FCC TEST REPORT

Reference No.	:	WTU16U0960898E
Applicant	:	Suzhou Switek Electronics&Technology Co, Ltd.
Address	:	No.86, South WuSong Road, Luzhi Town, Wuzhong District, Suzhou City,Jiangsu,China.
Manufacturer	:	Suzhou Switek Electronics&Technology Co, Ltd.
Address	:	No.86, South WuSong Road, Luzhi Town, Wuzhong District, Suzhou City,Jiangsu,China.
Product Name	:	PDU
Model No.	:	LIU-0816WN, LIU-0408WN
FCC ID		ZQXLIU-0816WN
Standards	:	FCC PART15.109_2016
Date of Receipt sample	:	January 01, 2017
Date of Test	:	January 01, 2017～February 13, 2017
Date of Issue	:	February 14, 2017
Test Report Form No.	:	FCC 15-1A
Test Result	:	**Pass ***

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company.
The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

Prepared By:
Waltek Services (Shenzhen) Co., Ltd.
Address: 1/F., Fukangtai Building, West Baima Road, Songgang Street, Baoan District, Shenzhen, Guangdong, China
Testing location: 1/F., Fukangtai Building, West Baima Road, Songgang Street, Baoan District, Shenzhen, Guangdong, China

Compiled by:

Fish Yu

Fish Yu / Project Engineer

Approved by:

Philo Zhong

Philo Zhong / Manager

1 Test Summary

Test Item	Test Requirement	Class	Test Method	Test Result
Conducted Emission (150KHz to 30MHz)	FCC PART15.107_2016	Class B	ANSI C63.4: 2014	Pass
Radiated Emission (30MHz to 1GHz)	FCC PART15.109_2016	Class B	ANSI C63.4: 2014	Pass

Remark:

Pass	Test item meets the requirement
Fail	Test item does not meet the requirement
N/A	Test case does not apply to the test object

2 Contents

3 General Information

3.1 General Description of E.U.T.

Product Name ..... : **PDU**

Model No. ..... : **LIU-0816WN, LIU-0408WN**

FCC ID..... **ZQXLIU-0816WN**

Remark..... : **The model difference are the number of output ports and output current. The first two numbers "08,04" stand for the number of output ports. The last two numbers "16,08" stand for output current 16A and 8A.**

3.2 Details of E.U.T.

Technical Data ..... : LIU-0816WN: Input:AC 100-240V,50/60Hz,Output current:total 16A
LIU-0408WN: Input:AC 100-240V,50/60Hz,Output current:total 8A

The Highest Operation Frequency.... : 25MHz

3.3 Description of Support Units

The EUT has been tested as an independent unit. LIU-0816WN is the test sample.

3.4 Standards Applicable for Testing

The tests were performed according to following standards:

FCC PART 15.109_2016 Electronic Code of Federal Regulations- Unintentional Radiators

3.5 Test Facility

The test facility has a test site registered with the following organizations:

- **FCC Test Site 1#– Registration No.: 880581**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory `has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, April 29, 2014.

- **FCC Test Site 2#– Registration No.: 328995**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory `has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 328995, December 3, 2014.

3.6 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test Lab: N/A

Lab address: N/A

Test items: N/A

3.7 Abnormalities from Standard Conditions

None.

4 Equipment Used during Test

Conducted Emissions at Mains Terminals Disturbance Voltage (Conducted Emission)						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	EMI Test Receiver	R&S	ESCI	101155	2016.09.12	2017.09.11
2	LISN	SCHWARZBECK	NSLK 8128	8128-289	2016.09.12	2017.09.11
3	Limiter	York	MTS-IMP-136	261115-001-0024	2016.09.12	2017.09.11
4	Cable	Laplace	RF300	-	2016.09.12	2017.09.11
3m Semi-anechoic Chamber for Radiation						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	Spectrum Analyzer	R&S	FSP	100091	2016.04.29	2017.04.28
2	Trilog Broadband Antenna	SCHWARZBECK	VULB9163	336	2016.04.09	2017.04.08
3	Coaxial Cable (below 1GHz)	Top	TYPE16(13M)	-	2016.09.12	2017.09.11
4	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	667	2016.04.09	2017.04.08
5	Broadband Preamplifier	COMPLIANCE DIRECTION	PAP-1G18	2004	2016.04.13	2017.04.12

4.1 easurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conducted Emission	150kHz~30MHz	±3.64dB	(1)
Radiated Emission	30MHz~1GHz	±5.03dB	(1)

(1)This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

5 Emission Test Results

5.1 Mains Terminals Disturbance Voltage, 150kHz to 30MHz

Test Requirement..... : FCC PART15.107_2016

Test Method..... : ANSI C63.4_2014

Test Result..... : Pass

Test Limit..... : FCC PART 15, SUBPART B Section 15.107

Frequency Range..... : 150kHz to 30MHz

Class..... : Class B

5.1.1 E.U.T. Operation

Operating Environment:

Temperature..... : 23°C

Humidity..... : 55%RH

Atmospheric Pressure..... : 101Kbar

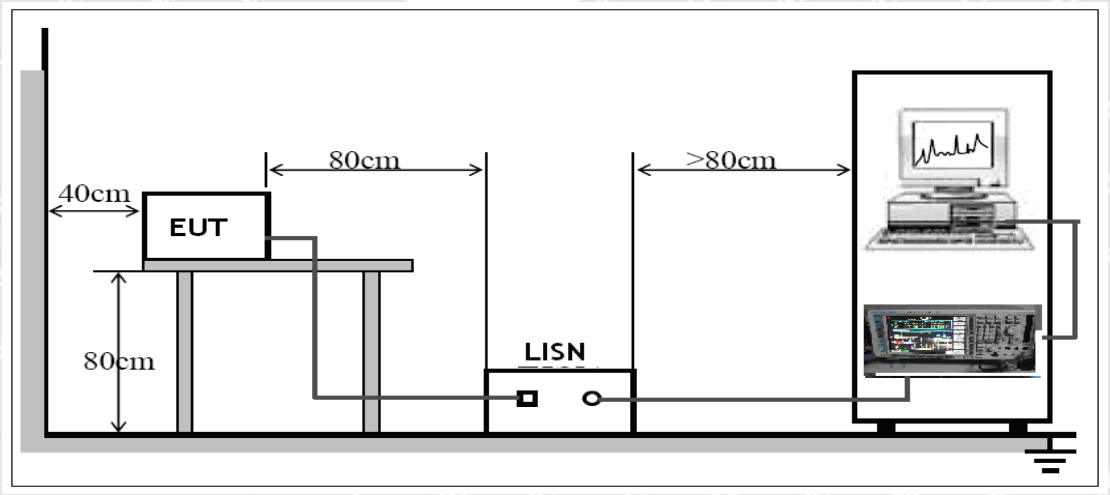
EUT Operation:

Input Voltage..... : AC120V/60Hz

Operating Mode..... : Full Load Mode

5.1.2 Block Diagram of Test Setup

The Mains Terminals Disturbance Voltage tests were performed in accordance with the FCC PART 15, SUBPART B .



5.1.3 Measurement Data

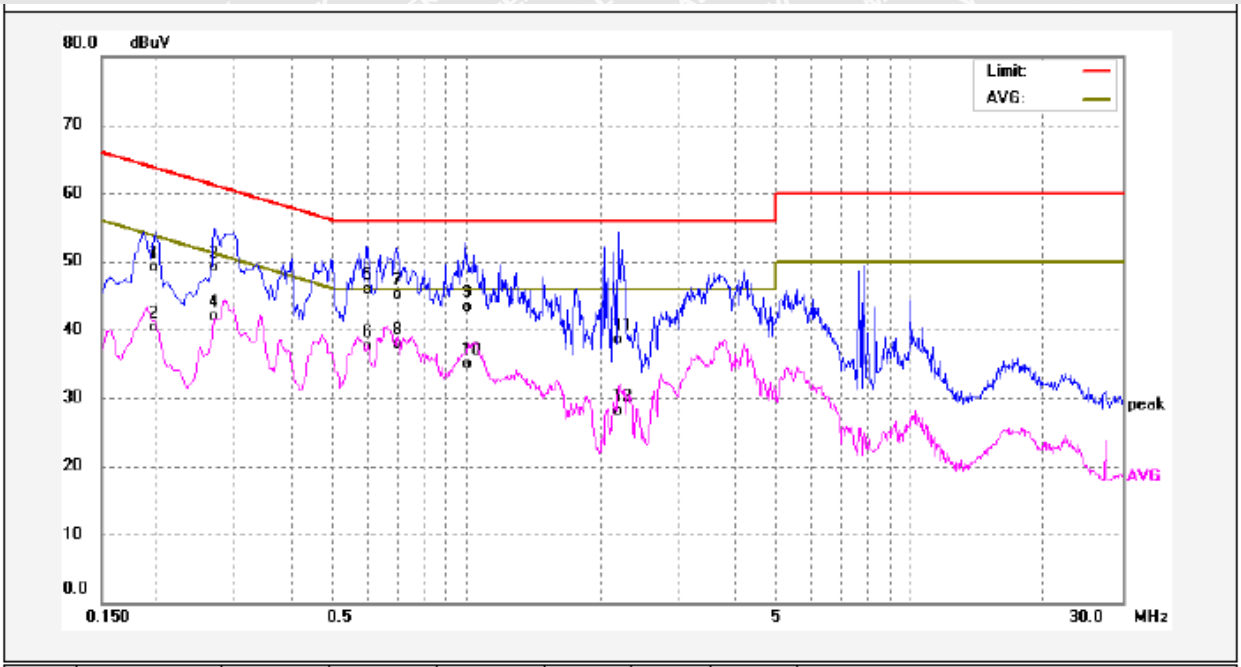
The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line. According to the data in section 5.1.4, the EUT complied with the FCC PART 15, SUBPART B standards.

Remark: Test Limit

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15–0.5	66 to 56*	56 to 46*
0.5–5	56	46
5–30	60	50

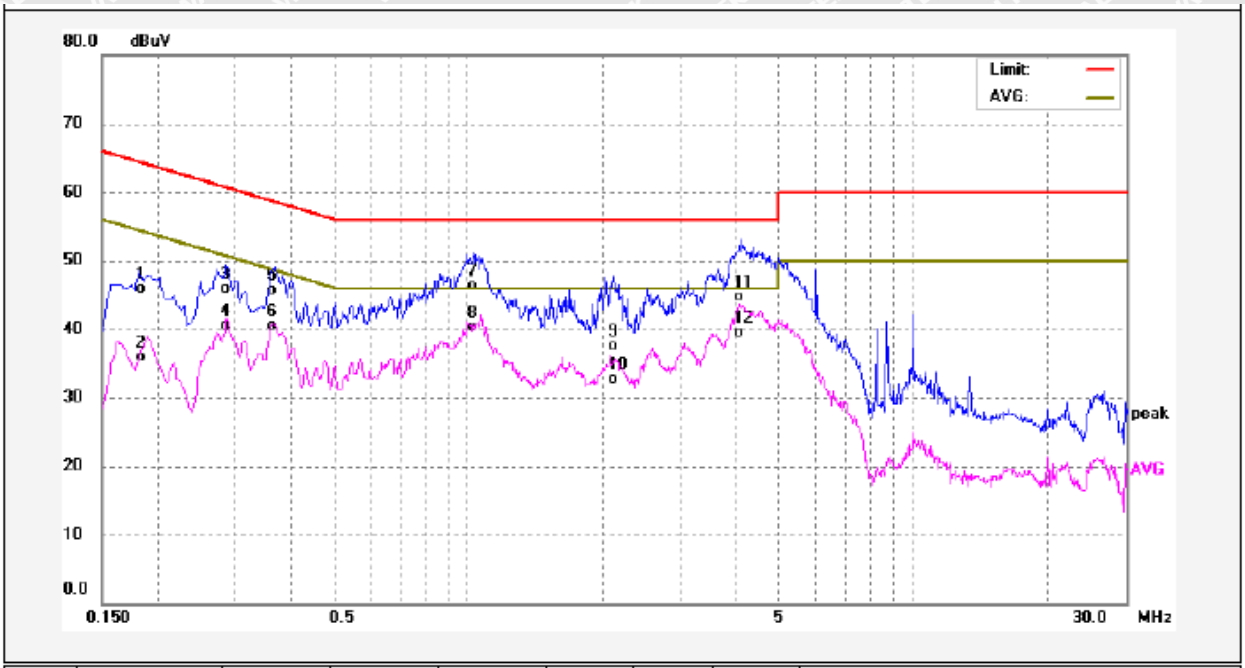
5.1.4 Mains Terminals Disturbance Voltage Test Data

Live Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1980	39.55	9.65	49.20	63.69	-14.49	QP	
2	0.1980	30.67	9.65	40.32	53.69	-13.37	AVG	
3	0.2700	39.44	9.65	49.09	61.12	-12.03	QP	
4	0.2700	32.16	9.65	41.81	51.12	-9.31	AVG	
5	0.5940	36.17	9.64	45.81	56.00	-10.19	QP	
6	0.5940	27.85	9.64	37.49	46.00	-8.51	AVG	
7	0.6900	35.53	9.66	45.19	56.00	-10.81	QP	
8	0.6900	28.31	9.66	37.97	46.00	-8.03	AVG	
9	0.9900	33.67	9.67	43.34	56.00	-12.66	QP	
10	0.9900	25.30	9.67	34.97	46.00	-11.03	AVG	
11	2.1940	28.85	9.68	38.53	56.00	-17.47	QP	
12	2.1940	18.33	9.68	28.01	46.00	-17.99	AVG	

Neutral Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.1819	36.22	9.66	45.88	64.39	-18.51	QP	
2	0.1819	26.31	9.66	35.97	54.39	-18.42	AVG	
3	0.2860	36.24	9.65	45.89	60.64	-14.75	QP	
4	0.2860	30.85	9.65	40.50	50.64	-10.14	AVG	
5	0.3660	36.04	9.64	45.68	58.59	-12.91	QP	
6	0.3660	30.77	9.64	40.41	48.59	-8.18	AVG	
7	1.0300	36.65	9.66	46.31	56.00	-9.69	QP	
8	1.0300	30.61	9.66	40.27	46.00	-5.73	AVG	
9	2.1140	27.89	9.68	37.57	56.00	-18.43	QP	
10	2.1140	23.03	9.68	32.71	46.00	-13.29	AVG	
11	4.0900	35.02	9.70	44.72	56.00	-11.28	QP	
12	4.0900	29.81	9.70	39.51	46.00	-6.49	AVG	

5.2 Radiation Emission Data For 30MHz to 1000MHz

Test Requirement..... : FCC PART15.109_2016

Test Method..... : ANSI C63.4_2014

Test Limit..... : FCC PART 15, SUBPART B Section 15.109

Test Result..... : Pass

Frequency Range..... : 30MHz to 1000MHz

Class...... : Class B

Measurement Distance..... 3m

5.2.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 23°C

Humidity..... : 55%RH

Atmospheric Pressure..... : 101Kbar

EUT Operation:

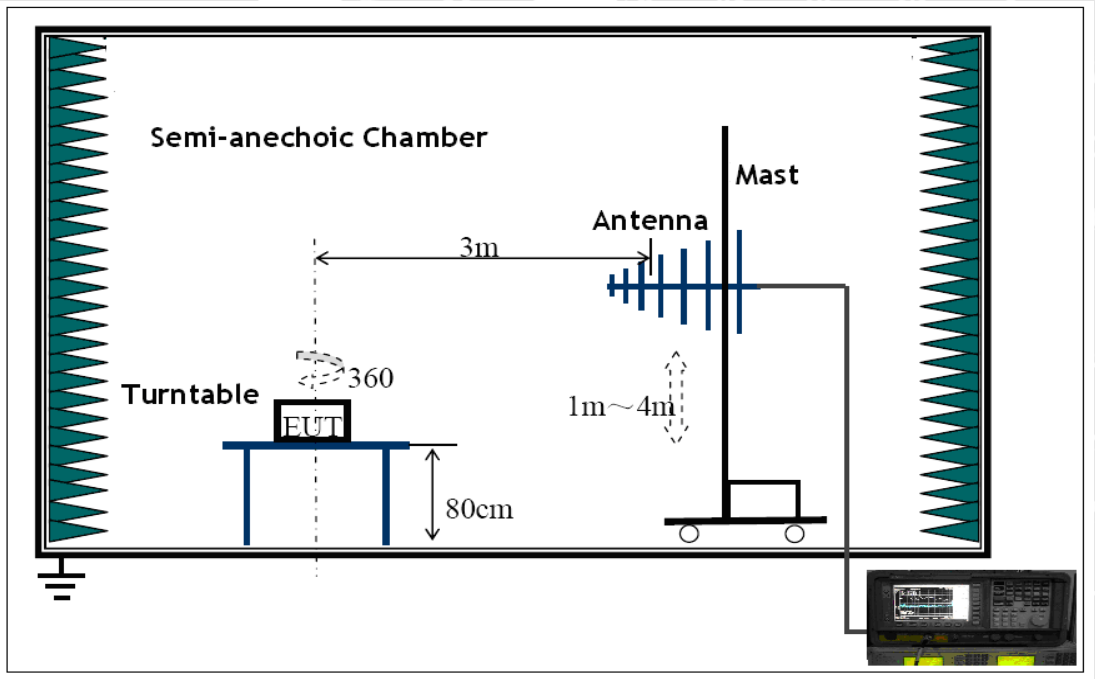
Input Voltage ..... : AC120V/60Hz

Operating Mode..... : Full Load Mode

5.2.2 Block Diagram of Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the FCC PART 15, SUBPART B.

30MHz ~ 1000MHz



5.2.3 Test Procedure

1. Test Procedure (above 30MHz)
   (1) The EUT is placed on a turntable, which is 0.8m above ground plane.
   (2) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
   (3) EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
   (4) Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
   (5) And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
   (6) Repeat above procedures until the measurements for all frequencies are complete.
   (7) AC source used during test.

2. Operating Mode:Full Load Mode

3. Test software: Audix EZ-EMC

4. Peak sweep refresh time: 100us

5. QP reading time:1s

5.2.4 Measurement Data

According to the data in section 5.2.4, the EUT complied with the FCC PART 15, SUBPART B standards.

Remark :

(1)The test Frequency range judgment basis:

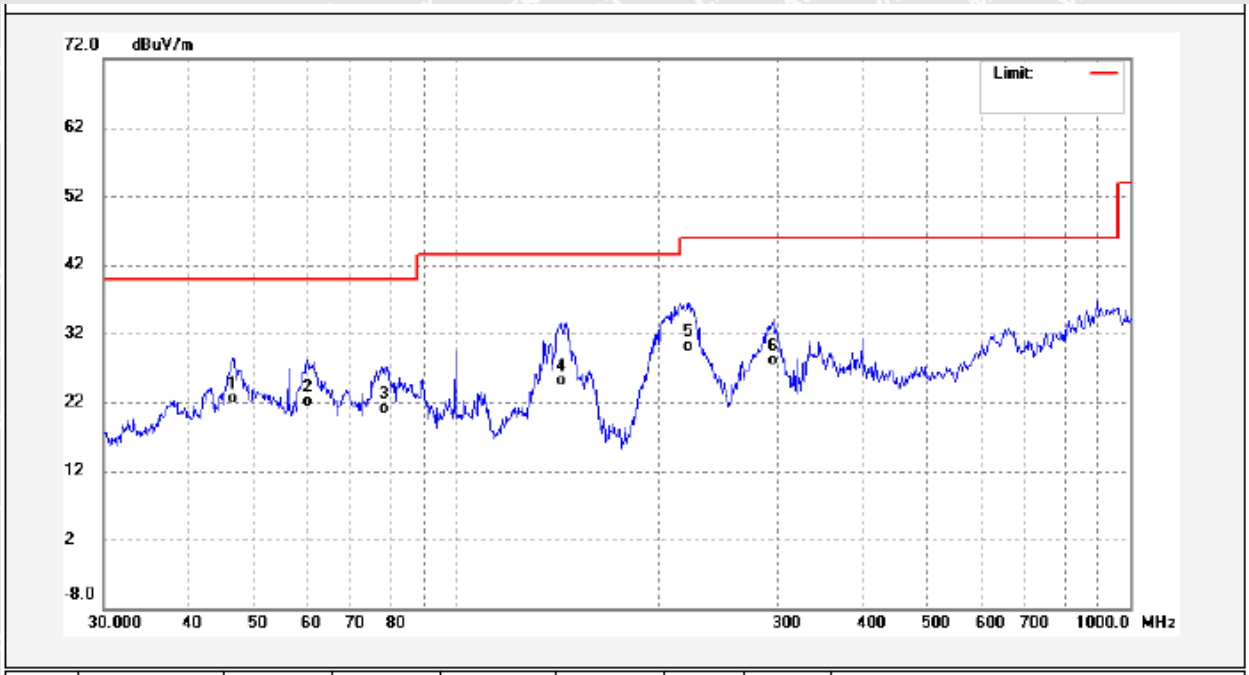
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30.
1.705–108	1000.
108–500	2000.
500–1000	5000.
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

(2) The test Limit :

Frequency of emission (MHz)	Field strength (microvolts/meter)
30–88	100
88–216	150
216–960	200
Above 960	500

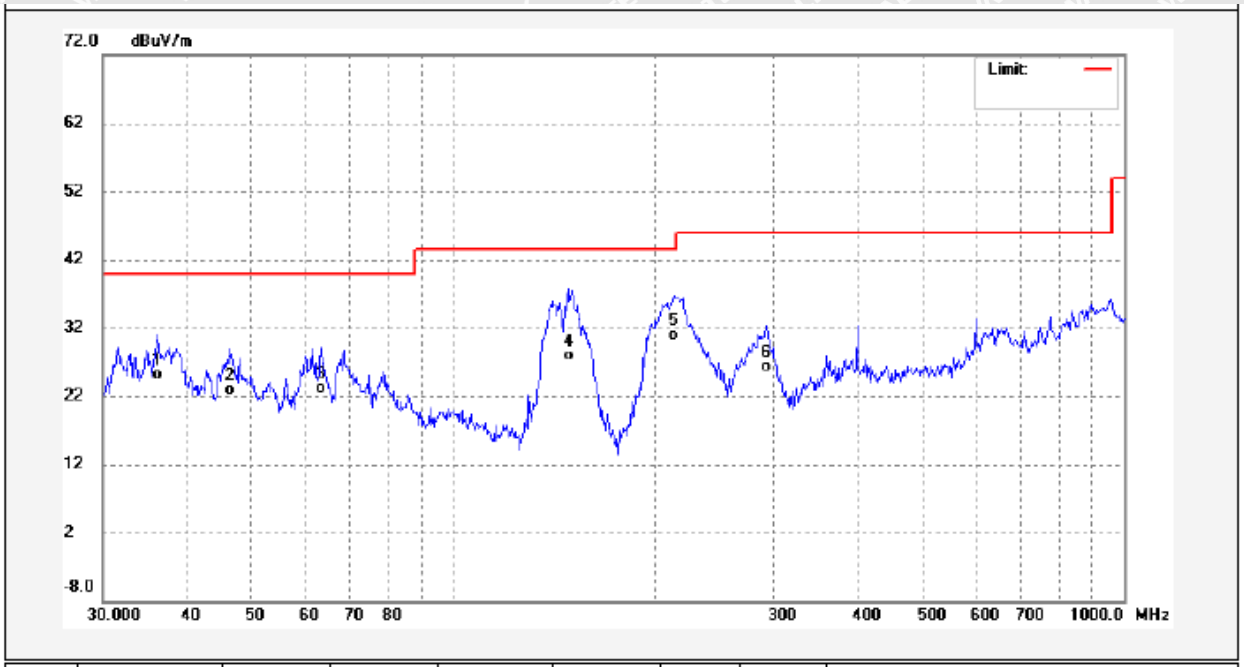
Radiated Emission test datas,30MHz to 1000MHz:

Antenna Horizontal



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	46.6664	8.74	13.78	22.52	40.00	-17.48	QP	
2	60.2801	7.20	14.99	22.19	40.00	-17.81	QP	
3	78.4133	9.76	11.40	21.16	40.00	-18.84	QP	
4	143.3261	13.96	11.11	25.07	43.50	-18.43	QP	
5	221.3921	16.07	13.98	30.05	46.00	-15.95	QP	
6	295.1469	11.48	16.64	28.12	46.00	-17.88	QP	

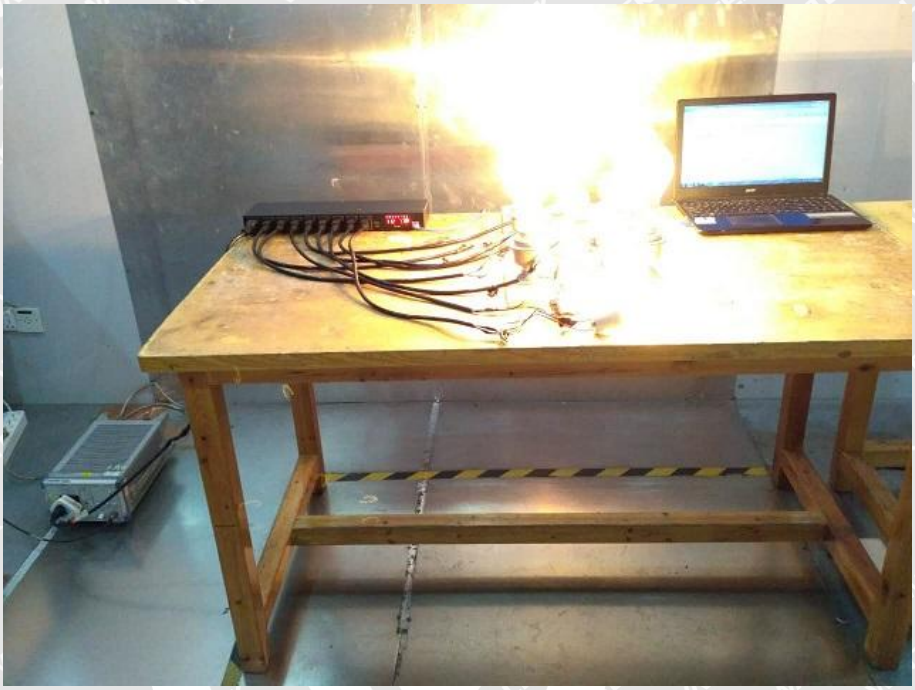
Antenna Vertical



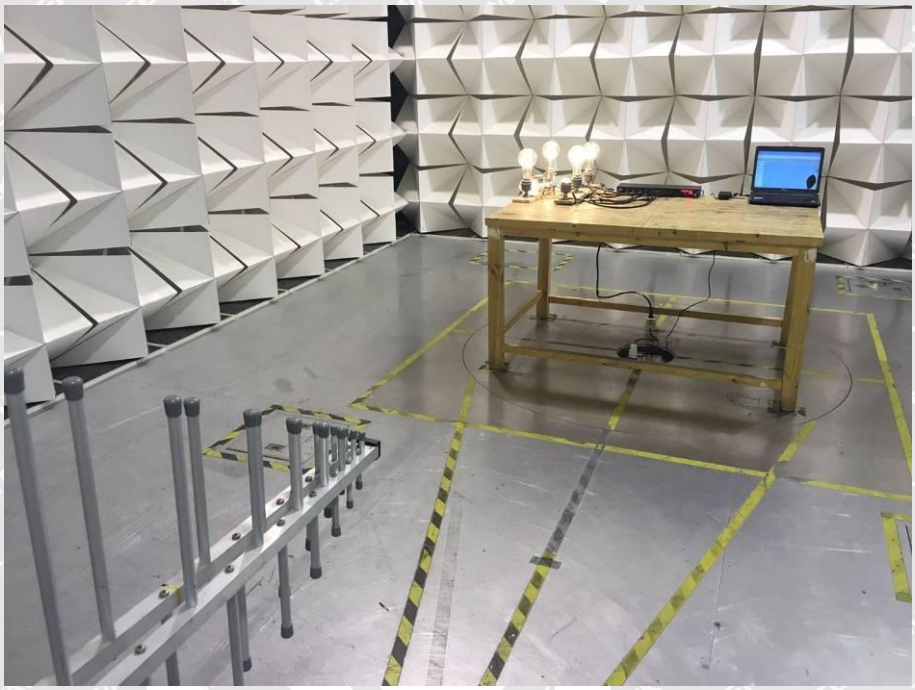
No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Remark
1	36.2540	11.66	13.43	25.09	40.00	-14.91	QP	
2	46.3402	9.22	13.73	22.95	40.00	-17.05	QP	
3	63.5356	9.94	13.25	23.19	40.00	-16.81	QP	
4	148.4410	17.32	10.65	27.97	43.50	-15.53	QP	
5	213.0151	16.63	14.27	30.90	43.50	-12.60	QP	
6	293.0842	9.83	16.50	26.33	46.00	-19.67	QP	

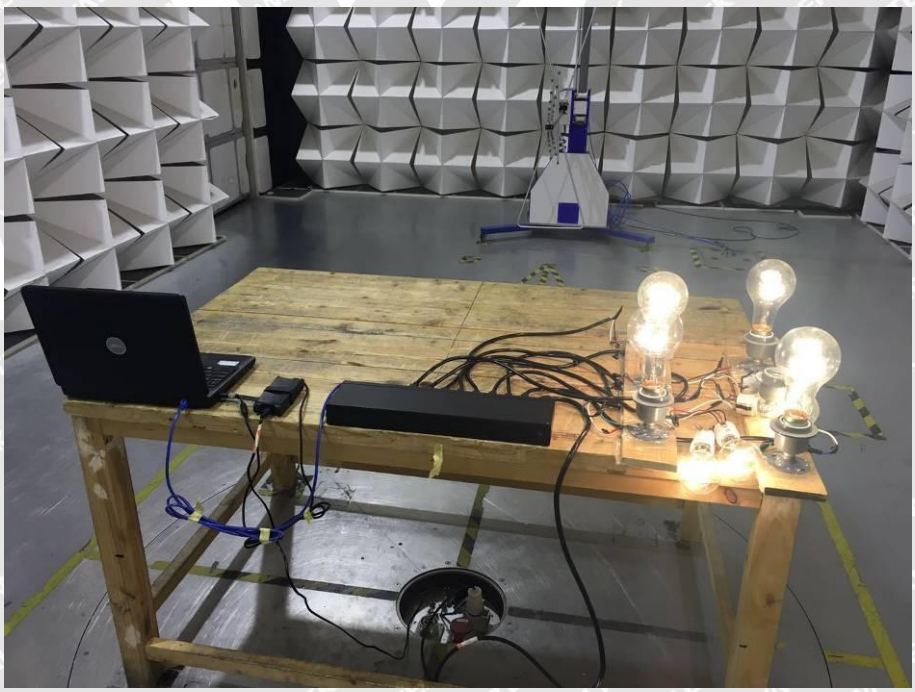
6 Photographs – Test Setup

6.1 Photograph –Disturbance Voltage Test Setup



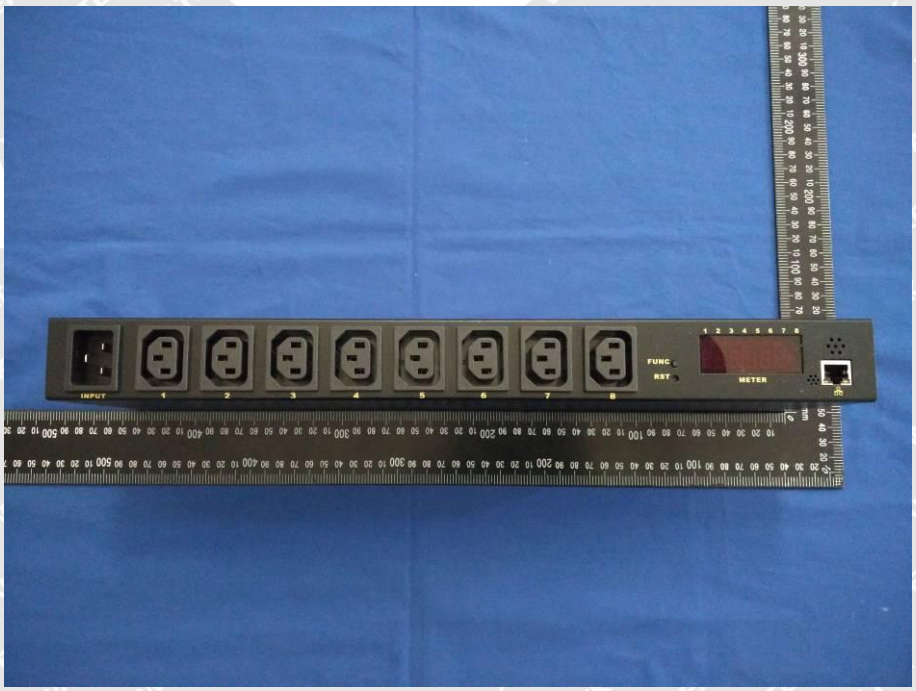
6.2 Photograph –Radiated Emission Test Setup

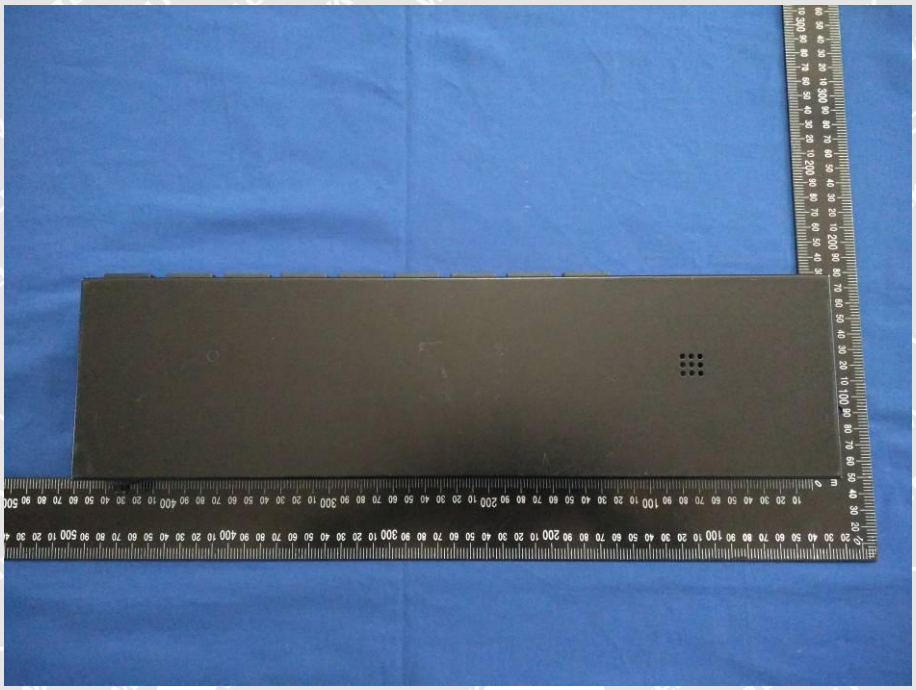


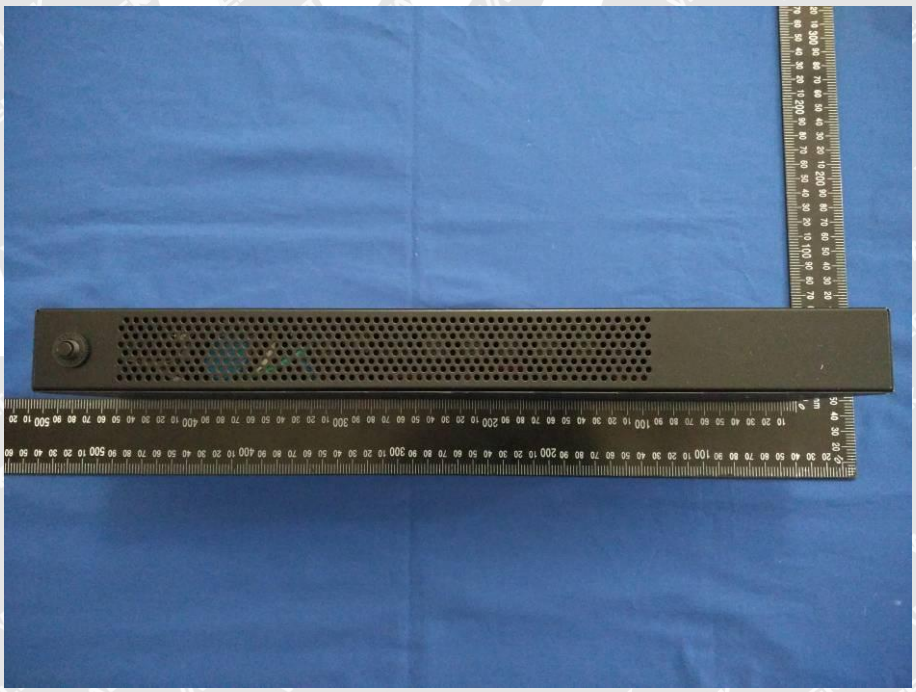


7 Photographs – Constructional Details

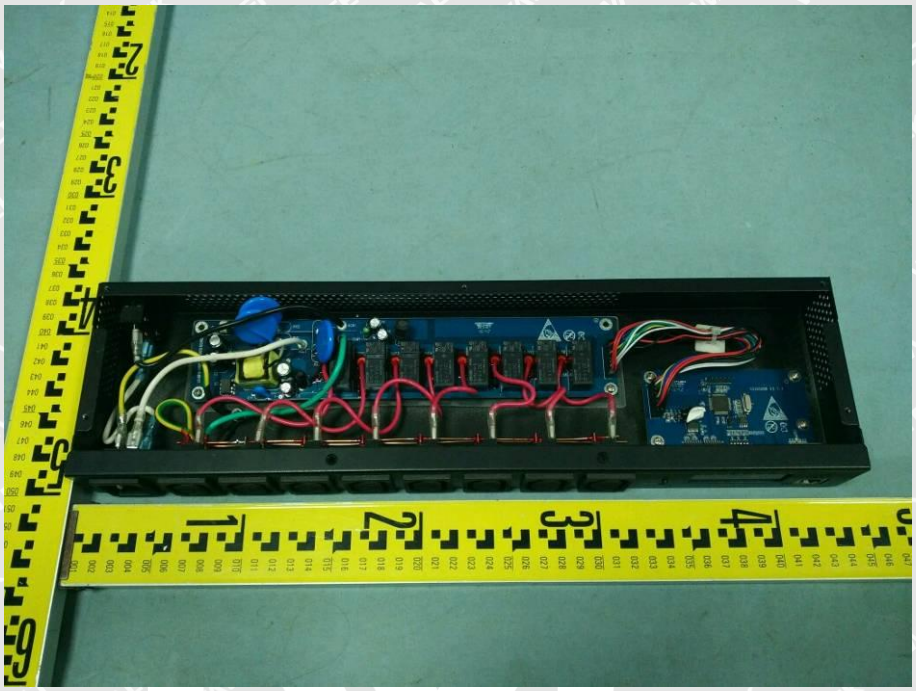
7.1 EUT -External View



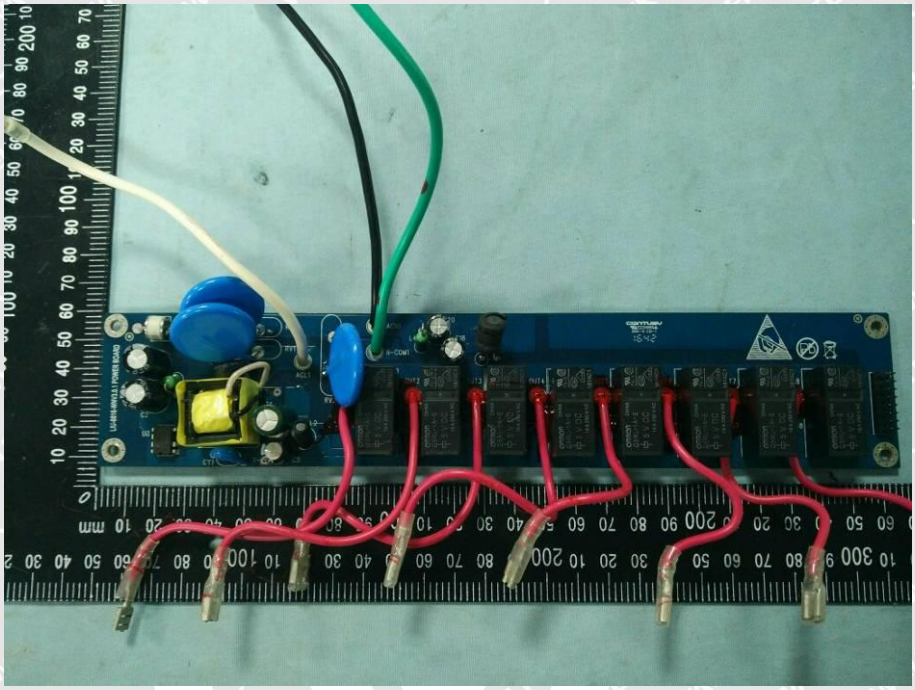


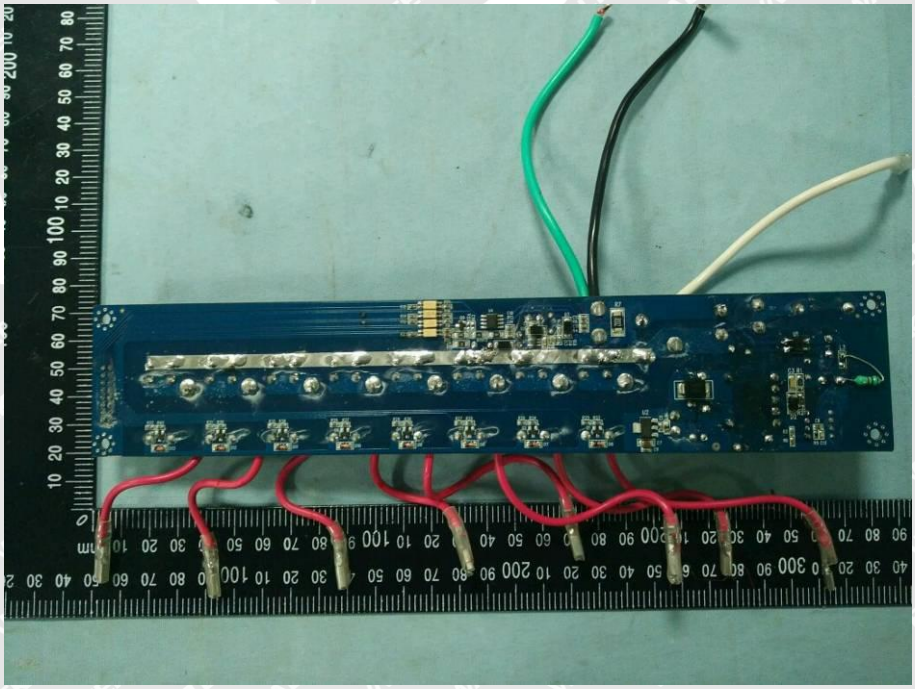


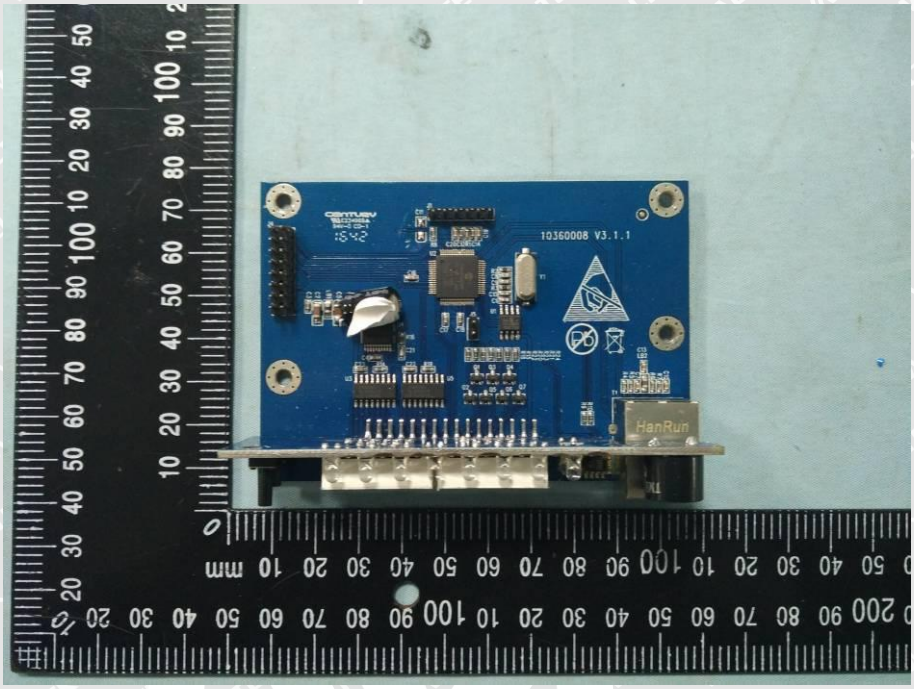
7.2 EUT –Open View

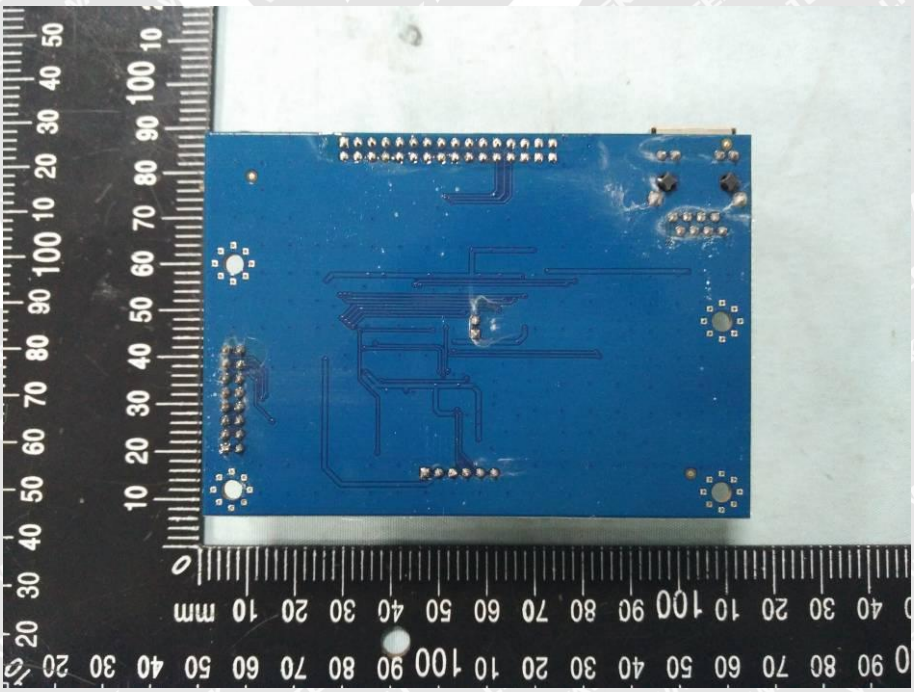


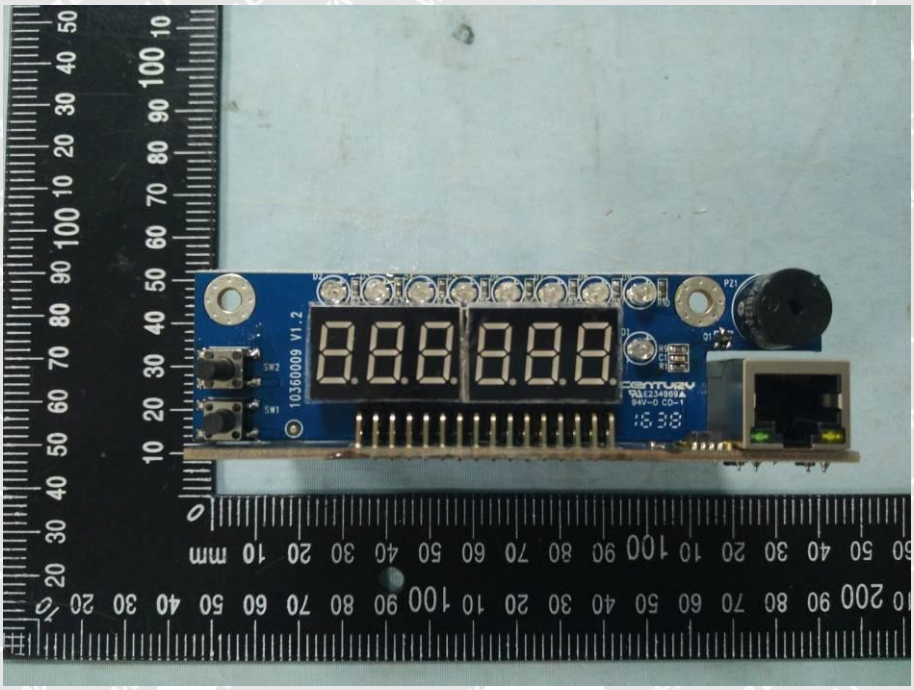
7.3 EUT –PCB View






10360008 V3.1.1
HanRun





======End of Test Report======