



FCC Verification Test Report

According to

47 CFR, Part 2, Part 15, CISPR PUB. 22

Applicant : Shenzhen Yinghuiyuan Electronics Co., Ltd

Address : 3F A Building NongDian Industrial Park, East of Baishixia,
FuYong Town, BaoAn District, SHENZHEN 518103, P.R.
China

Equipment : AC/DC ADAPTER

Model No. : YHY-XXXYYYYY(XXX and YYYYYY are variable, see model
list on page 7 for details)

Trade Mark : N/A

I HEREBY CERTIFY THAT :

The sample was received on Feb. 24, 2017 and the testing was carried out on Mar. 09, 2017 at CerpPASS Technology (Suzhou) Co., Ltd. The test result refers exclusively to the test presented test model / sample. Without written approval of CerpPASS Technology (Suzhou) Co., Ltd., the test report shall not be reproduced except in full.

Approved by:

Miro Chueh
EMC/RF B.U. Manager



FCC TEST REPORT

Issued by:

CerpPASS Technology (Suzhou) Co., Ltd.

No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China

Tel:86-512-6917-5888

Fax:86-512-6917-5666

The test record, data evaluation & Equipment. Under Test configurations represented herein are true and accurate accounts of the measurements of the samples EMC characteristics under the conditions specified in this report.

Laboratory Accreditation:

CerpPASS Technology Corporation Test Laboratory

NVLAP LAB Code:	200954-0
TAF LAB Code:	1439

CerpPASS Technology(SuZhou) Co., Ltd.

NVLAP LAB Code:	200814-0
CNAS LAB Code:	L5515



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History of this test report

Original

Additional attachment as following record:

Report No	Version	Date	Description
DEFV1702129	Rev 01	Mar. 09, 2017	Initial Issue



1. Summary of Test Procedure and Test Result

1.1. Applicable Standards

FCC

The measurements shown in this test report were made in accordance with the procedures given in ANSI C63.4 – 2014 and the energy emitted by this equipment was passed Part 2, Part 15, CISPR PUB. 22.

The energy emitted by this equipment was passed both Radiated and Conducted Emissions Class **B** limits.

Test Item	Normative References	Test Result
Conducted Emission	ANSI C63.4- 2014, FCC Part 15 Subpart B, KDB17416	PASS
Radiated Emission	ANSI C63.4- 2014, FCC Part 15 Subpart B, KDB17416	PASS



2. Test Configuration of Equipment under Test

2.1. Feature of Equipment under Test

Product Name:	AC/DC ADAPTER
Model Name:	YHY-XXXYYYYY (XXX and YYYYY are variable, see model list on page 7 for details)
Model Discrepancy:	All models are identical to each except for output voltage, output current, model designation, secondary components parameter (C16, C17, C18, R4, R28, R29, R30, R31, R32, R33, R34, D6, D7).
Housing material:	Plastic case
EUT Highest Frequency:	<108MHz
EUT Power Rating:	Input: 100-240V 50-60Hz 2.5A Output: Please see model list

Note: Please refer to user manual.



Model list:

Model	Input	Output	
		Voltage (V)	Current (A)
YHY-XXXYYYYY	100-240Vac, 50-60Hz, 2.5A	12.0	0-10.0
		12.1-13	0-9.2
		13.1-14	0-8.5
		14.1-15	0-8.0
		15.1-16	0-7.5
		16.1-17	0-7.0
		17.1-18	0-6.5
		18.1-19	0-6.3
		19.1-20	0-6.0
		20.1-21	0-5.7
		21.1-22	0-5.4
		22.1-23	0-5.2
		23.1-24	0-5.0

“XXX” is 3 digit number code (XXX can be 120-240) which represents the output voltage (Volt), for example, 120 represents the output voltage is 12.0V, in step of 0.1V.

“YYYYY” is 5 digit number code (YYYYY can be 00100-10000) which represents the output current (Ampere), for example, 08000 represents the output current is 10.0A, in step of 0.1A.

2.2. Test Manner

- a. During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
- b. The complete test system includes Meter, LOAD and EUT for EMI test.
- c. The test mode of conduction and radiation test as follow:
 - Test Mode 1. FULL LOAD For YHY-24005000 (24V/5.0A)
 - Test Mode 2. FULL LOAD For YHY-12010000 (12V/10A)
 - Test Mode 3. HALF LOAD For YHY-24005000 (24V/2.5A)The “Test Mode 1” generated the worst test result; it was reported as final data.
- d. The maximum operating frequency is under 108MHz; the test frequency range is from 30MHz to 1GHz.



2.3. Description of Test System

EMC:

Device	Manufacturer	Model No.	Description
Meter	Fluke	15B	N/A
LOAD	N/A	N/A	N/A

Use Cable:

No.	Cable	Quantity	Description
A	Meter Cable	2	1.2m Non Shielding
B	DC Cable	1	1.5m Non Shielding
C	DC Cable	1	1.5m Non Shielding



2.4. General Information of Test

<input type="checkbox"/>	Test Site	<p>CerpPASS Technology Corporation Test Laboratory Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel:+886-3-3226-888 Fax:+886-3-3226-881 Address: No.68-1, Shihbachongsi, Shihding Township, New Taipei City 223, Taiwan, R.O.C. Tel: +886-2-2663-8582</p>
	FCC	TW1079, TW1061,390316, 228391, 641184
	IC	4934B-1, 4934E-1, 4934E-2
	VCCI	T-2205 for Telecommunication Test C-4663 for Conducted emission test R-3428, R-4218 for Radiated emission test G-812, G-813 for radiated disturbance above 1GHz
<input checked="" type="checkbox"/>	Test Site	<p>CerpPASS Technology (Suzhou) Co., Ltd. Address: No.66,Tangzhuang Road, Suzhou Industrial Park, Jiangsu 215006, China Tel: +86-512-6917-5888 Fax: +86-512-6917-5666</p>
	FCC	331395
	IC	7290A-1, 7290A-2
	VCCI	T-1945 for Telecommunication Test C-2919 for Conducted emission test R-2670 for Radiated emission test G-227 for radiated disturbance above 1GHz
Frequency Range Investigated:		Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 40000MHz
Test Distance:		The test distance of radiated emission from antenna to EUT is 3 M.



2.5. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests Performed on the EUT as specified in CISPR 16-4-2:

Conducted Emission	
The measurement uncertainty is evaluated as ± 3.19 dB.	
Radiated Emission	
(30MHz -200MHz)	The measurement uncertainty is evaluated as ± 3.69 dB.
(200M-1000M)	The measurement uncertainty is evaluated as ± 3.67 dB.

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

Consistent with industry standard (e.g. CISPR 22: 2008, clause 11, Measurement Uncertainty) determining compliance with the limits shall be base on the results of the compliance measurement. Consequently the measure emissions being less than the maximum allowed emission result in this is a compliant test or passing test.



3. Test of Conducted Emission

3.1. Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 120 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-2014 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

Conducted Emission Limits:

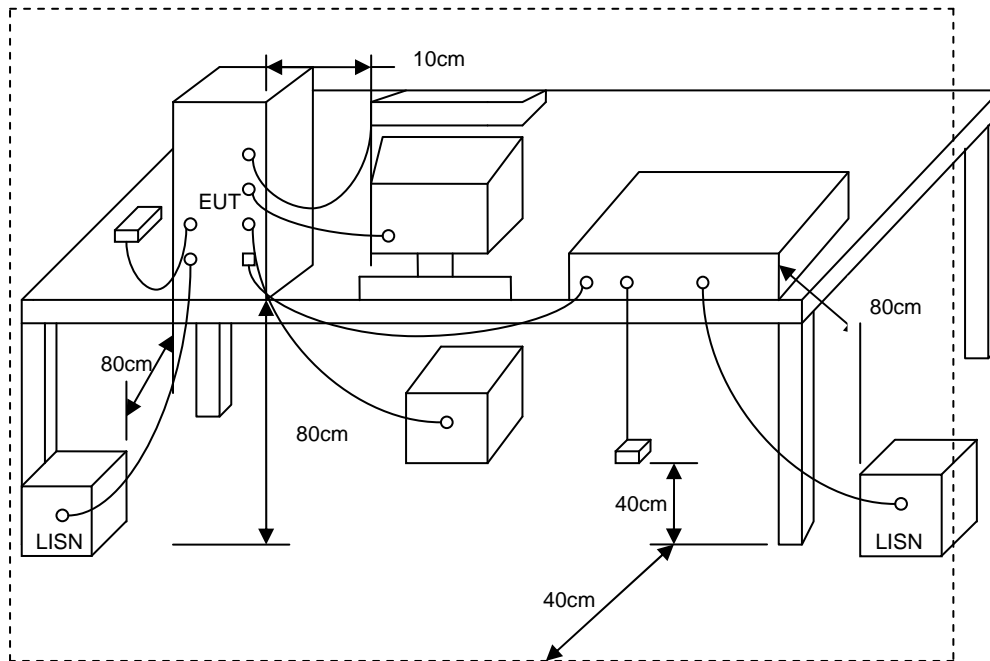
Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

3.2. Test Procedures

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. All the support units are connecting to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



3.3. Typical test Setup



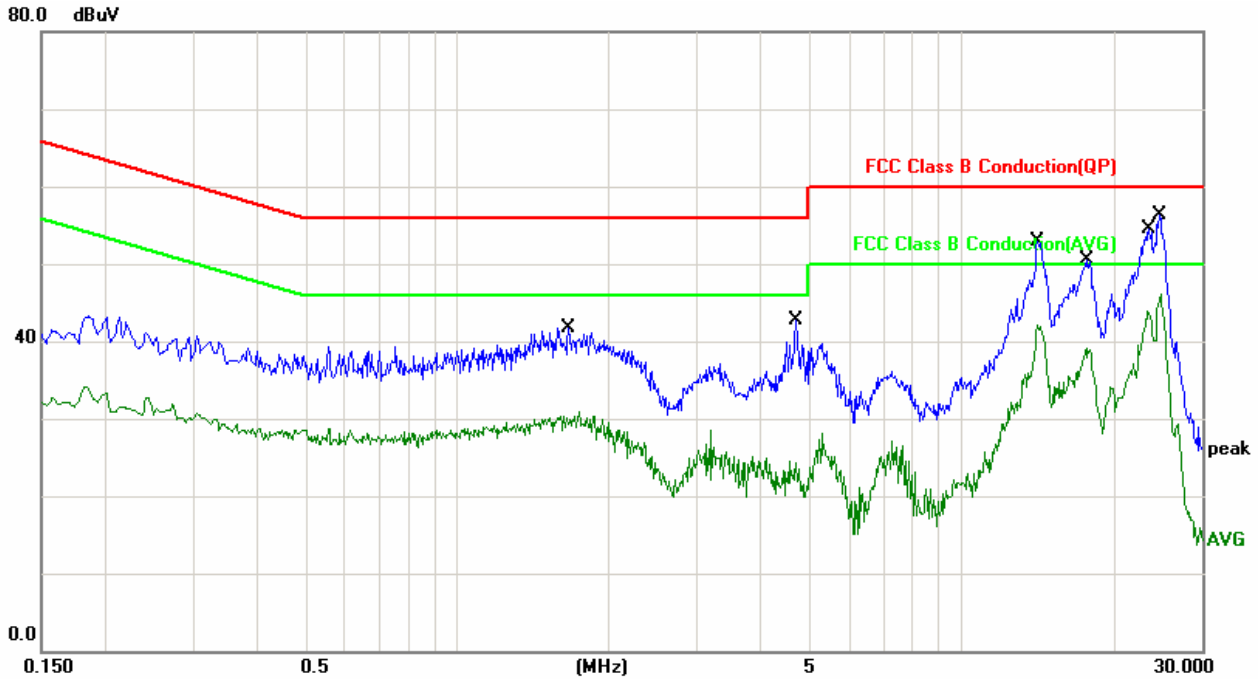
3.4. Measurement Equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
Test Receiver	R&S	ESCI	100564	2017.02.14	2018.02.13
LISN	SCHWARZBECK	NSLK 8127	8127748	2017.02.14	2018.02.13
LISN	SCHWARZBECK	NSLK 8127	8127749	2017.02.14	2018.02.13
Pulse Limiter with 10dB Attenuation	SCHWARZBECK	VTSD 9561-F	9561-F106	2017.02.14	2018.02.13
Temperature/ Humidity Meter	mingle	ETH529	N/A	2017.02.14	2018.02.13



3.5. Test Result and Data

Power	AC 120V	Pol/Phase	LINE
Test Mode 1	FULL LOAD For YHY-24005000 (24V/5.0A)	Temperature	20 °C
Test Date	Feb. 26, 2017	Humidity	58 %

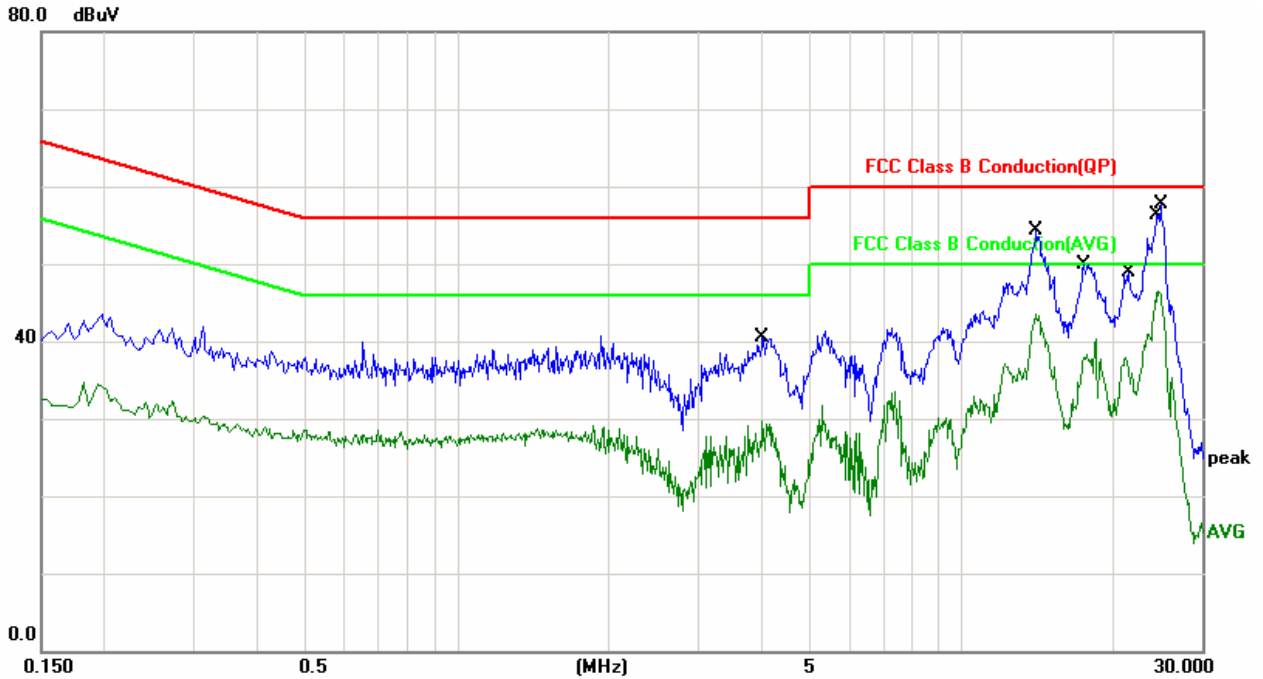


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	1.6660	10.75	25.35	36.10	56.00	-19.90	QP
2	1.6660	10.75	18.15	28.90	46.00	-17.10	AVG
3	4.7020	10.33	20.89	31.22	56.00	-24.78	QP
4	4.7020	10.33	9.63	19.96	46.00	-26.04	AVG
5	14.2060	10.39	37.51	47.90	60.00	-12.10	QP
6	14.2060	10.39	29.77	40.16	50.00	-9.84	AVG
7	17.7020	10.46	34.92	45.38	60.00	-14.62	QP
8	17.7020	10.46	26.45	36.91	50.00	-13.09	AVG
9	23.5459	10.59	38.21	48.80	60.00	-11.20	QP
10	23.5459	10.59	31.10	41.69	50.00	-8.31	AVG
11	24.7700	10.59	39.69	50.28	60.00	-9.72	QP
12	24.7700	10.59	33.69	44.28	50.00	-5.72	AVG

Note: Level = Reading + Factor
Margin = Level – Limit



Power	AC 120V	Pol/Phase	NEUTRAL
Test Mode 1	FULL LOAD For YHY-24005000 (24V/5.0A)	Temperature	20 °C
Test Date	Feb. 26, 2017	Humidity	58 %



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	4.0340	10.22	27.71	37.93	56.00	-18.07	QP
2	4.0340	10.22	17.91	28.13	46.00	-17.87	AVG
3	14.1220	10.39	37.78	48.17	60.00	-11.83	QP
4	14.1220	10.39	30.32	40.71	50.00	-9.29	AVG
5	17.5660	10.46	34.40	44.86	60.00	-15.14	QP
6	17.5660	10.46	23.92	34.38	50.00	-15.62	AVG
7	21.4540	10.57	33.17	43.74	60.00	-16.26	QP
8	21.4540	10.57	24.81	35.38	50.00	-14.62	AVG
9	24.4420	10.59	40.51	51.10	60.00	-8.90	QP
10	24.4420	10.59	33.56	44.15	50.00	-5.85	AVG
11	24.8100	10.59	41.10	51.69	60.00	-8.31	QP
12	24.8100	10.59	34.63	45.22	50.00	-4.78	AVG

Note: Level = Reading + Factor

Margin = Level – Limit

Test engineer: Nunu

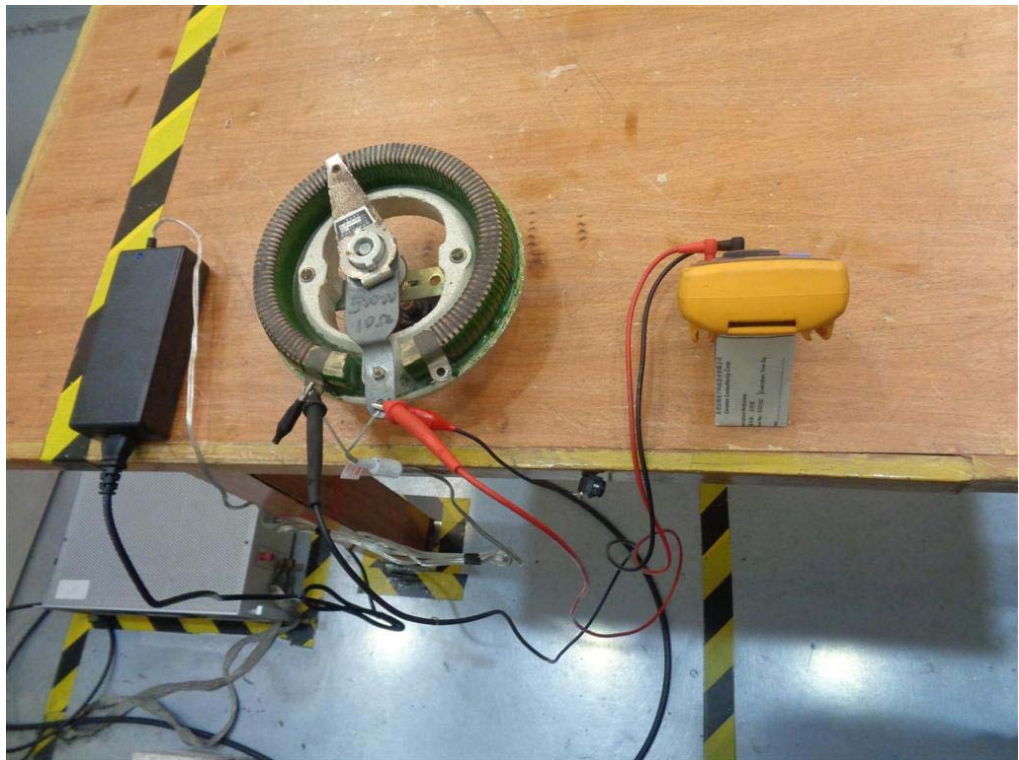


3.6. Test Photographs

Front View



Side View





4. Test of Radiated Emission

4.1. Test Limit

Radiated emissions from 30 MHz to 15,000 MHz were measured with a bandwidth of 120 kHz according to the methods defines in ANSI C63.4-2014. The EUT was placed on a nonmetallic stand in the open-field site, 0.8 meter above the ground plane, as shown in section 3.2. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency (MHz)	Distance Meters	Radiated (μ V / M)	Radiated (dB μ V/ M)
30-88	3	100	40.0
88-216	3	150	43.5
216-960	3	200	46.0
Above 960	3	500	54.0

For unintentional device, according to CISPR PUB.22, for Class B digital devices, the general requirement of field strength of radiated emissions from intentional radiators at a distance of 10 meters shall not exceed the below table.

Frequency (MHz)	Distance Meters	Radiated (dB μ V/ M)
30-230	10	30
230-1000	10	37

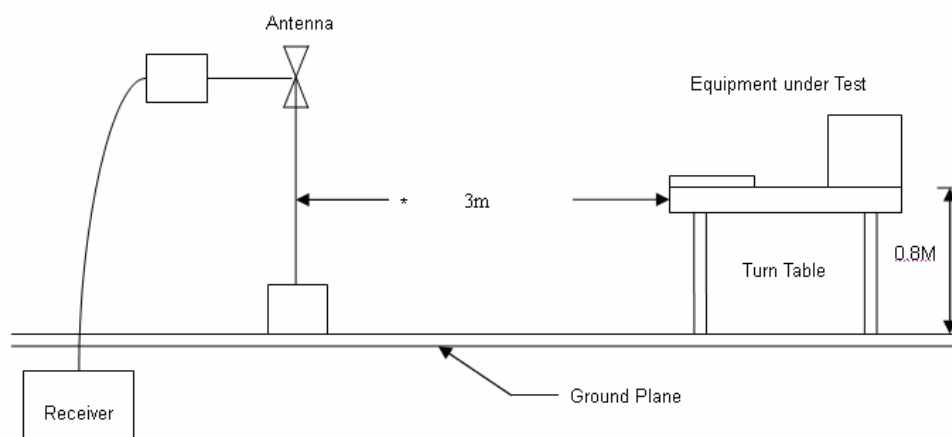


4.2. Test Procedures

- a. The EUT was placed on a relatable table top 0.8 meter above ground.
- b. The EUT was set such that distance from the interference receiving antenna to EUT was 3/10 meters for below 1GHz and 3 meters for above 1GHz. The antenna was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a broadband antenna for below 1GHz and horn antenna for above 1GHz, and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. The bandwidth below 1GHz setting on the strength meter is 120kHz and above 1GHz is 1MHz.

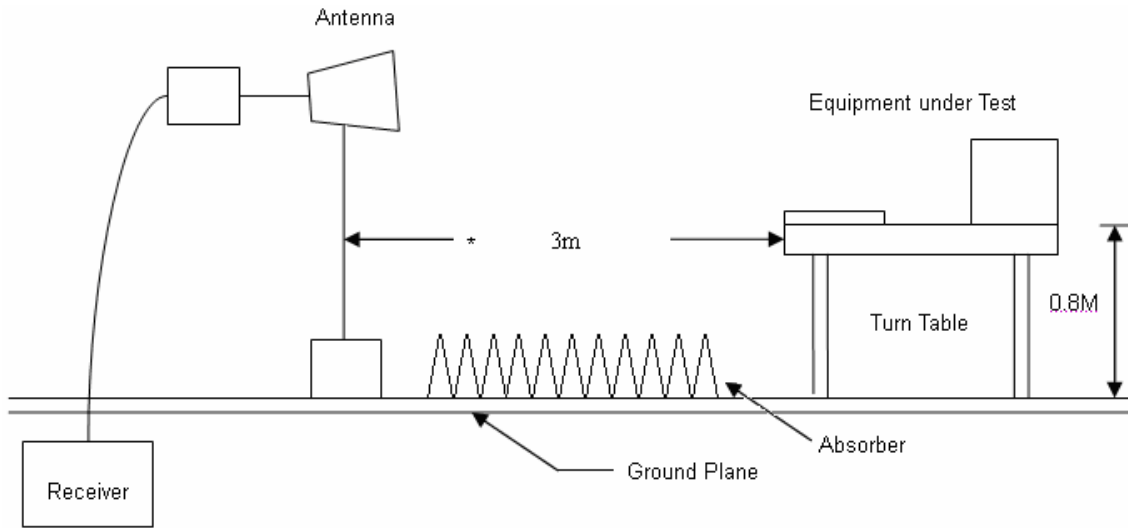
4.3. Typical test Setup

Below 1GHz Test Setup





Above 1GHz Test Setup



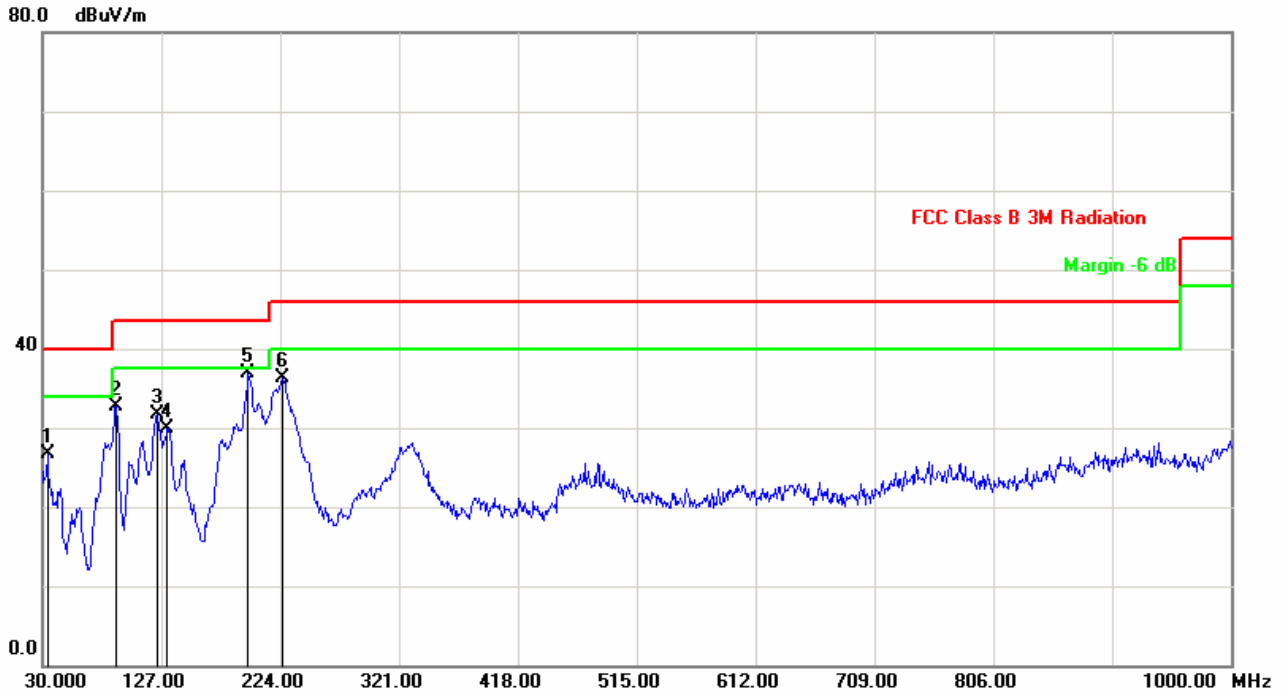
4.4. Measurement equipment

Instrument/Ancillary	Manufacturer	Model No.	Serial No.	Calibration Date	Valid Date.
EMI Test Receiver	R&S	ESCI	100853	2017.02.14	2018.02.13
Preamplifier	HP	8447F	3113A05915	2017.02.14	2018.02.13
Preamplifier	FIELD	AFS44-00101800 -25-10P-44	1579008	2016.09.29	2017.09.28
Ultra Broadband Antenna	SCHAFFNER	CBL6112D	22241	2017.02.14	2018.02.13
Broad-Band Horn Antenna	Sunol	DRH-118	A072913	2016.10.12	2017.10.11
Spectrum Analyzer	Agilent	E4407B	MY45118947	2016.06.06	2017.06.05
Temperature/ Humidity Meter	mingle	ETH529	N/A	2017.02.14	2018.02.13



4.5. Test Result and Data (30MHz ~ 1GHz)

Power	AC 120V	Pol/Phase	HORIZONTAL
Test Mode 1	FULL LOAD For YHY-24005000 (24V/5.0A)	Temperature	22 °C
Test Date	Feb. 26, 2017	Humidity	68 %

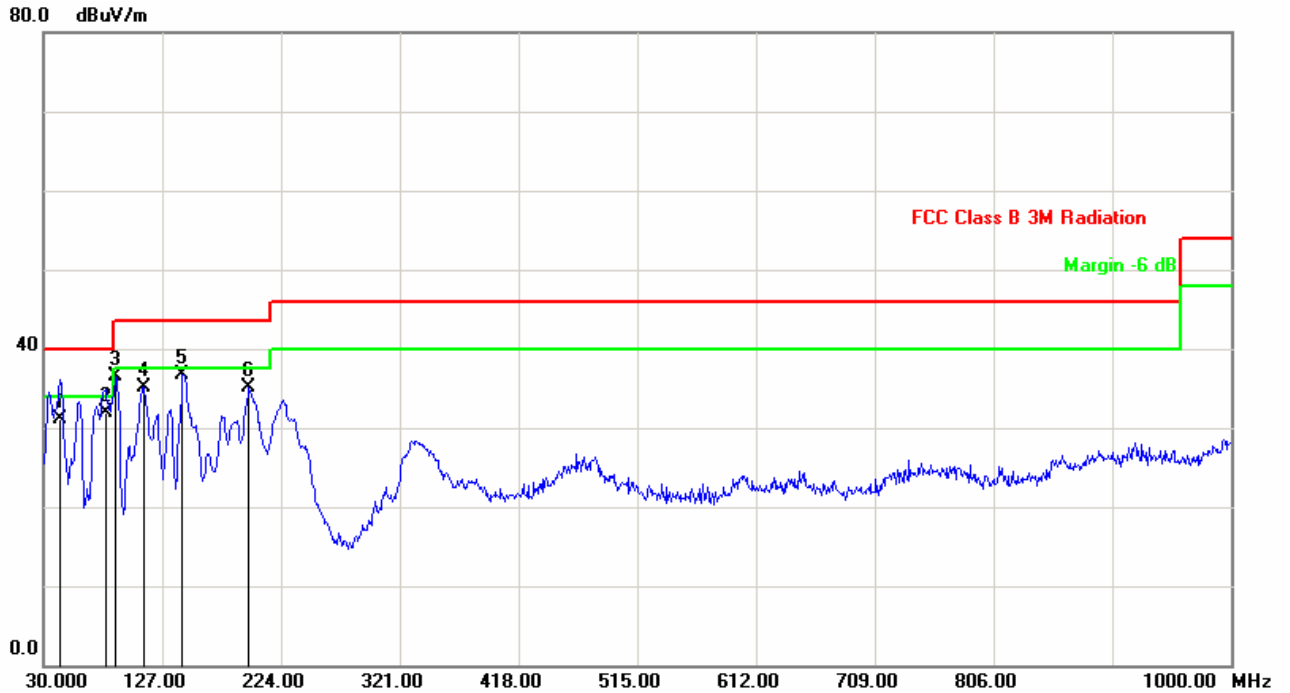


No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	33.8800	-5.41	32.13	26.72	40.00	-13.28	peak	200	166
2	90.1400	-11.37	44.08	32.71	43.50	-10.79	peak	400	256
3	124.0900	-8.31	40.08	31.77	43.50	-11.73	peak	200	349
4	131.8500	-9.15	39.07	29.92	43.50	-13.58	peak	400	12
5	197.8100	-9.77	46.75	36.98	43.50	-6.52	peak	200	315
6	225.9400	-9.56	45.78	36.22	46.00	-9.78	peak	200	128

Note: Level = Reading + Factor
Margin = Level – Limit



Power	AC 120V	Pol/Phase	VERTICAL
Test Mode 1	FULL LOAD For YHY-24005000 (24V/5.0A)	Temperature	22 °C
Test Date	Feb. 26, 2017	Humidity	68 %



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.	Height (cm)	Azimuth (deg)
1	43.5800	-11.77	42.80	31.03	40.00	-8.97	QP	100	126
2	80.4400	-13.39	45.30	31.91	40.00	-8.09	QP	100	236
3	88.2000	-11.58	48.17	36.59	43.50	-6.91	peak	100	36
4	111.4800	-8.43	43.62	35.19	43.50	-8.31	peak	100	189
5	143.4900	-10.80	47.51	36.71	43.50	-6.79	peak	100	349
6	197.8100	-9.77	44.83	35.06	43.50	-8.44	peak	100	278

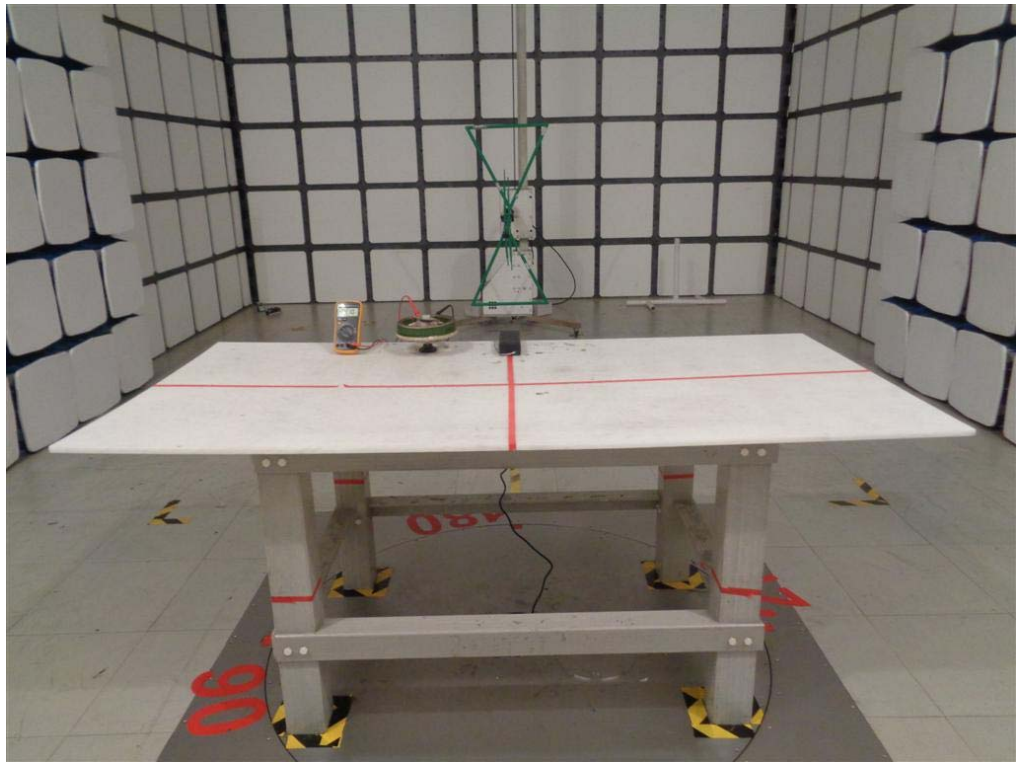
Note: Level = Reading + Factor
 Margin = Level – Limit

Test engineer: Nunu

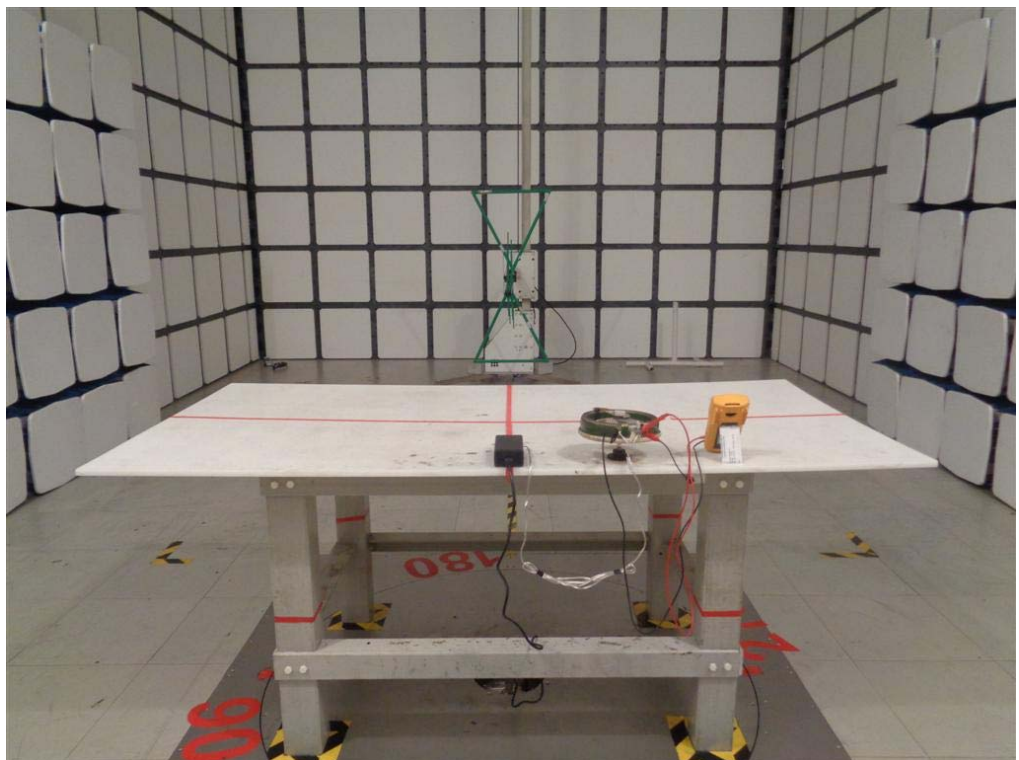


4.6. Test Photographs (30MHz ~ 1GHz)

Front View



Rear View





5. Photographs of EUT

YHY-12010000

1) EUT Photo

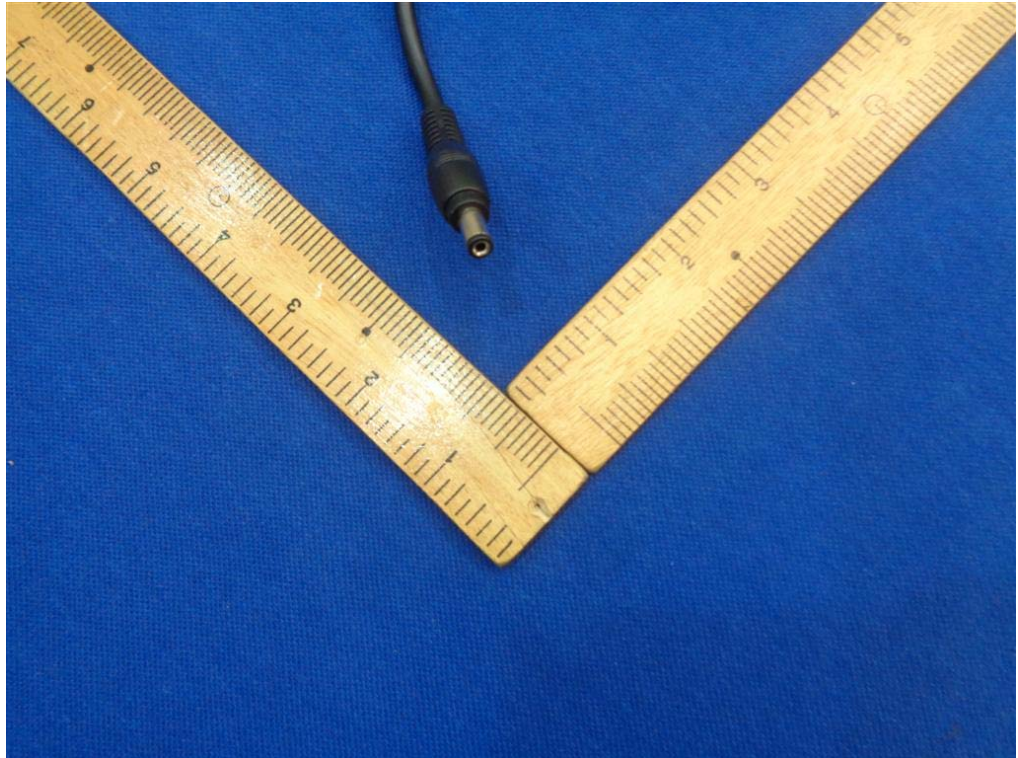


2) EUT Photo





3) EUT Photo



4) EUT Photo





YHY-24005000

5) EUT Photo

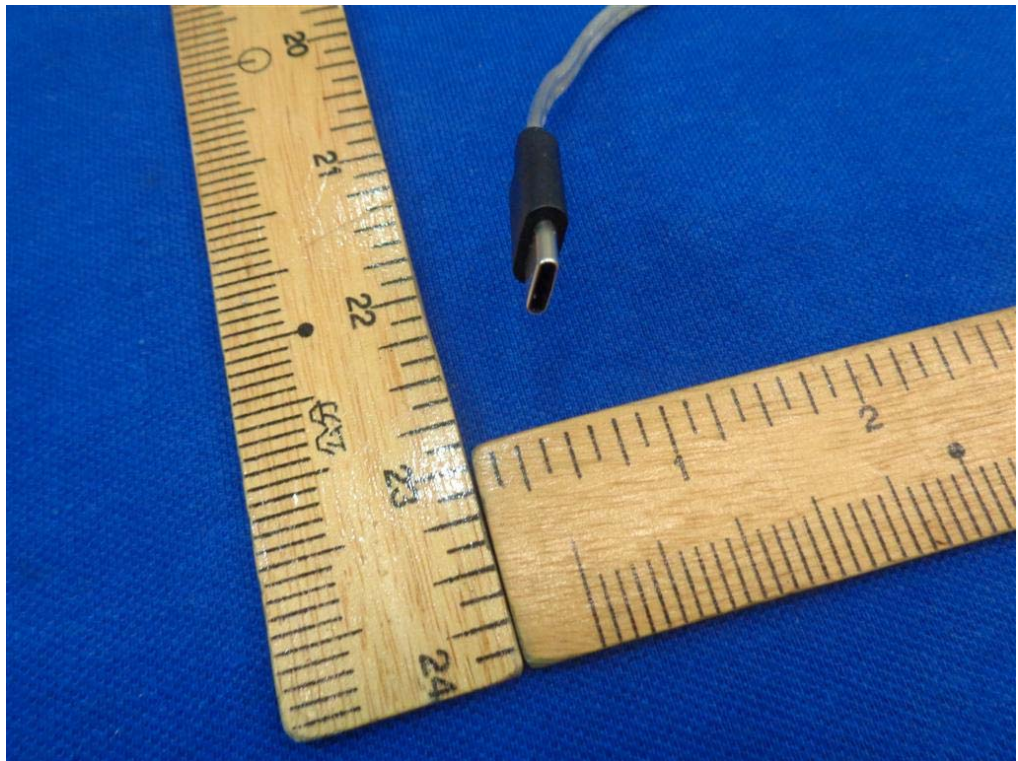


6) EUT Photo

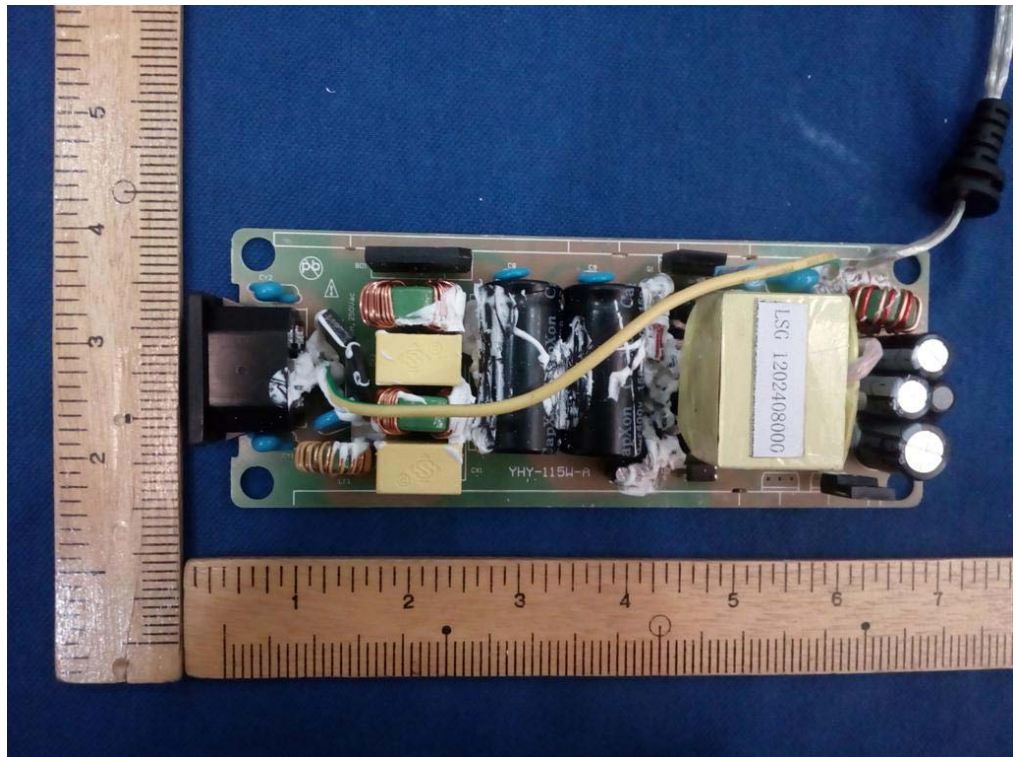




7) EUT Photo

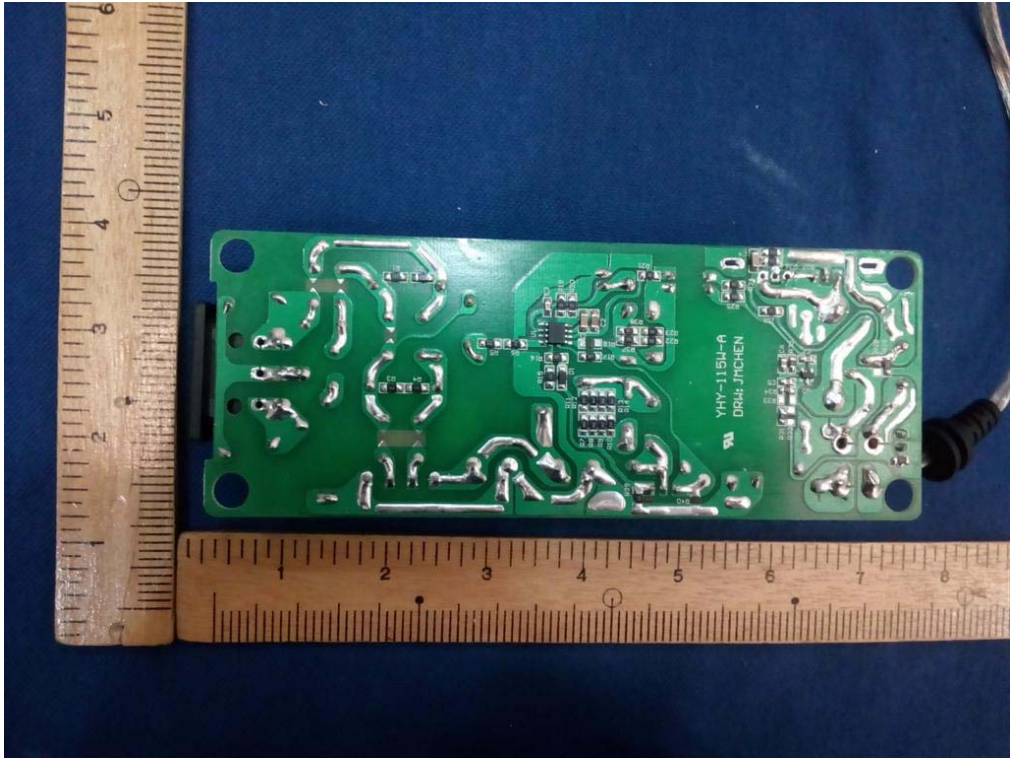


8) EUT Photo





9) EUT Photo



----- End of the report -----