DISTURBANCES (R/S)	27
8.1 TEST PROCEDURE	27
8.2 CONTINUOUS RADIATED DISTURBANCES TEST DATA	27
9. ELECTRICAL FAST TRANSIENTS (EFT)	28
9.1 TEST PROCEDURE	28
9.2 ELECTRICAL FAST TRANSIENTS TEST DATA	28
10. SURGES	29
10.1 TEST PROCEDURE	29
10.2 SURGE TEST DATA	29
11. CONTINUOUS CONDUCTED DISTURBANCES (C/S)	30
11.1 TEST PROCEDURE	30
11.2 CONTINUOUS CONDUCTED DISTURBANCES TEST DATA	30
12. VOLTAGE DIPS AND INTERRUPTIONS	31
12.1 TEST PROCEDURE	31
12.2 VOLTAGE DIPS AND INTERRUPTIONS TEST DATA	31
EXHIBIT 1 - PRODUCT LABELING	32
PROPOSED CE LABEL FORMAT	32
PROPOSED LABEL LOCATION ON EUT	32

EXHIBIT 2 - EUT PHOTOGRAPHS.....	33
EXHIBIT 3 - TEST SETUP PHOTOGRAPHS.....	35

SEM.Test

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Shenzhen Hi-Link Electronic co.,Ltd
Address of applicant: 3F,5# Building,Minxing Industrial Park,MinKang Rd .Minzhi,Longhua District,ShenZhen,China
Manufacturer: Shenzhen Hi-Link Electronic co.,Ltd
Address of manufacturer: 3F,5# Building,Minxing Industrial Park,MinKang Rd .Minzhi,Longhua District,ShenZhen,China

General Description of EUT	
Product Name:	AC-DC Module
Trade Name:	HI-LINK
Model No.:	HLK-PM03
Adding Model(s):	HLK-PM01, HLK-PM09, HLK-PM12
<i>Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model HLK-PM03, but the circuit and the electronic construction do not change, declared by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	/
Rated Current:	/
Rated Power:	/
Power Adaptor Model:	/
Highest Internal Frequency:	Below 108MHz
Classification of Equipment:	Class B

1.2 Test Standards

The following report is prepared on behalf of the Shenzhen Hi-Link Electronic co.,Ltd in accordance with EN55032, Electromagnetic compatibility of multimedia equipment - Emission requirements, and EN61000-3-2, Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase), and EN61000-3-3, Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection, and EN55024, Immunity characteristics Limits and methods of measurement.

The objective of the manufacturer is to demonstrate compliance with the standards EN55032, EN61000-3-2, EN61000-3-3, and EN55024 for multimedia equipment.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with the standards EN55032, EN61000-3-2, EN61000-3-3, and EN55024 for Information Technology Equipment, and all related testing and measurement techniques intentional standards.

1.4 Test Facility

FCC – Registration No.: 934118

Shenzhen SEM.Test Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 934118.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Shenzhen SEM.Test Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.

CNAS Registration No.: L4062

Shenzhen SEM.Test Technology Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 1/F, Building A, Hongwei Industrial Park, Liuxian 2nd Road, Bao'an District, Shenzhen, P.R.C (518101).

1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission/immunity level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Working	Link to the load

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
/	/	/	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
AC Cable	1.25	Shielded	Without Core

1.6 Performance Criteria for EMS

All the test data has been collected, reduced, and analyzed within this report in accordance with Immunity requires the following as specific performance criteria:

- A. The apparatus shall continue to operate as intended during and after the test. The manufacturer specifies some minimum performance level. The performance level may be specified by the manufacturer as a permissible loss of performance.
- B. The apparatus shall continue to operate as intended after the test. This indicates that the EUT does not need to function at normal performance levels during the test, but must recover. Again some minimal performance is defined by the manufacture. No change in operating state or loss or data is permitted.
- C. Temporary loss of function is allowed. Operation of the EUT may stop as long as it is either automatically reset or can be manually restored by operation of the controls.

1.7 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Due. Date
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2016-06-16
Amplifier	Agilent	8447F	3113A06717	2016-06-16
Amplifier	C&D	PAP-1G18	2002	2016-06-16
Broadband Antenna	Schwarz beck	VULB9163	9163-333	2016-06-16
Horn Antenna	ETS	3117	00086197	2016-06-16
Loop Antenna	Schwarz beck	FMZB 1516	9773	2016-06-16
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2016-06-16
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2016-06-16
AC LISN	Schwarz beck	NSLK8126	8126-224	2016-06-16
DC LISN	Schwarz beck	NNBM8126D	279	2016-06-16
8-WIRE LISN	Schwarz beck	8158	CAT3-8158-0059	2016-06-16
8-WIRE LISN	Schwarz beck	8158	CAT5-8158-0117	2016-06-16
Clamp	Schwarz beck	MDS21	3809	2016-06-16
Loop Antenna	EVERFINE	LLA-2	711001	2016-06-16
VDH Test Head	AFJ	VDH 30	SC022Z	2016-06-16
Digital Power Analyzer	California Instrument	PACS-1	72831	2016-06-16
Power Source	California Instrument	5001iX	25965	2016-06-16
ESD Generator	TESQ AG	NSG 437	161	2016-06-16
Signal Generator	Rohde & Schwarz	SMT03	100059	2016-06-16
Voltage Probe	Rohde & Schwarz	URV5-Z2	100013	2016-06-16
Power Amplifier	AR	150W1000	300999	2016-06-16
Power Amplifier	AR	25S1G4AM1	305993	2016-06-16
Transient 2000	EMC PARTNER	TRA2000	863	2016-06-16
CW Simulator	EM Test	CWS 500C	0900-03	2016-06-16
EMC PRO	KEYTEK	EMCPro	0509124	2016-06-16
Coil	KEYTEK	F-1000-4-8	0533	2016-06-16

2. SUMMARY OF TEST RESULTS

Standards	Description of Test Item	Result
EN55032	Conducted Emission	Compliant
	Radiated Emission	Compliant
EN61000-3-2	Harmonic Current Emission	Compliant
EN61000-3-3	Voltage Fluctuation and Flicker	Compliant
EN55024	Electrostatic Discharge Immunity in accordance with IEC 61000-4-2	Compliant
	Continuous Radiated Disturbances Immunity in accordance with IEC 61000-4-3	Compliant
	Electrical Fast Transient/Burst Immunity in accordance with IEC 61000-4-4	Compliant
	Surges Immunity in accordance with IEC 61000-4-5	Compliant
	Continuous Conducted Disturbances Immunity in accordance with IEC 61000-4-6	Compliant
	Power-frequency Magnetic Fields Immunity in accordance with IEC 61000-4-8	N/A
	Voltage Dips/Interruptions Immunity in accordance with IEC 61000-4-11	Compliant

N/A: not applicable

3. Conducted Emission

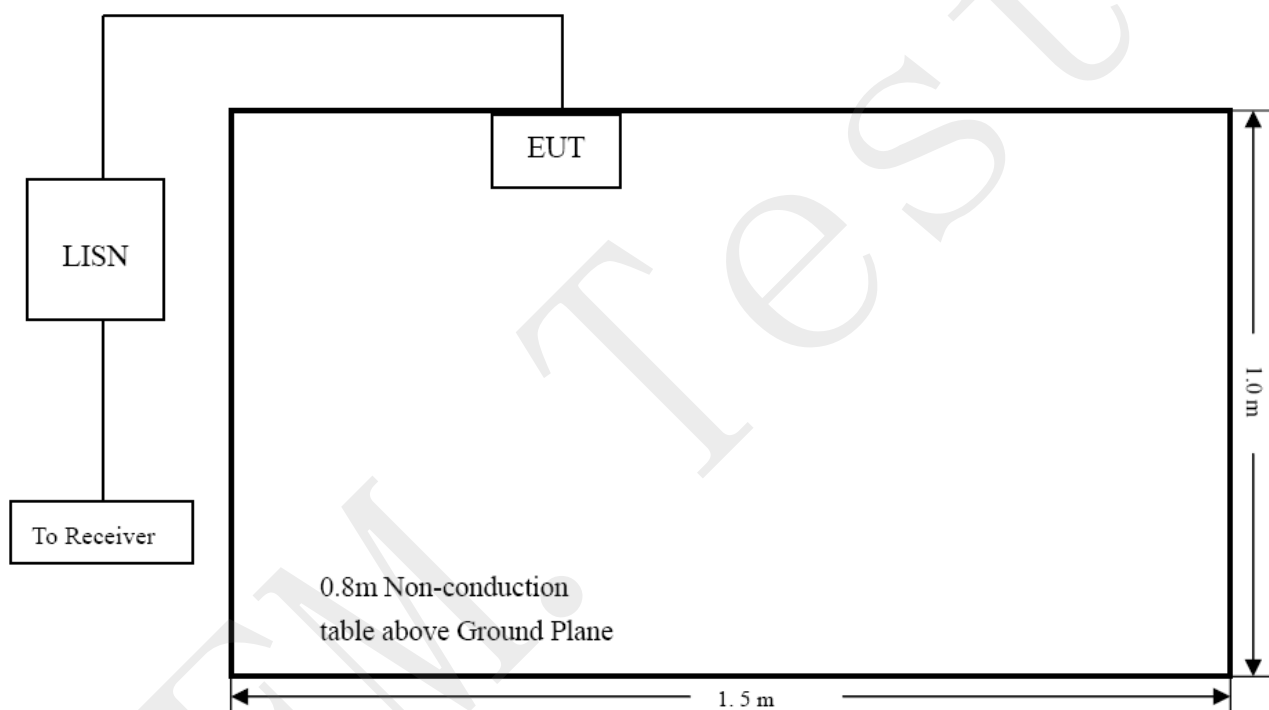
3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

3.2 Test Procedure

Test is conducting under the description of EN55032 Annex A.3.5.

3.3 Basic Test Setup Block Diagram



3.4 Environmental Conditions

Temperature:	22 ° C
Relative Humidity:	55 %
ATM Pressure:	1015 mbar

3.5 Summary of Test Results/Plots

According to the data in section 3.6, the EUT complied with the EN55032 Conducted margin for a Class B device, with the *worst* margin reading of:

-5.48 dB at 0.1780 MHz in the Neutral mode, Peak detector, 0.15-30MHz

3.6 Conducted Emissions Test Data

Plot of Conducted Emissions Test Data

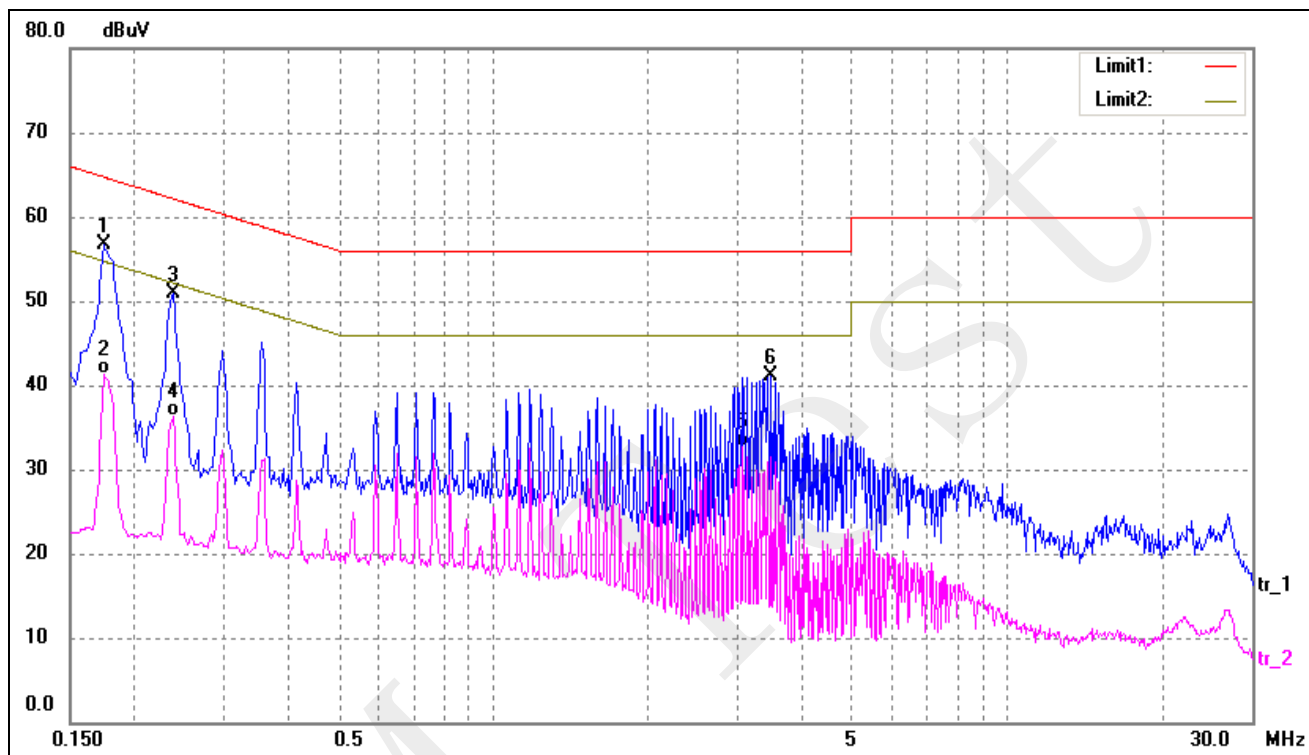
EUT: AC-DC Module

Tested Model: HLK-PM03

Operating Condition: TM1

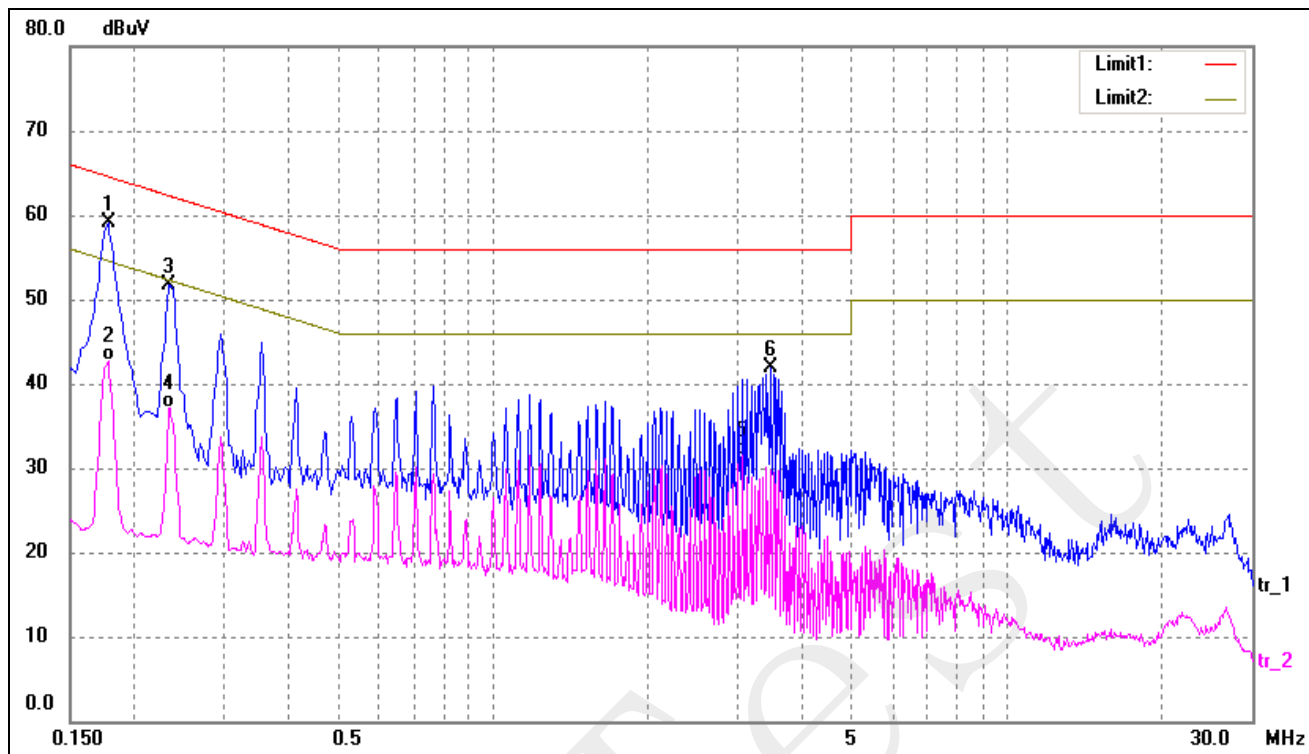
Comment: AC 230V/50Hz

Test Specification: Line



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1740	47.23	9.50	56.73	64.77	-8.04	peak
2	0.1740	31.81	9.50	41.31	54.77	-13.46	AVG
3	0.2380	41.47	9.50	50.97	62.17	-11.20	peak
4	0.2380	26.75	9.50	36.25	52.17	-15.92	AVG
5	3.0700	22.76	9.97	32.73	46.00	-13.27	AVG
6	3.4820	31.09	10.03	41.12	56.00	-14.88	peak

Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1*	0.1780	49.60	9.50	59.10	64.58	-5.48	peak
2	0.1780	33.16	9.50	42.66	54.58	-11.92	AVG
3	0.2340	42.23	9.50	51.73	62.31	-10.58	peak
4	0.2340	27.61	9.50	37.11	52.31	-15.20	AVG
5	3.0580	21.48	9.97	31.45	46.00	-14.55	AVG
6	3.4700	31.89	10.03	41.92	56.00	-14.08	peak

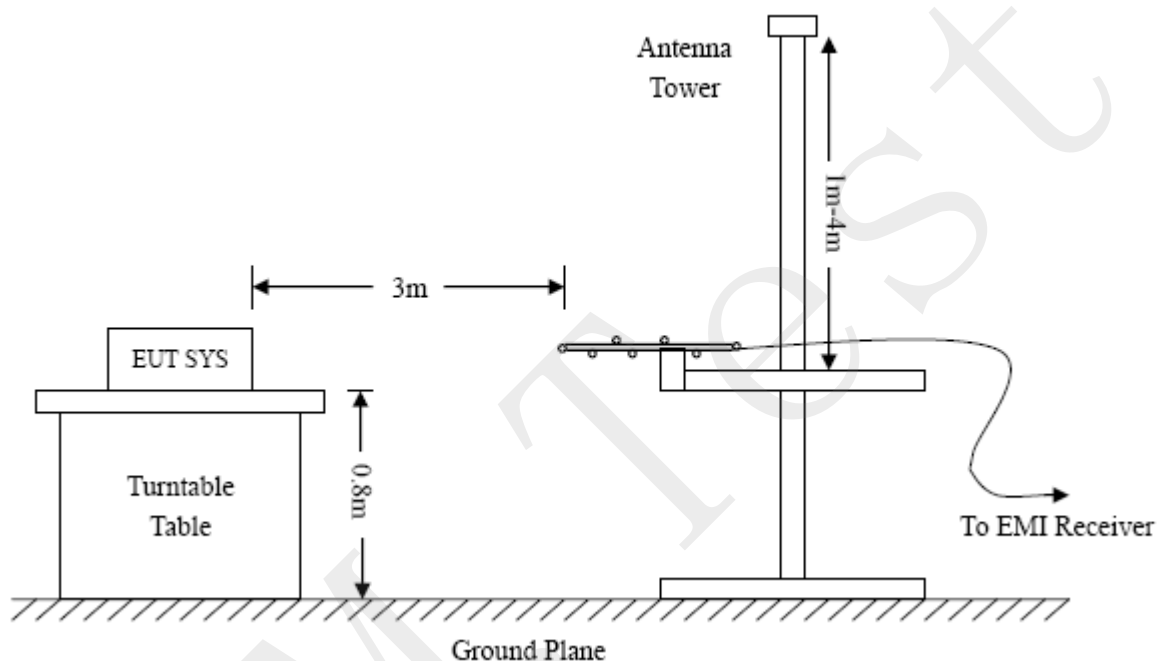
4. Radiated Emission

4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Procedure

Test is conducting under the description of EN55032 Annex A.3.4.



4.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Class B device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{EN55032 Class B Limit}$$

4.4 Environmental Conditions

Temperature:	23° C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

4.5 Summary of Test Results/Plots

According to the data in section 4.5, the EUT complied with the EN55032 Class B standards, and had the worst margin is:

-10.90 dB at 677.5798 MHz in the Horizontal polarization, 30 MHz to 1 GHz, 3Meters

Plot of Radiated Emissions Test Data

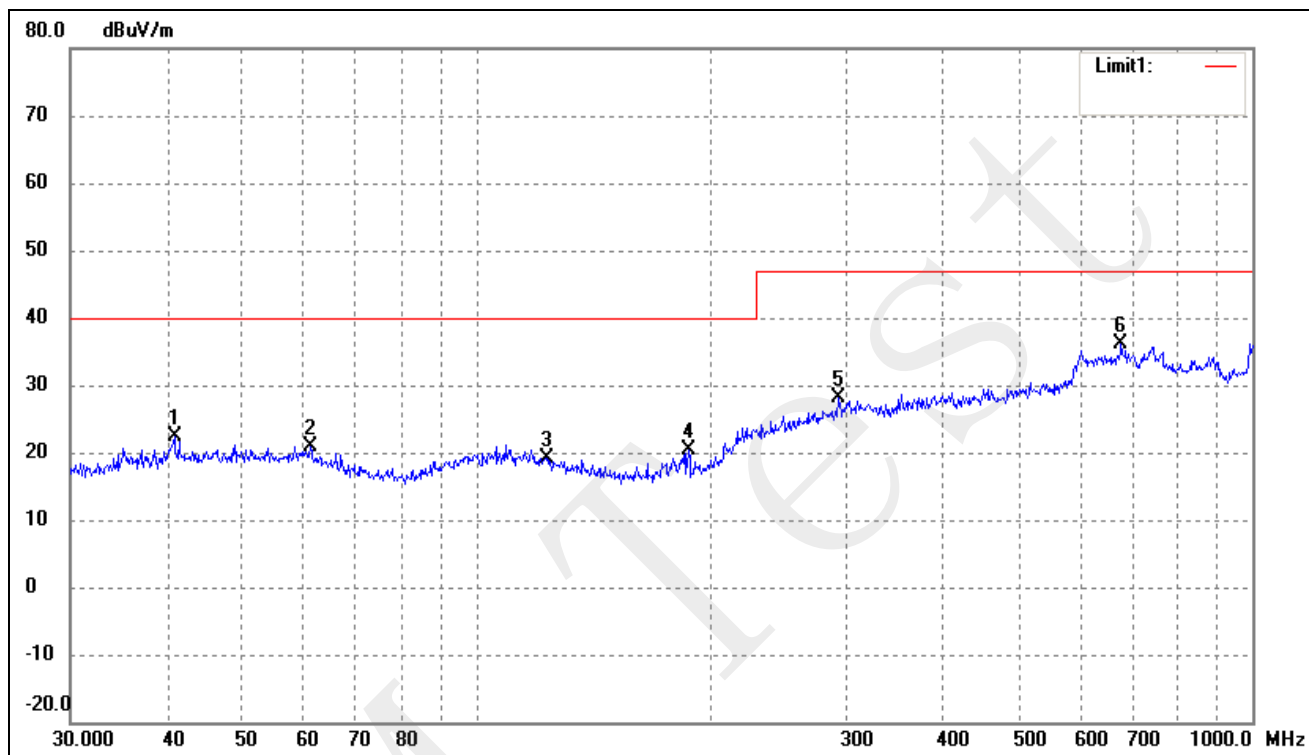
EUT: AC-DC Module

Tested Model: HLK-PM03

Operating Condition: TM1

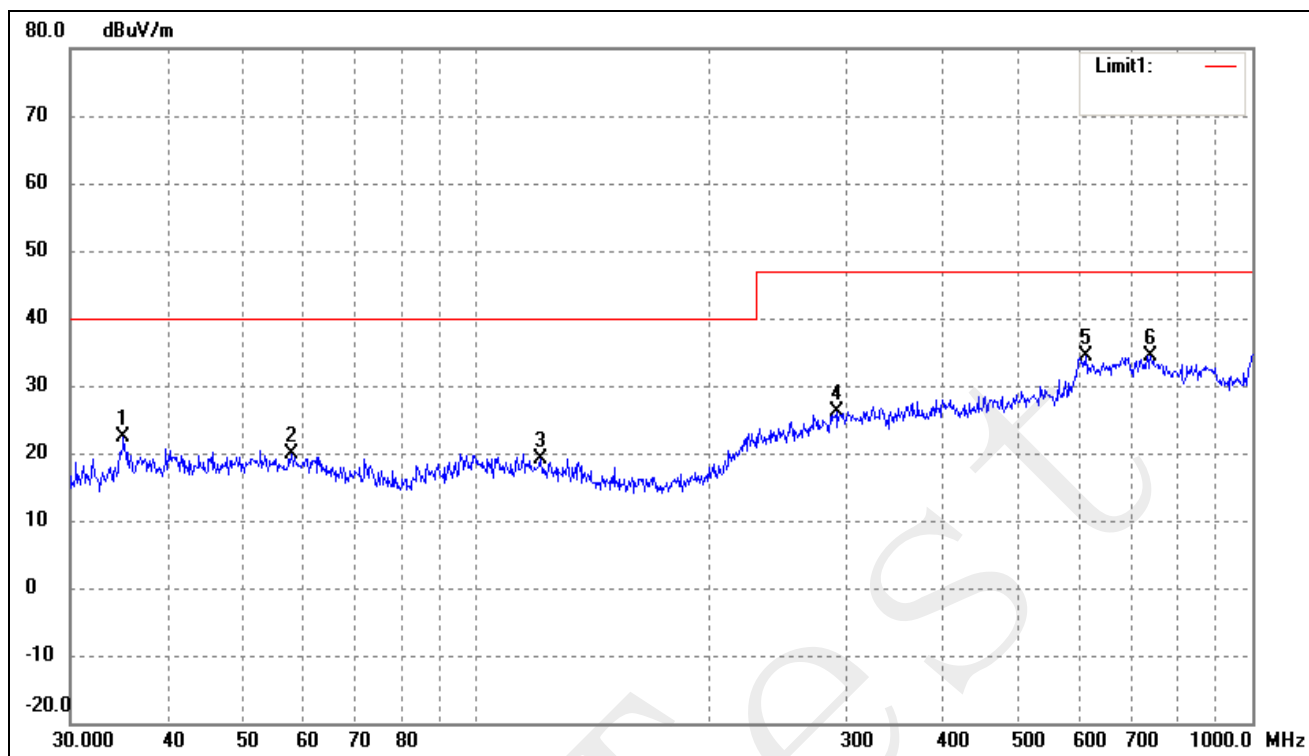
Comment: AC 230V/50Hz

Test Specification: Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	40.8446	17.08	5.25	22.33	40.00	-17.67	147	100	peak
2	61.1316	15.85	5.13	20.98	40.00	-19.02	198	100	peak
3	123.2655	14.47	4.76	19.23	40.00	-20.77	243	100	peak
4	187.7530	17.29	3.10	20.39	40.00	-19.61	310	100	peak
5	293.0842	16.17	11.90	28.07	47.00	-18.93	201	100	peak
6	677.5798	16.97	19.13	36.10	47.00	-10.90	134	100	peak

Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (°)	Height (cm)	Remark
1	35.1278	18.06	4.41	22.47	40.00	-17.53	246	100	peak
2	57.7962	14.58	5.35	19.93	40.00	-20.07	341	100	peak
3	121.1231	14.22	4.92	19.14	40.00	-20.86	158	100	peak
4	291.0360	14.40	11.83	26.23	47.00	-20.77	171	100	peak
5	609.9217	15.72	18.63	34.35	47.00	-12.65	267	100	peak
6	739.6605	14.88	19.53	34.41	47.00	-12.59	347	100	peak

5. Harmonic Current Emissions

5.1 Test Procedure

Test is conducting under the description of EN61000-3-2.

5.2 Test Standards

EN61000-3-2, Clause 7.1 Limits for Class A equipment.

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	48%
ATM Pressure:	1022 mbar

5.3 Harmonic Current Emissions Test Data

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

EUT: AC-DC Module

Tested by: Scalpel

Test category: Class-A per Ed. 3.2 (2009) (European limits)

Test Margin: 100

Test date: 2016-3-4

Start time: 03:47:46 PM

End time: 03:50:38 PM

Test duration (min): 2.5

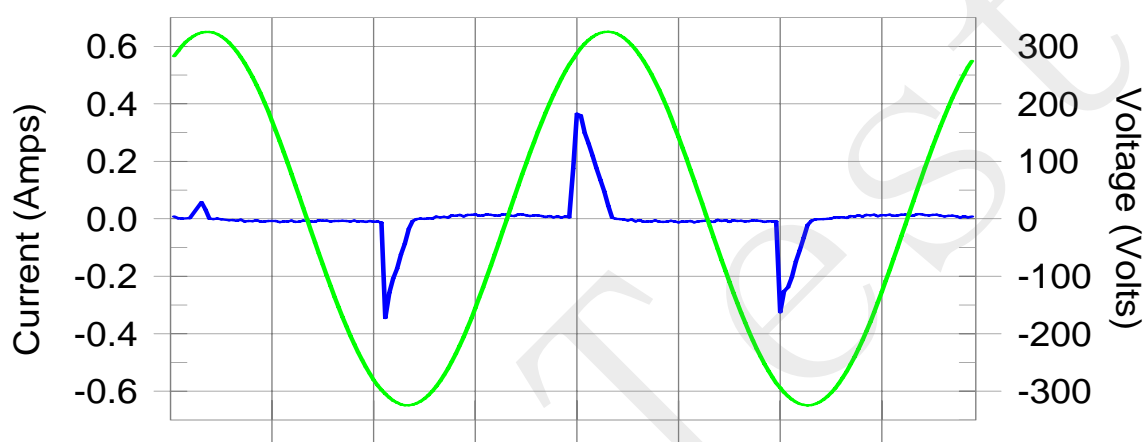
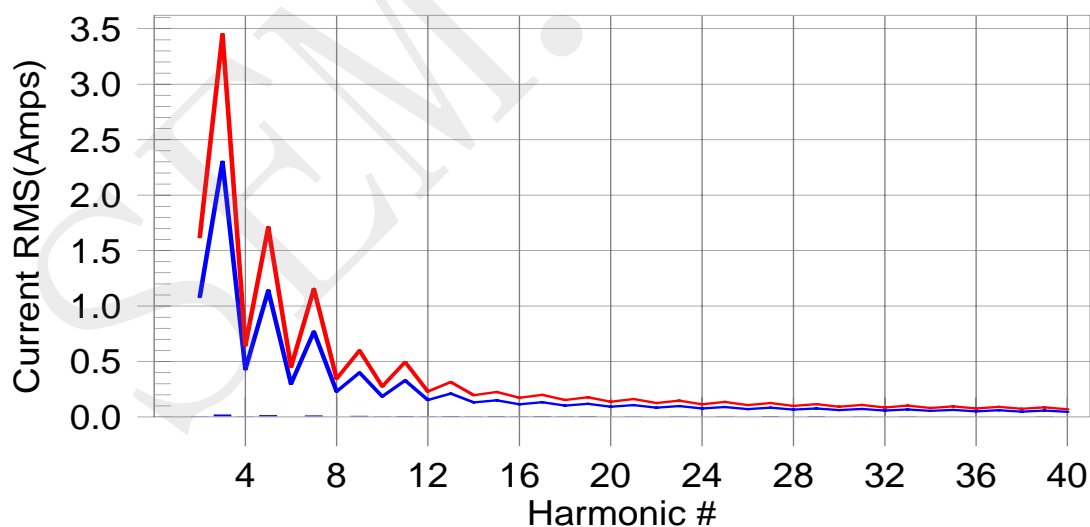
Data file name: H-000046.cts_data

Comment: TM1

Customer: Shenzhen Hi-Link Electronic co.,Ltd

Test Result: Pass

Source qualification: Normal

Current & voltage waveforms**Harmonics and Class A limit line****European Limits****Test result: Pass Worst harmonic was #9 with 1.72% of the limit.**

Current Test Result Summary (Run time)

EUT: AC-DC Module Tested by: Scalpel
Test category: Class-A per Ed. 3.2 (2009) (European limits) Test Margin: 100
Test date: 2016-3-4 Start time: 03:47:46 PM End time: 03:50:38 PM
Test duration (min): 2.5 Data file name: H-000046.cts_data
Comment: TM1
Customer: Shenzhen Hi-Link Electronic co.,Ltd

Test Result: Pass Source qualification: Normal
THC(A): 0.03 I-THD(%): 115.78 POHC(A): 0.000 POHC Limit(A): 0.320

Highest parameter values during test:

V_RMS (Volts): 229.71 Frequency(Hz): 50.00
I_Peak (Amps): 0.496 I_RMS (Amps): 0.064
I_Fund (Amps): 0.024 Crest Factor: 8.716
Power (Watts): 4.5 Power Factor: 0.338

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.001	1.080	0.0	0.002	1.620	0.10	Pass
3	0.018	2.300	0.8	0.019	3.450	0.56	Pass
4	0.001	0.430	0.0	0.001	0.645	0.19	Pass
5	0.015	1.140	1.3	0.015	1.710	0.90	Pass
6	0.001	0.300	0.0	0.001	0.450	0.21	Pass
7	0.011	0.770	1.4	0.011	1.155	0.98	Pass
8	0.001	0.230	0.0	0.001	0.345	0.28	Pass
9	0.007	0.400	1.7	0.007	0.600	1.21	Pass
10	0.001	0.184	0.0	0.001	0.276	0.38	Pass
11	0.004	0.330	0.0	0.004	0.495	0.78	Pass
12	0.001	0.153	0.0	0.001	0.230	0.51	Pass
13	0.002	0.210	0.0	0.003	0.315	0.88	Pass
14	0.001	0.131	0.0	0.001	0.197	0.64	Pass
15	0.003	0.150	0.0	0.003	0.225	1.52	Pass
16	0.001	0.115	0.0	0.001	0.173	0.73	Pass
17	0.003	0.132	0.0	0.004	0.199	1.81	Pass
18	0.001	0.102	0.0	0.001	0.153	0.76	Pass
19	0.003	0.118	0.0	0.003	0.178	1.67	Pass
20	0.001	0.092	0.0	0.001	0.138	0.74	Pass
21	0.002	0.107	0.0	0.002	0.161	1.16	Pass
22	0.001	0.084	0.0	0.001	0.125	0.75	Pass
23	0.001	0.098	0.0	0.001	0.147	0.72	Pass
24	0.001	0.077	0.0	0.001	0.115	0.80	Pass
25	0.001	0.090	0.0	0.002	0.135	1.17	Pass
26	0.001	0.071	0.0	0.001	0.106	0.84	Pass
27	0.002	0.083	0.0	0.002	0.125	1.68	Pass

28	0.001	0.066	0.0	0.001	0.099	0.91	Pass
29	0.002	0.078	0.0	0.002	0.116	1.90	Pass
30	0.001	0.061	0.0	0.001	0.092	0.90	Pass
31	0.002	0.073	0.0	0.002	0.109	1.71	Pass
32	0.001	0.058	0.0	0.001	0.086	0.91	Pass
33	0.001	0.068	0.0	0.001	0.102	1.22	Pass
34	0.000	0.054	0.0	0.001	0.081	0.89	Pass
35	0.001	0.064	0.0	0.001	0.096	0.81	Pass
36	0.000	0.051	0.0	0.001	0.077	0.90	Pass
37	0.001	0.061	0.0	0.001	0.091	1.08	Pass
38	0.001	0.048	0.0	0.001	0.073	0.98	Pass
39	0.001	0.058	0.0	0.001	0.087	1.55	Pass
40	0.001	0.046	0.0	0.001	0.069	1.17	Pass

Voltage Source Verification Data (Run time)

EUT: AC-DC Module

Tested by: Scalpel

Test category: Class-A per Ed. 3.2 (2009) (European limits) Test Margin: 100

Test date: 2016-3-4

Start time: 03:47:46 PM

End time: 03:50:38 PM

Test duration (min): 2.5

Data file name: H-000046.cts_data

Comment: TM1

Customer: Shenzhen Hi-Link Electronic co.,Ltd

Test Result: Pass

Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms): 229.71

Frequency(Hz): 50.00

I_Peak (Amps): 0.496

I_RMS (Amps): 0.064

I_Fund (Amps): 0.024

Crest Factor: 8.716

Power (Watts): 4.5

Power Factor: 0.338

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.058	0.459	12.62	OK
3	0.552	2.067	26.68	OK
4	0.072	0.459	15.58	OK
5	0.067	0.919	7.34	OK
6	0.030	0.459	6.58	OK
7	0.028	0.689	4.10	OK
8	0.020	0.459	4.40	OK
9	0.018	0.459	4.01	OK
10	0.010	0.459	2.23	OK
11	0.023	0.230	10.13	OK
12	0.014	0.230	6.01	OK
13	0.013	0.230	5.85	OK
14	0.005	0.230	2.23	OK
15	0.012	0.230	5.38	OK
16	0.009	0.230	3.76	OK
17	0.018	0.230	7.90	OK
18	0.011	0.230	4.91	OK
19	0.015	0.230	6.44	OK
20	0.017	0.230	7.42	OK
21	0.011	0.230	5.00	OK
22	0.005	0.230	2.29	OK
23	0.007	0.230	3.02	OK
24	0.004	0.230	1.66	OK
25	0.006	0.230	2.42	OK
26	0.003	0.230	1.50	OK
27	0.010	0.230	4.30	OK

28	0.005	0.230	2.06	OK
29	0.007	0.230	3.22	OK
30	0.003	0.230	1.25	OK
31	0.006	0.230	2.77	OK
32	0.004	0.230	1.95	OK
33	0.006	0.230	2.43	OK
34	0.003	0.230	1.26	OK
35	0.004	0.230	1.58	OK
36	0.003	0.230	1.29	OK
37	0.003	0.230	1.27	OK
38	0.002	0.230	1.05	OK
39	0.005	0.230	2.05	OK
40	0.008	0.230	3.55	OK

6. Voltage Fluctuation and Flicker

6.1 Test Procedure

Test is conducting under the description of EN61000-3-3.

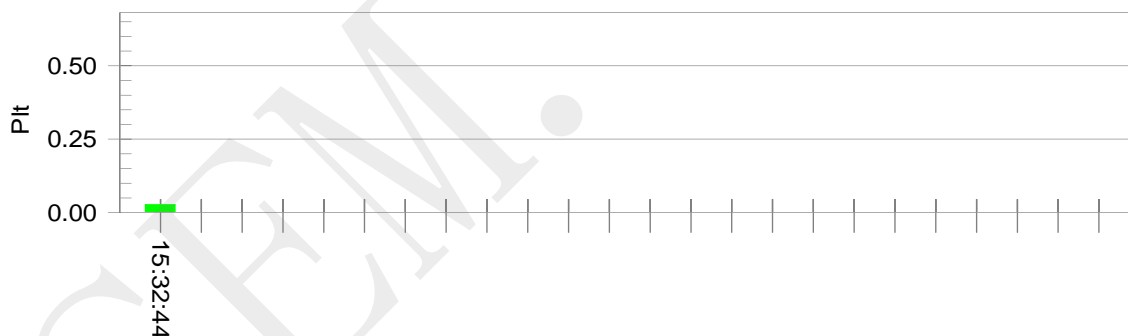
6.2 Test Standards

EN61000-3-3, Limit: Clause 5.

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	48%
ATM Pressure:	1022 mbar

6.3 Voltage Fluctuation and Flicker Test Data

Flicker Test Summary per EN/IEC61000-3-3 (Run time)**EUT: AC-DC Module****Tested by: Scalpel****Test category: All parameters (European limits)****Test Margin: 100****Test date: 2016-3-4****Start time: 03:22:24 PM****End time: 03:32:45 PM****Test duration (min): 10****Data file name: F-000045.cts_data****Comment: TM1****Customer: Shenzhen Hi-Link Electronic co.,Ltd****Test Result: Pass****Status: Test Completed****Pst_i and limit line****European Limits****Plt and limit line****Parameter values recorded during the test:****Vrms at the end of test (Volt): 229.64**

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):	0.064	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650	Pass

7. Electrostatic Discharges (ESD)

7.1 Test Procedure

Test is conducting under the description of IEC61000-4-2.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

7.2 Electrostatic Discharge Immunity Test Data

Table 1: Electrostatic Discharge Immunity (Air Discharge)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Surface	A	A	A	A	A	A	A	A		

Table 2: Electrostatic Discharge Immunity (Direct Contact)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Pin	A	A	A	A						

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

EN 61000-4-2	Test Levels (kV)									
Test Points	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A						
Top Side	A	A	A	A						
Back Side	A	A	A	A						
Left Side	A	A	A	A						
Right Side	A	A	A	A						

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

EN 61000-4-2	Test Levels (kV)									
Test Points	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A						
Top Side	A	A	A	A						
Back Side	A	A	A	A						
Left Side	A	A	A	A						
Right Side	A	A	A	A						

Test Result: Pass

8. Continuous Radiated Disturbances (R/S)

8.1 Test Procedure

Test is conducting under the description of IEC61000-4-3.

Test Performance

Performance Criterion: A

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1010 mbar

8.2 Continuous Radiated Disturbances Test Data

Frequency step: 1% of fundamental

Dwell time: 1 second

Modulation: AM by 1kHz sine wave with 80% modulation depth

Frequency Range(MHz)	Field (V/m)	Front		Rear		Left Side		Right Side	
		VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	3	A	A	A	A	A	A	A	A

Test Result: Pass

9. Electrical Fast Transients (EFT)

9.1 Test Procedure

Test is conducting under the description of IEC61000-4-4.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

9.2 Electrical Fast Transients Test Data

EN 61000-4-4		Test Levels (kV)							
Test Points		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
Power Supply Power Port of EUT	L1	A	A	A	A	/	/	/	/
	L2	A	A	A	A	/	/	/	/
	PE	/	/	/	/	/	/	/	/
	L1+L2	A	A	A	A	/	/	/	/
	L1 + PE	/	/	/	/	/	/	/	/
	L2 + PE	/	/	/	/	/	/	/	/
	L1+L2+PE	/	/	/	/	/	/	/	/
Signal ports		/	/	/	/	/	/	/	/

Test Result: Pass

10. Surges

10.1 Test Procedure

Test is conducting under the description of IEC 61000-4-5.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

10.2 Surge Test Data

Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	L-N	A	/
2	1kV	±	L-N	A	/
3	2kV	±	L-PE, N-PE	/	/
4	4kV	±	L-N, L-PE, N-PE	/	/

Test Result: Pass

11. Continuous Conducted Disturbances (C/S)

11.1 Test Procedure

Test is conducting under the description of IEC 61000-4-6.

Test Performance

Performance Criterion: A

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

11.2 Continuous Conducted Disturbances Test Data

Sweep frequency range: 150kHz~80MHz

Frequency step: 1% of fundamental

Dwell time: 1 second

Level	Voltage Level (e.m.f.) U_0	Modulation:	Pass	Fail
1	1	AM 80%, 1kHz sinewave	/	/
2	3	AM 80%, 1kHz sinewave	A	/
3	10	AM 80%, 1kHz sinewave	/	/
X	Special	/	/	/

Test Result: Pass

12. Voltage Dips and Interruptions

12.1 Test Procedure

Test is conducting under the description of IEC 61000-4-11.

Test Performance

Performance Criterion: B/C

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50%
ATM Pressure:	1011 mbar

12.2 Voltage Dips And Interruptions Test Data

U: Voltage dips in % U_T (U_T is rated voltage for the EUT)

T: Test duration

Level	U	T	Phase Angle	N	Pass	Fail
1	100%	10ms	0/90/180/270	3	A	/
2	30%	500ms	0/90/180/270	3	A	/
3	100%	5000ms	0/90/180/270	3	C	/

Test Result: Pass

EXHIBIT 1 - PRODUCT LABELING

Proposed CE Label Format



Specifications: Text is Black in color and is justified. Labels are printed in indelible ink on permanent adhesive backing or silk-screened onto the EUT or shall be affixed at a conspicuous location on the EUT. The 'CE' marking must be affixed to the EUT or to its data plate. Where this is not possible or not warranted on account of the nature of the apparatus, it must be affixed to the packaging, if any, and to the accompanying documents. The 'CE' marking must have a height of at least 5 mm. If the 'CE' marking is reduced or enlarged the proportions given in the above graduated drawing must be respected.

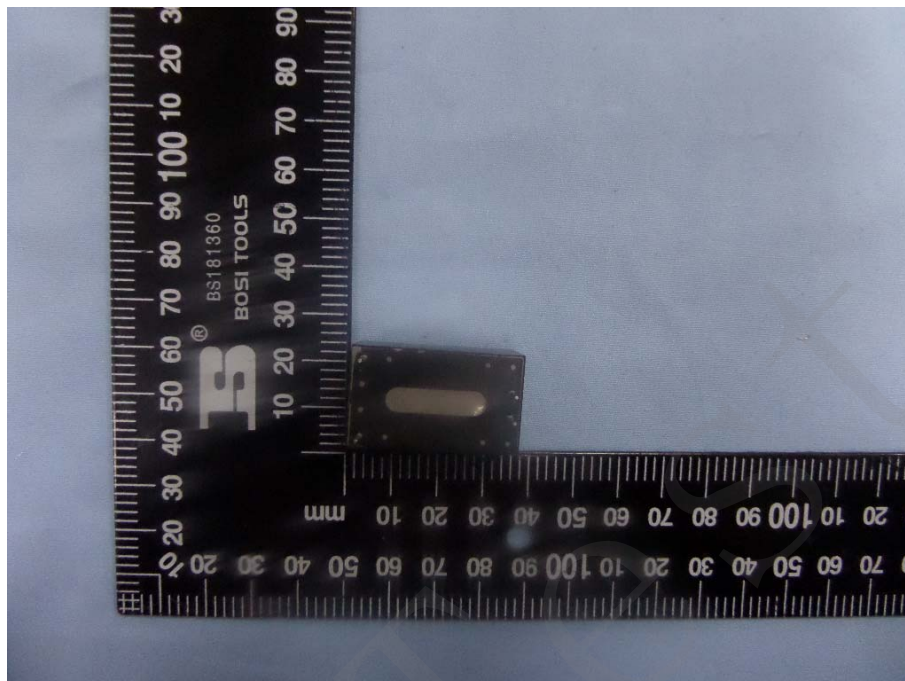
Proposed Label Location on EUT

CE Label Location

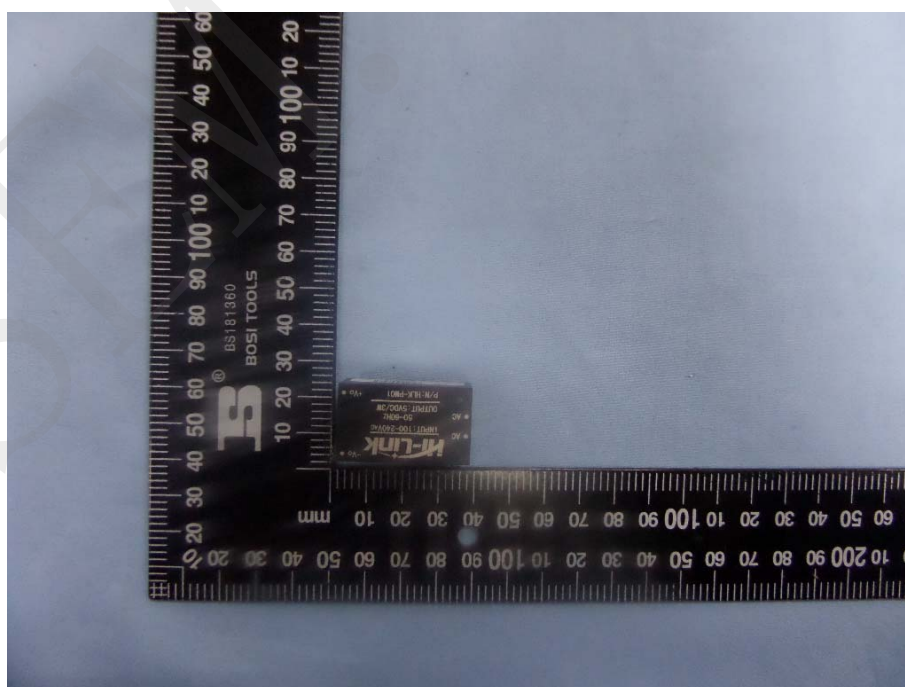


EXHIBIT 2 - EUT PHOTOGRAPHS

EUT View 1



EUT View 2



EUT View 3

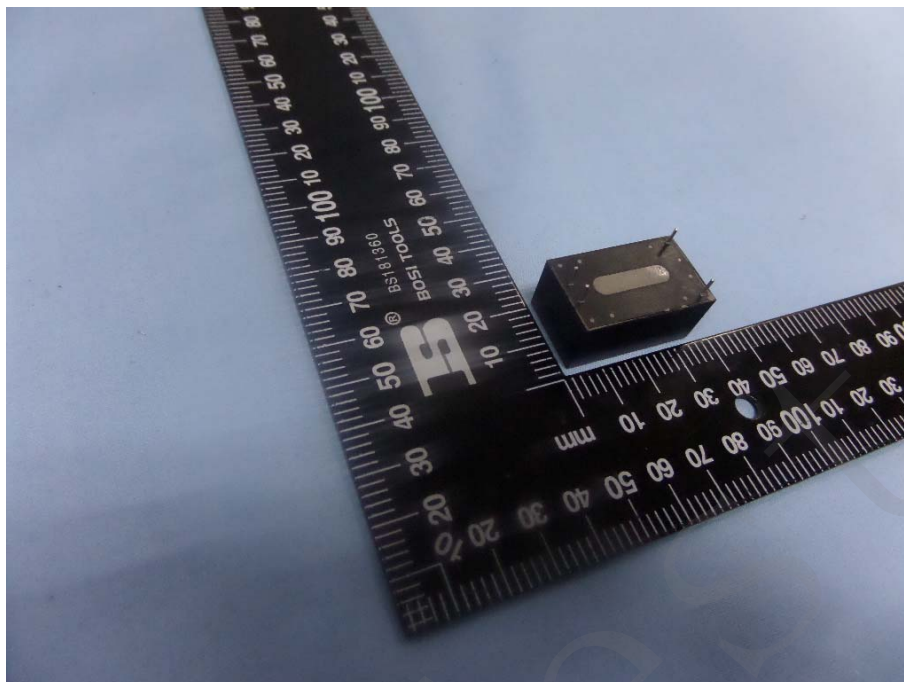
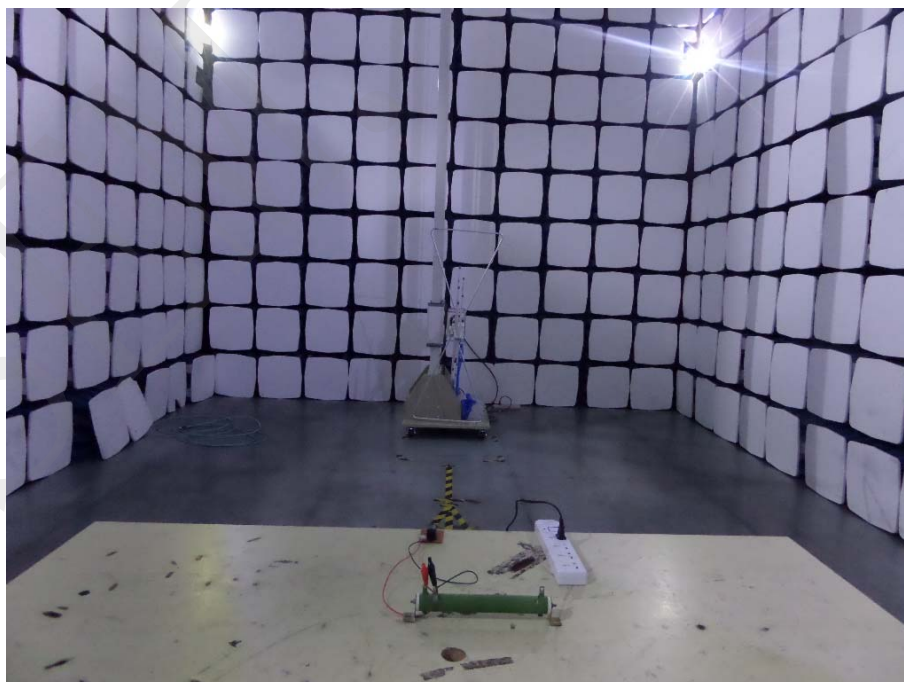


EXHIBIT 3 - TEST SETUP PHOTOGRAPHS

Conduction Emission Test View



Radiation Emission Test View

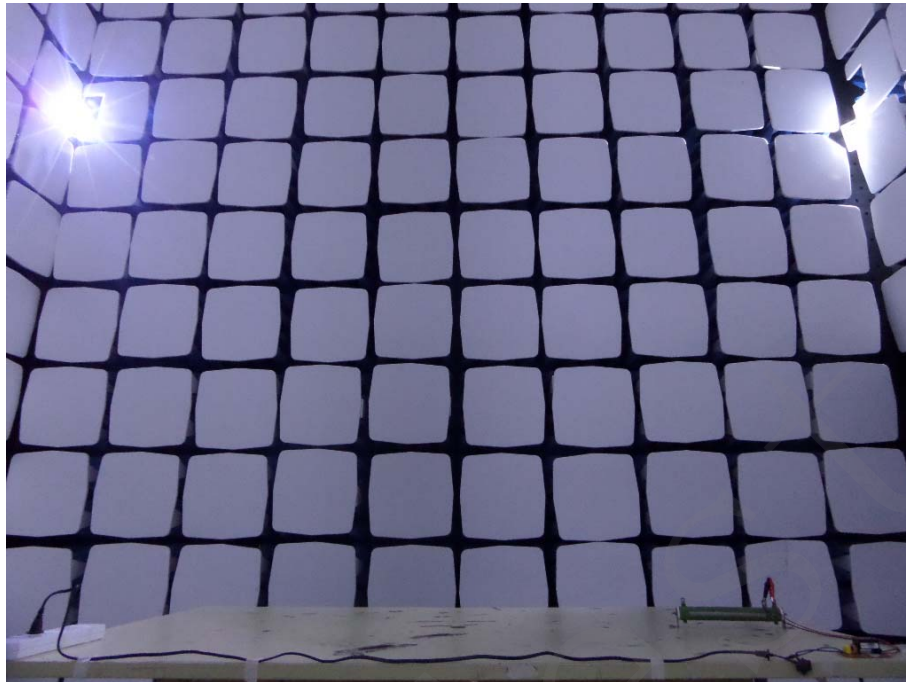


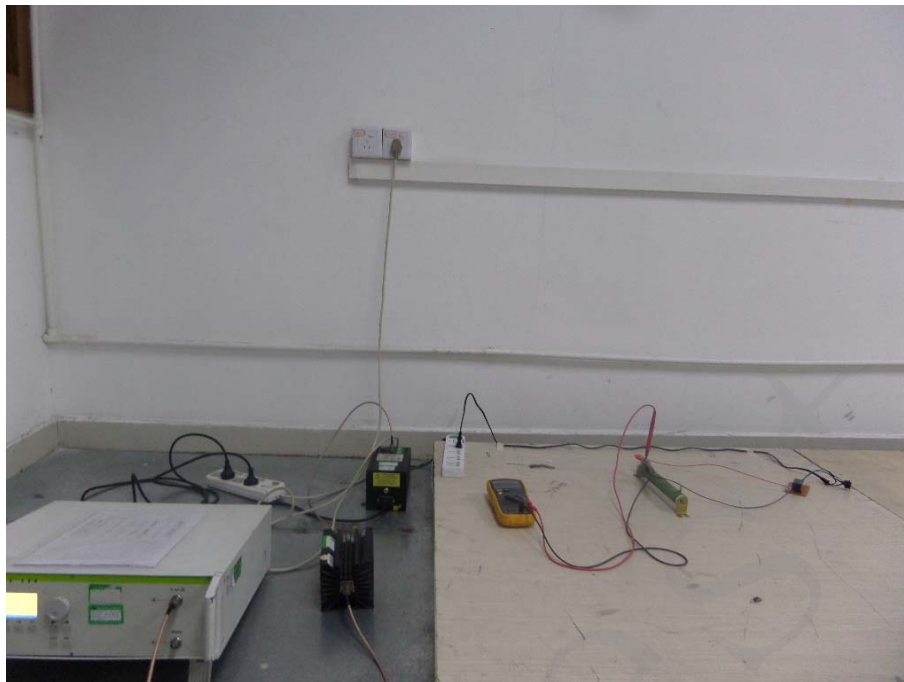
Harmonic/Flicker Test View



IEC61000-4-2 Test View



IEC61000-4-3 Test View**IEC61000-4-4/5/11 Test View**



***** END OF REPORT *****