TEST REPORT

Reference No.	:	WTF16S1166736-1E
FCC ID	:	2AKFR-41000
Applicant	:	Hestan Smart Cooking
Address	:	1 Meyer Plaza, Vallejo California 94590, United States
Manufacturer	:	Zhongshan Yalesi Electric Co.,Ltd
Address	:	Shenghui Bei Industrial Area, Nantou Town, Zhongshan City, China
Product Name	:	Portable Induction Cooktop
Model No.	:	41000
Standards	:	FCC PART18: 2016
Date of Receipt sample	:	Nov. 29, 2016
Date of Test	:	Dec. 01 – 20, 2016
Date of Issue	:	Dec. 22, 2016
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
Tel :+86-755-83551033
Fax:+86-755-83552400

Compiled by:

Zero Zhou / Test Engineer

Approved by:

Philo Zhong / Manager

1 Contents

Page

COVER PAGE 1

1 CONTENTS 2

2 REVISION HISTORY 3

3 GENERAL INFORMATION 4

3.1 GENERAL DESCRIPTION OF E.U.T. 4
3.2 DETAILS OF E.U.T. 4
3.3 STANDARDS APPLICABLE FOR TESTING 4
3.4 TEST FACILITY 4
3.5 SUBCONTRACTED 4

4 EQUIPMENT USED DURING TEST 5

4.1 EQUIPMENT LIST 5
4.2 MEASUREMENT UNCERTAINTY 6

5 TEST SUMMARY 7

6 EMISSION TEST RESULTS 8

6.1 CONDUCTED EMISSION, 9 KHZ TO 30 MHZ 8
6.2 RADIATION EMISSION, 9 KHZ TO 30 MHZ 12

7 PHOTOGRAPHS –MODEL 41000 TEST SETUP 19

7.1 PHOTOGRAPH –POWER LINE CONDUCTED EMISSION TEST SETUP AT TEST SITE 1# 19
7.2 PHOTOGRAPH – RADIATED EMISSION TEST SETUP FOR 9 KHZ~30 MHZ 19

8 PHOTOGRAPHS – CONSTRUCTIONAL DETAILS 20

8.1 MODEL 41000 – EXTERNAL PHOTOS 20
8.2 MODEL 41000 – INTERNAL PHOTOS 24

2 Revision History

Test report No.	Date of Receipt sample	Date of Test	Date of Issue	Purpose	Comment	Approved
WTF16S1166736-1E	Nov. 29, 2016	Dec. 01 – 20. 2016	Dec. 20, 2016	original	-	Valid

3 General Information

3.1 General Description of E.U.T.

Product Name	:Portable Induction Cooktop
Model No.	:41000
Model Differences	: N/A
Type of Modulation	: GFSK
Frequency Range	: 2402MHz-2480MHz, separated by 2MHz,40 Channels in total
Bluetooth Version	:4.0 (BLE only)
The Lowest Oscillator	: 32.768KHz
Inveter for Induction heating	: 27KHz
Antenna installation	: PCB Printed Antenna

3.2 Details of E.U.T.

Technical Data : 120V 60Hz 1600W

3.3 Standards Applicable for Testing

The tests were performed according to following standards:

FCC PART 18: 2016 INDUSTRIAL, SCIENTIFIC, AND MEDICAL EQUIPMENT

3.4 Test Facility

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

- **IC – Registration No.: 7760A-1**

Waltek Services(Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration 7760A-1, October 15, 2015.

- **FCC – Registration No.: 880581**

Waltek Services (Shenzhen) Co., Ltd. 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 – 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.

3.5 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: Guangdong CIQ Technology Center

Lab address: No.3, Desheng East Road, Shunde Daliang, Foshan, Guangdong, China

Test items: Radiation Emission

4 Equipment Used during Test

4.1 Equipment List

Conducted Emissions at Mains Terminals Disturbance Voltage(1#)						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	EMI Test Receiver	R&S	ESCI	100947	Sep.12, 2016	Sep.11, 2017
2	LISN	R&S	ENV216	100115	Sep.12, 2016	Sep.11, 2017
3	Cable	Top	TYPE16(3.5M)	-	Sep.12, 2016	Sep.11, 2017

Conducted Emissions at Mains Terminals Disturbance Voltage(2#)						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	EMI Test Receiver	R&S	ESCI	101155	Sep.12, 2016	Sep.11, 2017
2	LISN	SCHWARZBECK	NSLK 8128	8128-289	Sep.12, 2016	Sep.11, 2017
3	Limiter	York	MTS-IMP-136	261115-001-0024	Sep.12, 2016	Sep.11, 2017
4	Cable	**Laplace**	RF300	-	Sep.12, 2016	Sep.11, 2017

Radiation Emission, 9KHz~30MHz						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No**	**Last Calibration Date**	**Calibration Due Date**
1	10m Semi-anechoic chamber	Frankonia GabH	SAC10	F069042	Aug.15, 2016	Aug.14,2017
2	EMI Test Receiver(20Hz-40GHz)	ROHDE&SCHWARZ	ESU40	100298	Aug.15, 2016	Aug.14,2017
3	loop Antenna(φ0.6m ,9 kHz-30MHz)	TESEQ	HLA6120	25435	Jan.12, 2016	Jan.11, 2017
4	Turntable And Antenna Controller	FRANKONIA	FC02	N/A	N/A	N/A

4.2 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±3.64dB	(1)
Radiation Emission	30MHz~1GHz	±5.03dB	(1)
	1GHz~6GHz	±5.47dB	(1)

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

5 Test Summary

Test Item	Test Requirement	Test Method	Test Result
Conduction Emission (9kHz to 30MHz)	18.307(a)	ANSI C63.4: 2014 FCC Measurement Procedure MP-5	C
Radiated Emission (9KHz to 30MHz)	18.305(b)	ANSI C63.4: 2014 FCC Measurement Procedure MP-5	C
Note: C=Compliance; NC=Not Compliance; NT=Not Tested; N/A=Not Applicable			

6 Emission Test Results

6.1 Conducted Emission, 9 KHz to 30 MHz

Test Requirement ..... : FCC CFR 47 Part 18 Section 18.307(c)

Test Method ..... : ANSI C63.4:2014 and FCC Measurement Procedure MP-5

Test Result ..... : Pass

Frequency Range ..... : 9 kHz to 30 MHz

Limit ..... :

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.009-0.05	110	—
0.05-0.15	90-80*	—
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

6.1.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 23°C

Humidity ..... : 53.6%RH

Atmospheric Pressure..... : 101kPa

EUT Operation:

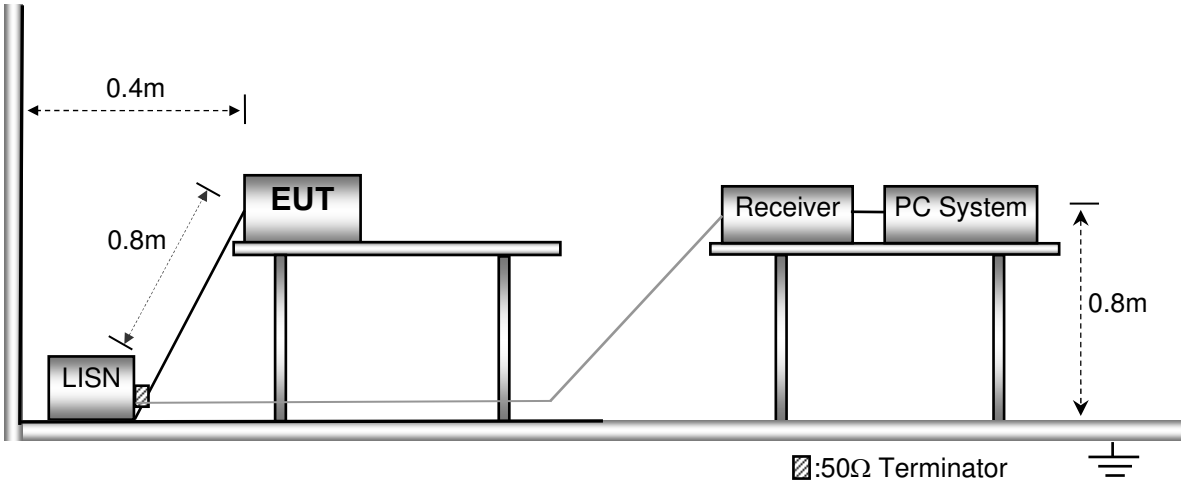
Input Voltage..... : AC 120V/60Hz

Operating Mode ..... : Working on Maximum power, Working on Minimum power

All test mode were tested and passed, Only the worst case mode< Working on Maximum power > which were recorded in this report.

6.1.2 Block Diagram of Test Setup

The Mains Terminals Disturbance Voltage tests were performed in accordance with the ANSI C63.4 .

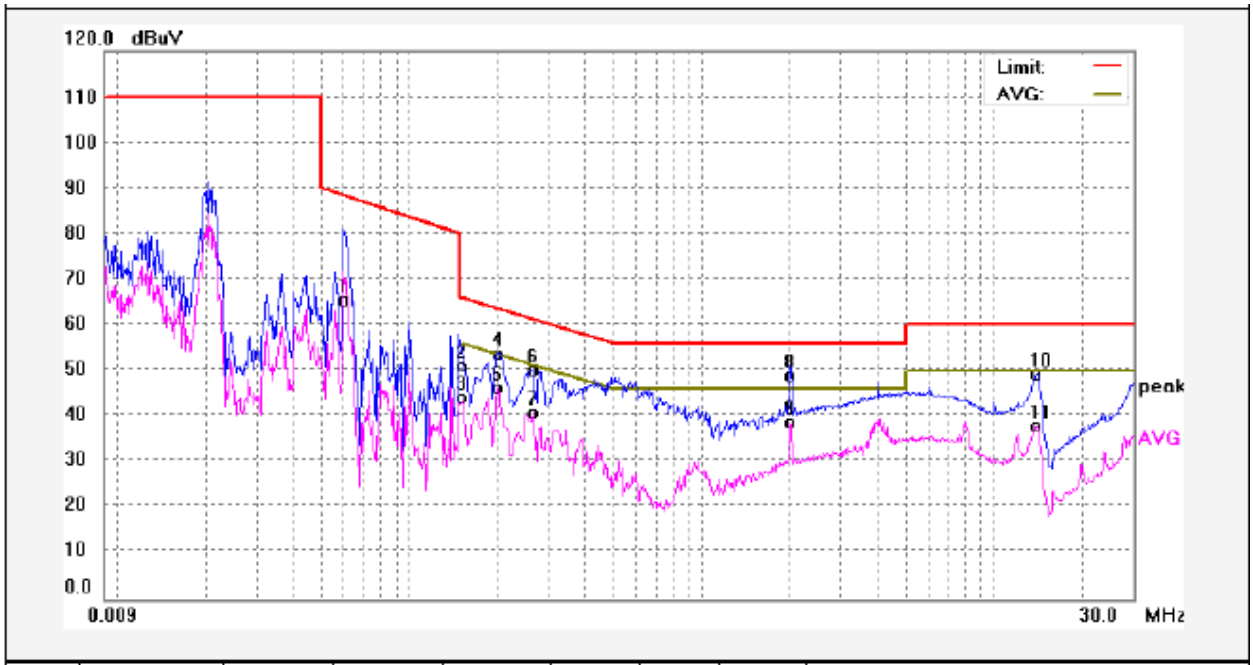


6.1.3 Measurement Data

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.

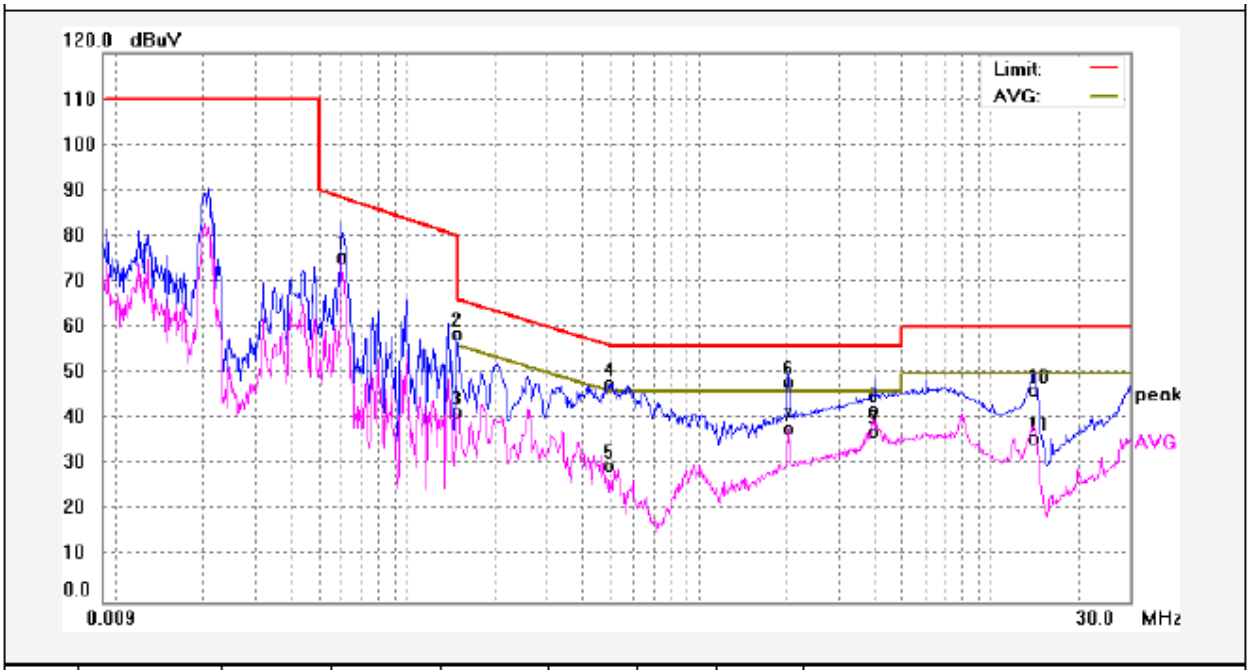
6.1.4 Power Line Conducted Emission Test Data

Live Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.0597	55.68	9.72	65.40	88.39	-22.99	QP	
2	0.1500	41.55	9.64	51.19	65.99	-14.80	QP	
3	0.1500	34.72	9.64	44.36	55.99	-11.63	AVG	
4	0.2005	44.28	9.62	53.90	63.59	-9.69	QP	
5	0.2005	36.87	9.62	46.49	53.59	-7.10	AVG	
6	0.2645	40.73	9.64	50.37	61.29	-10.92	QP	
7	0.2645	31.26	9.64	40.90	51.29	-10.39	AVG	
8	2.0125	39.21	9.95	49.16	56.00	-6.84	QP	
9	2.0125	29.00	9.95	38.95	46.00	-7.05	AVG	
10	13.9845	39.11	10.22	49.33	60.00	-10.67	QP	
11	13.9845	27.81	10.22	38.03	50.00	-11.97	AVG	

Neutral Line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.0594	65.76	9.72	75.48	88.43	-12.95	QP	
2	0.1500	48.99	9.64	58.63	65.99	-7.36	QP	
3	0.1500	32.03	9.64	41.67	55.99	-14.32	AVG	
4	0.4965	38.25	9.65	47.90	56.06	-8.16	QP	
5	0.4965	20.28	9.65	29.93	46.06	-16.13	AVG	
6	2.0205	38.07	9.95	48.02	56.00	-7.98	QP	
7	2.0205	27.99	9.95	37.94	46.00	-8.06	AVG	
8	4.0165	32.18	9.94	42.12	56.00	-13.88	QP	
9	4.0165	27.39	9.94	37.33	46.00	-8.67	AVG	
10	14.0925	36.06	10.22	46.28	60.00	-13.72	QP	
11	14.0925	25.57	10.22	35.79	50.00	-14.21	AVG	

6.2 Radiation Emission, 9 KHz to 30 MHz

Test Requirement ..... : FCC CFR 47 Part 18 Section 18.305(b)

Test Method ..... : ANSI C63.4:2014 and FCC Measurement Procedure MP-5

Test Result ..... : Pass

Frequency Range ..... : 9 KHz to 30MHz

Limit

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field Strength Limit at 30m Measurement (uV/m)	Field Strength Limit at 10m Measurement (dBuV/m)
Induction cooking ranges	Below 90 kHz On or above 90kHz	Any Any	1500 300	73.50 59.5

6.2.1 E.U.T. Operation

Operating Environment:

Temperature ..... : 23°C

Humidity ..... : 54.1%RH

Atmospheric Pressure..... : 101kPa

EUT Operation:

Input Voltage..... : AC 120V/60Hz

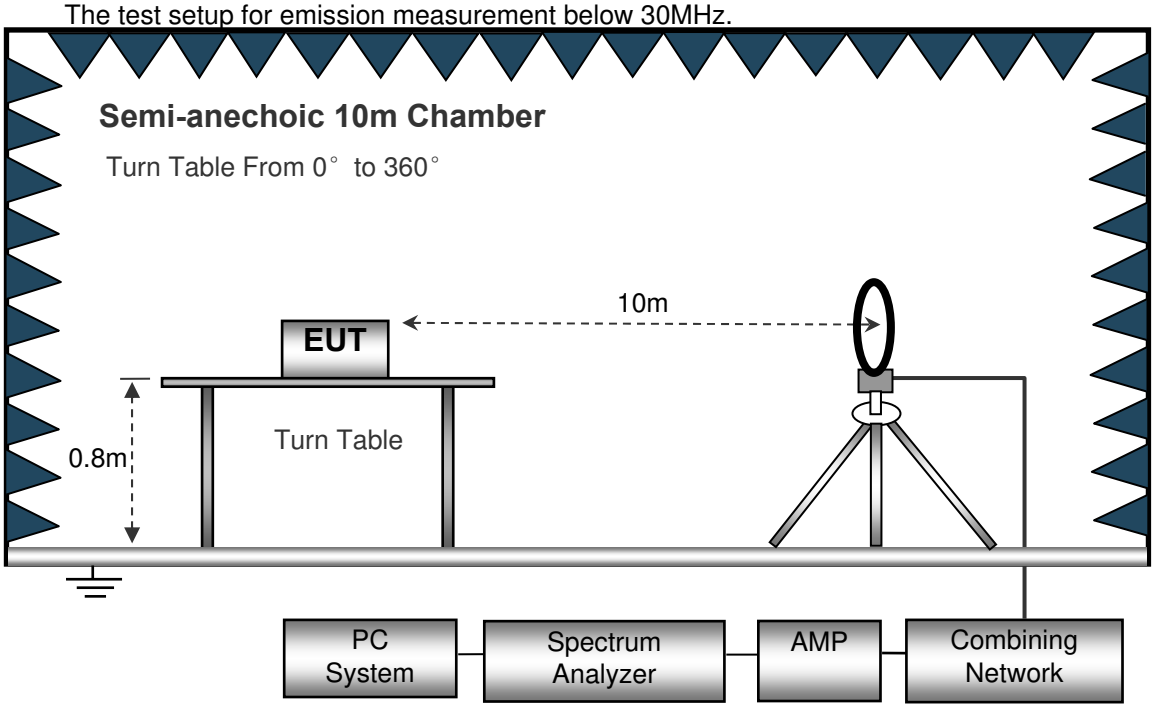
Operating Mode ..... : Working on Maximum power, Working on Minimum power

All test mode were tested and passed, Only the worst case mode< Working on Maximum power > which were recorded in this report.

6.2.2 Block Diagram of Test Setup

The radiated emission tests were performed in the 10m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4.

The test setup for emission measurement below 30MHz.



6.2.3 Test Procedure

1. The EUT is placed on a turntable. the EUT 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 10m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.
4. Except as otherwise indicated in paragraphs §15.33 (b) (2) or §15.33 (b)(3) of this section, for an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

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.

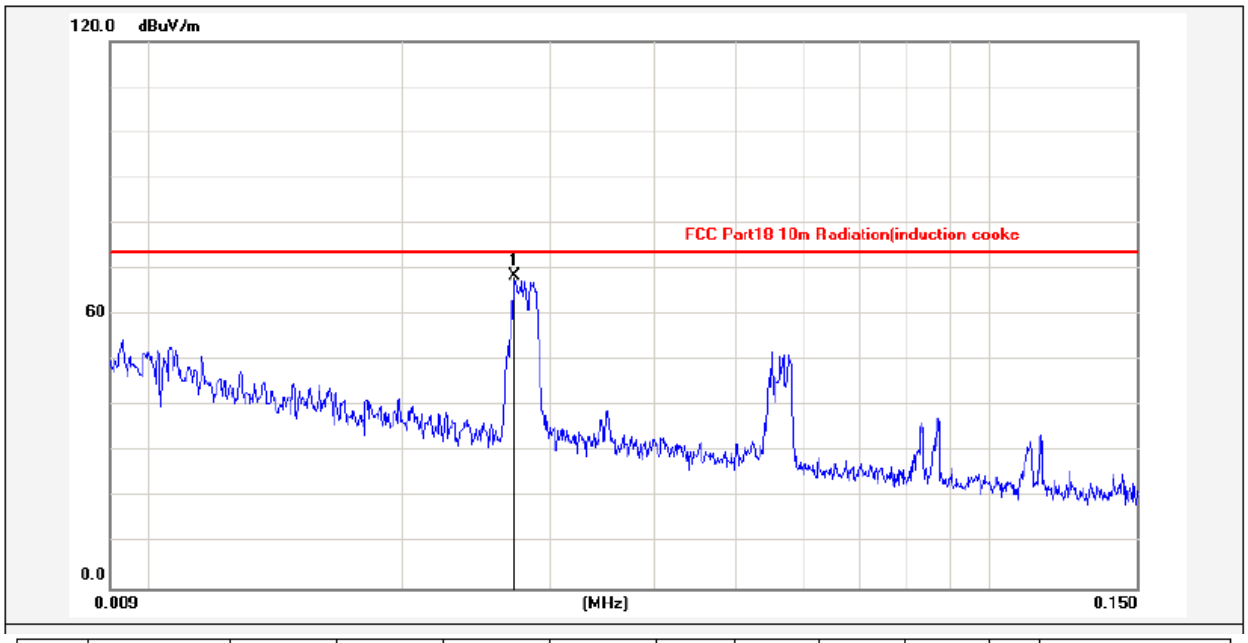
5. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
6. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
7. Repeat above procedures until the measurements for all frequencies are complete.
8. The radiation measurements are tested under 3-axes(X, Y, Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), after pre-test, It was found that the worse radiation emission was get at the Z position. So the data shown was the Z position only.

6.2.4 Measurement Data

The maximised peak emissions from the EUT was scanned and measured for both the Antenna Vertical Polarization and Antenna Horizontal Polarization. Quasi-peak measurements were performed if peak emissions were within 6dB of the Quasi-peak limit line.

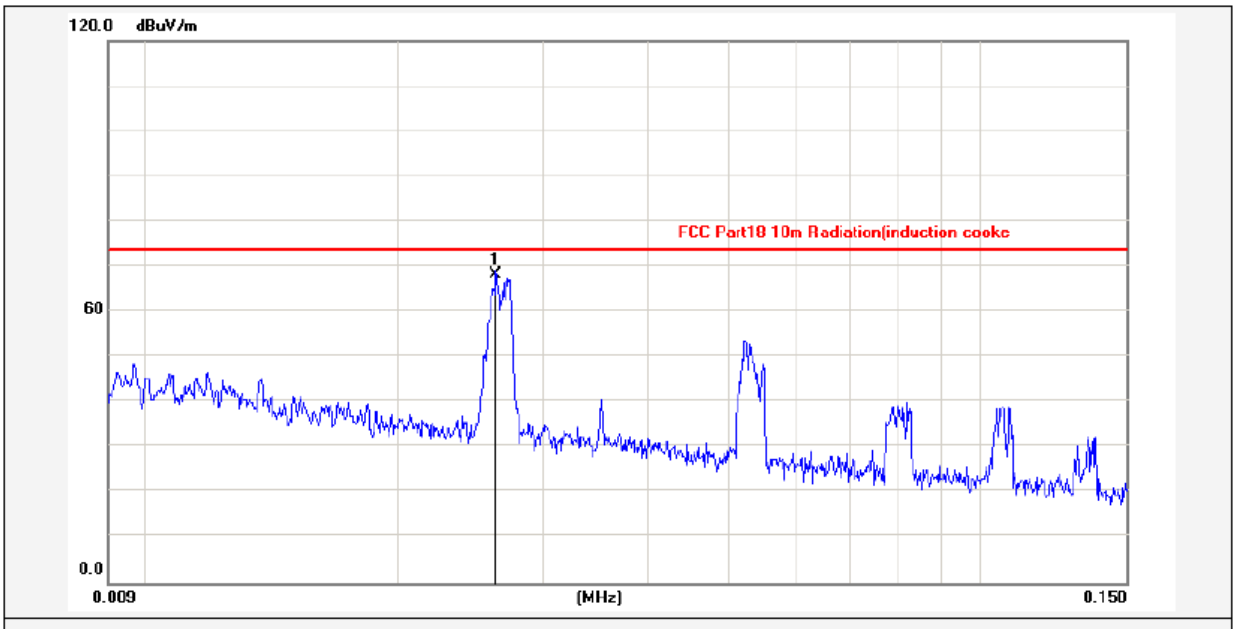
6.2.5 Radiated Emission Test Data,9KHz to 30MHz

0.009MHz to 0.150MHz Antenna Polarization: Vertical



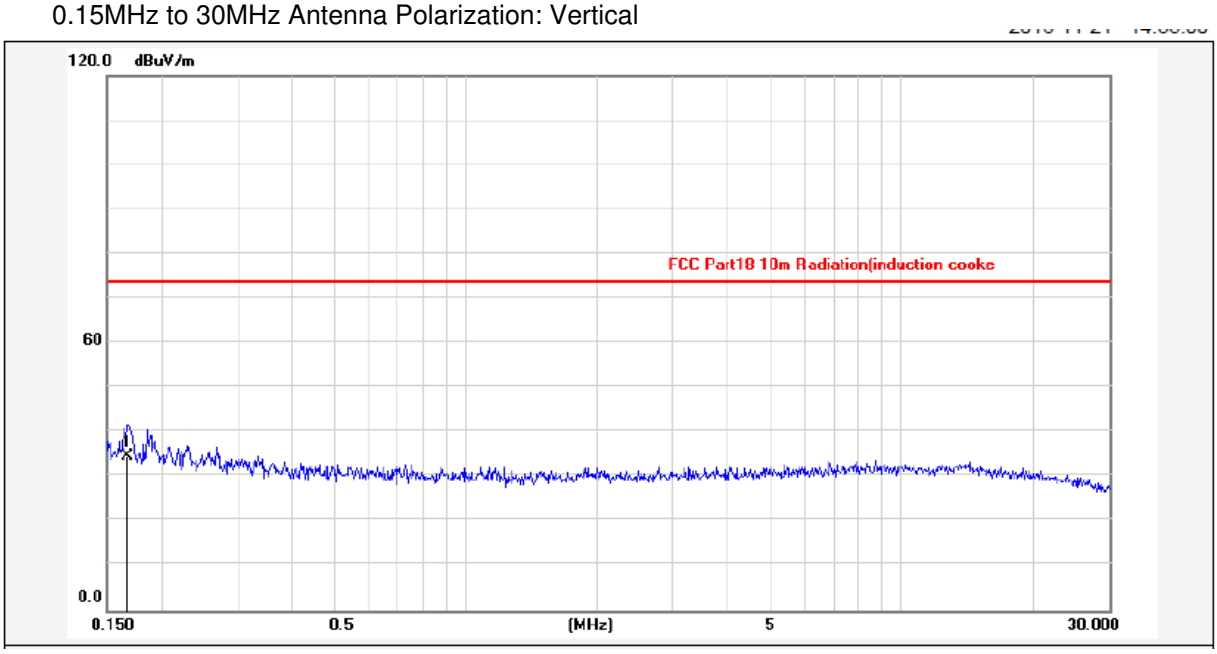
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	0.0273	20.25	48.25	68.50	73.50	-5.00	QP			P	

0.009MHz to 0.150MHz Antenna Polarization: Horizontal



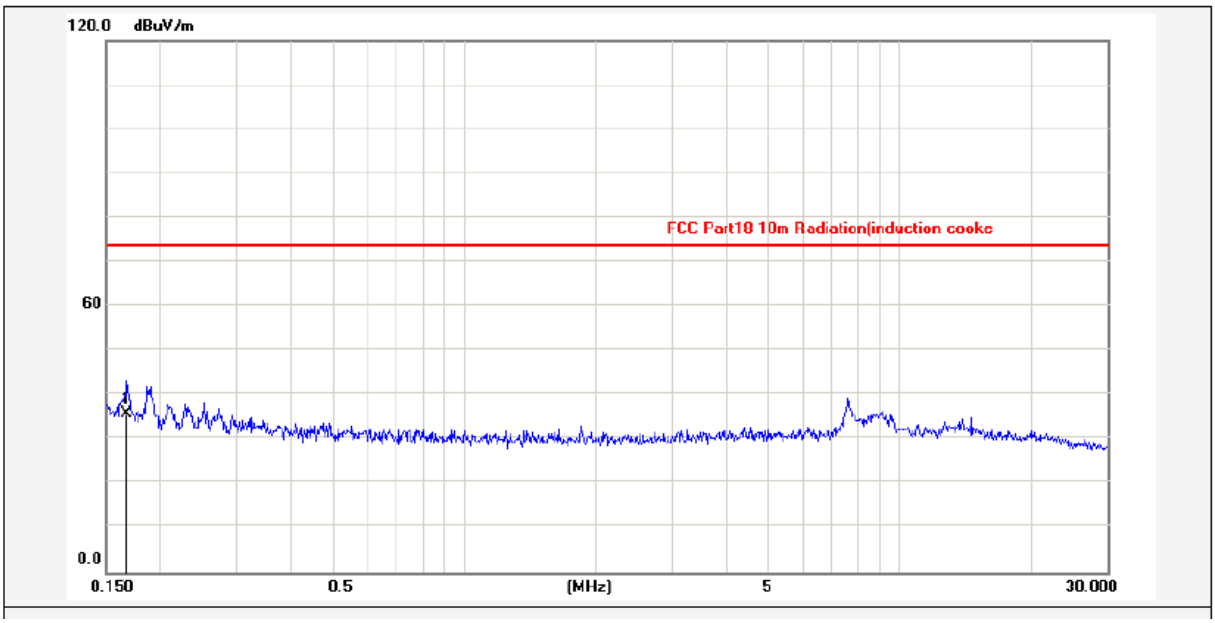
No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	0.0263	20.28	48.02	68.30	73.50	-5.20	QP			P	

0.15MHz to 30MHz Antenna 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	0.1677	20.31	14.39	34.70	73.50	-38.80	QP			P	

0.15MHz to 30MHz Antenna Polarization: Horizontal

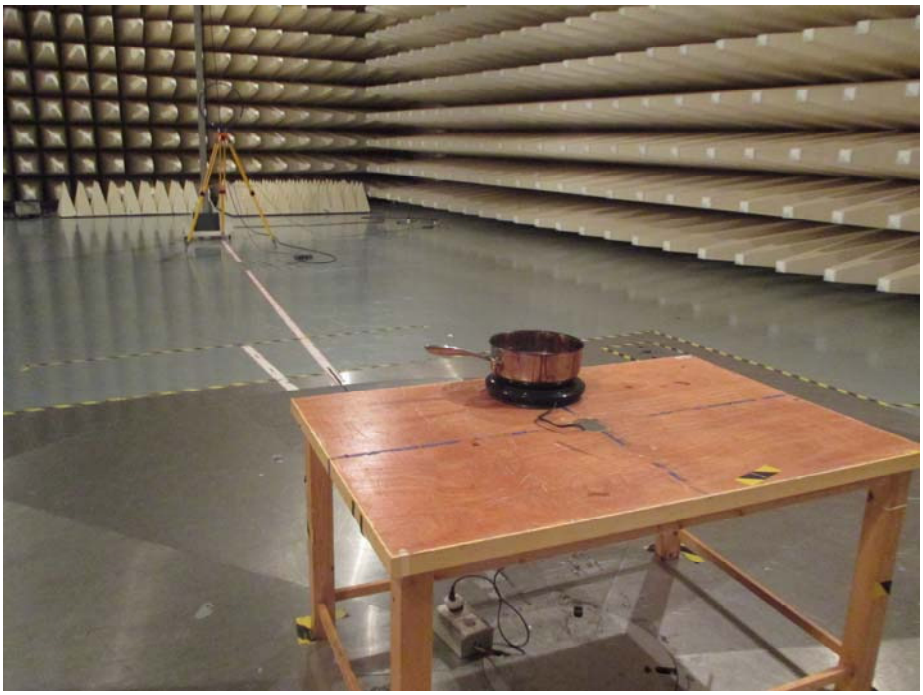


No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	0.1677	20.31	15.59	35.90	73.50	-37.60	QP			P	

7 Photographs –Model 41000 Test Setup

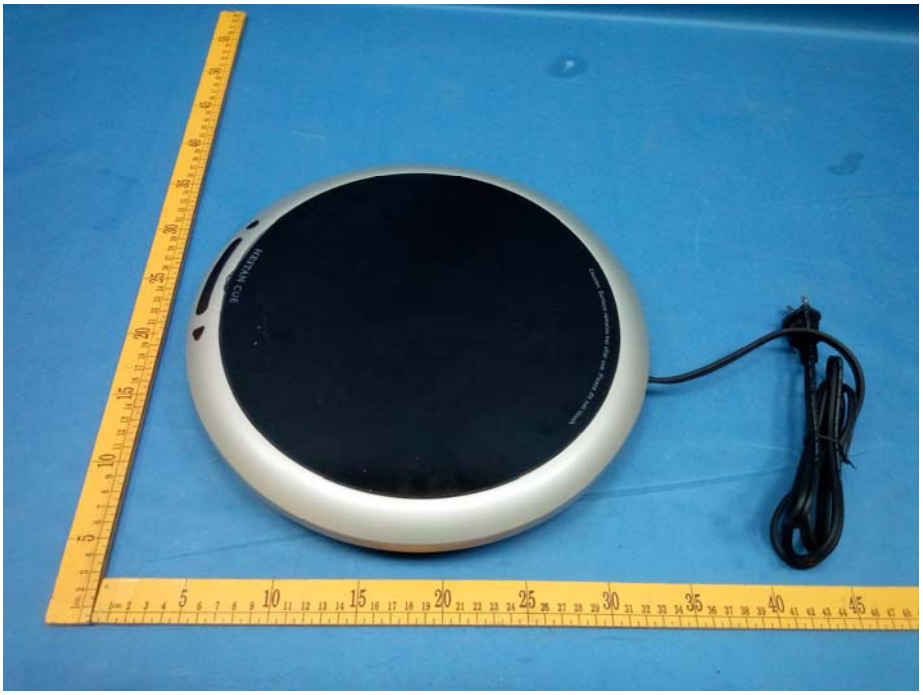
7.1 Photograph –Power Line Conducted Emission Test Setup at test site 1#

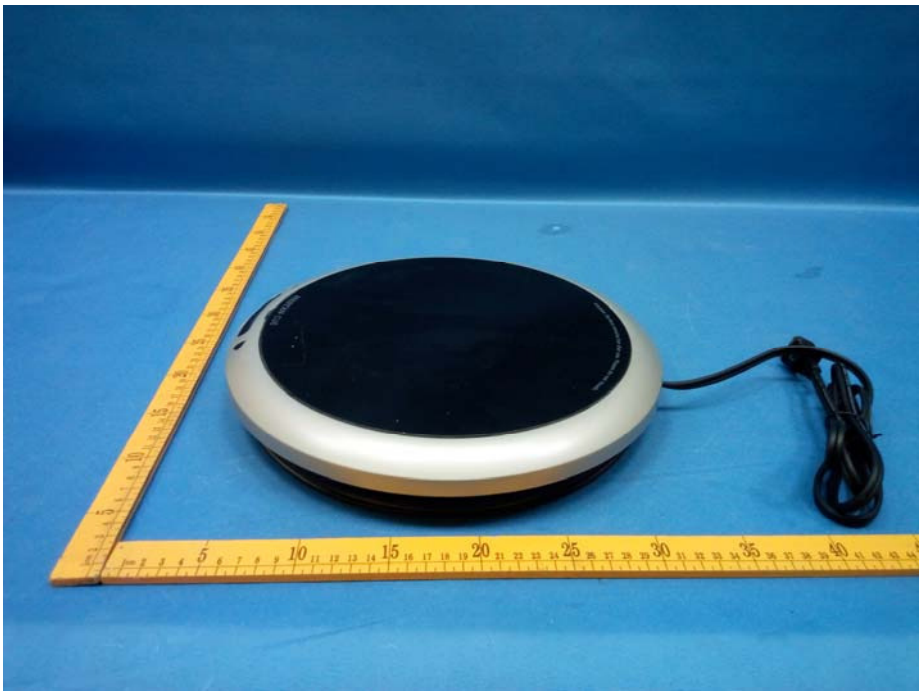
7.2 Photograph – Radiated Emission Test Setup for 9 KHz~30 MHz



8 Photographs – Constructional Details

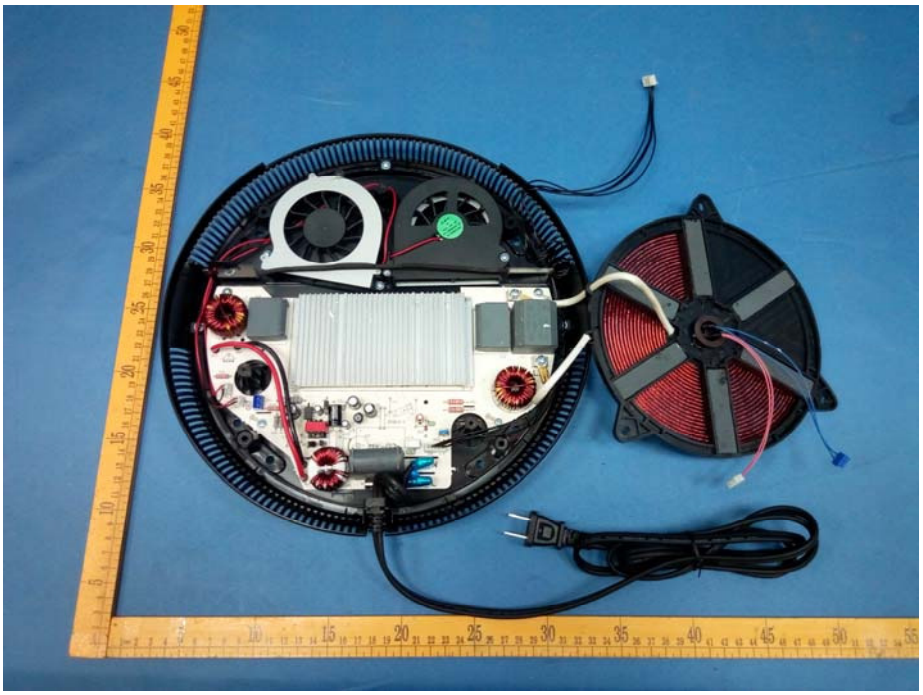
8.1 Model 41000 – External Photos

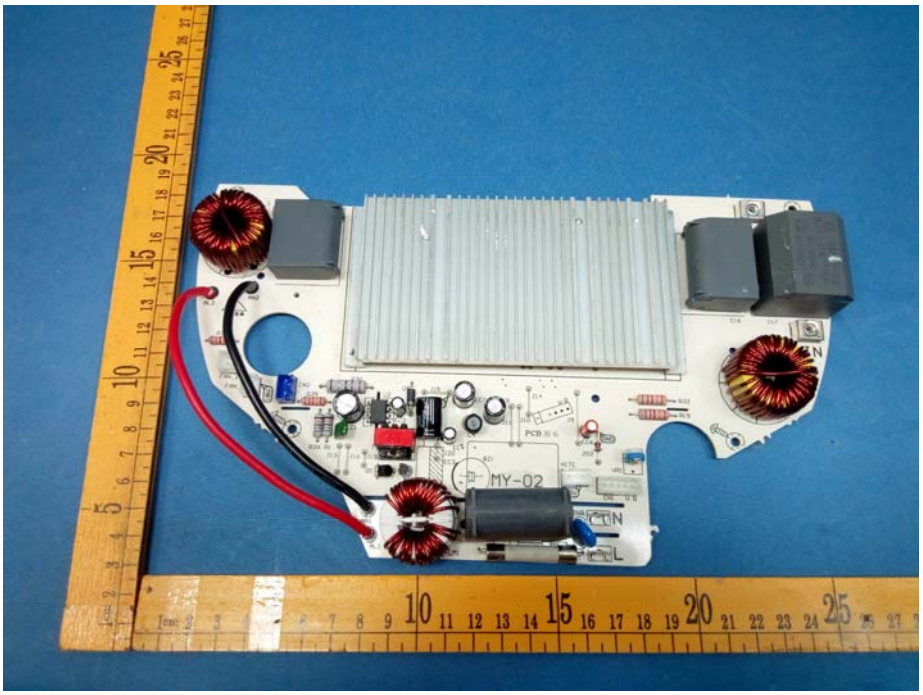


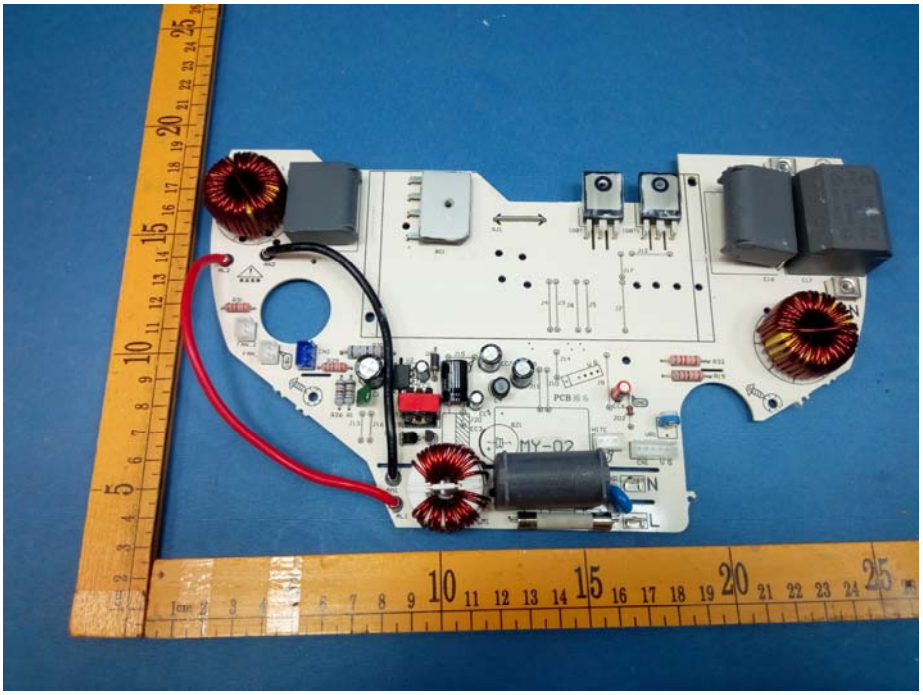


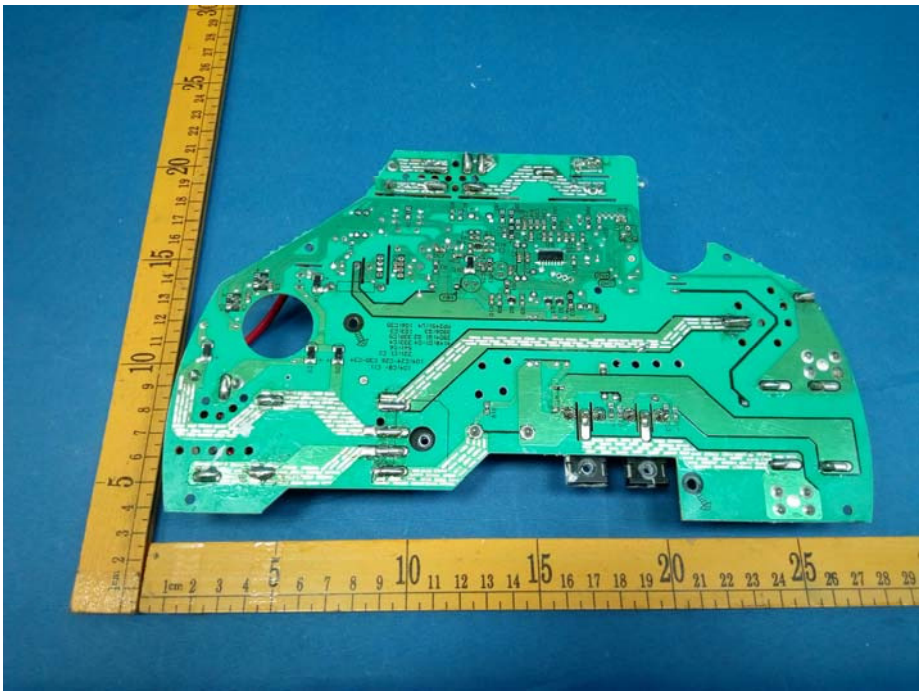
HESTAN CUE

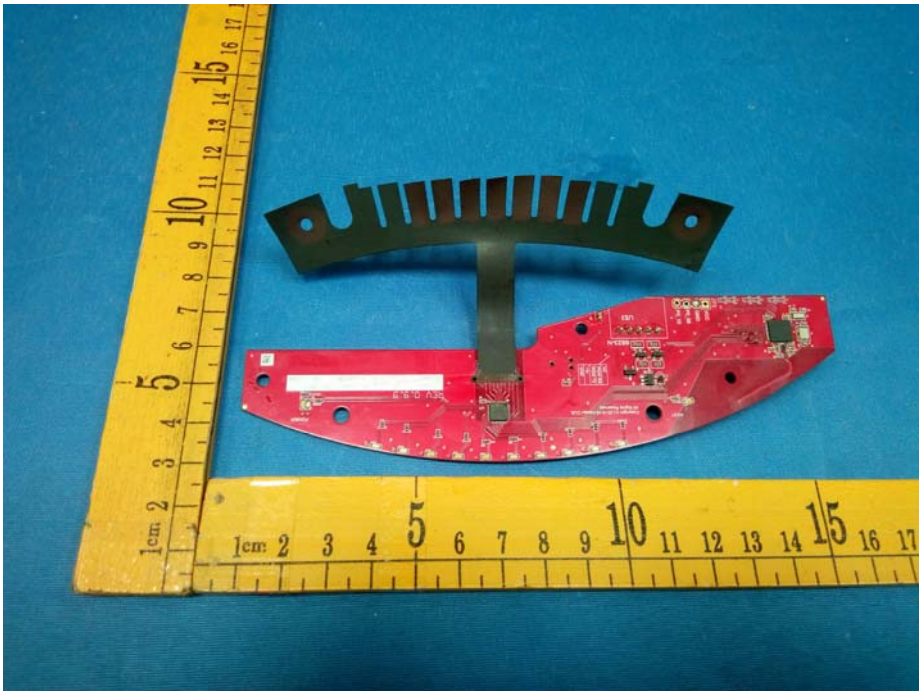
8.2 Model 41000 – Internal Photos

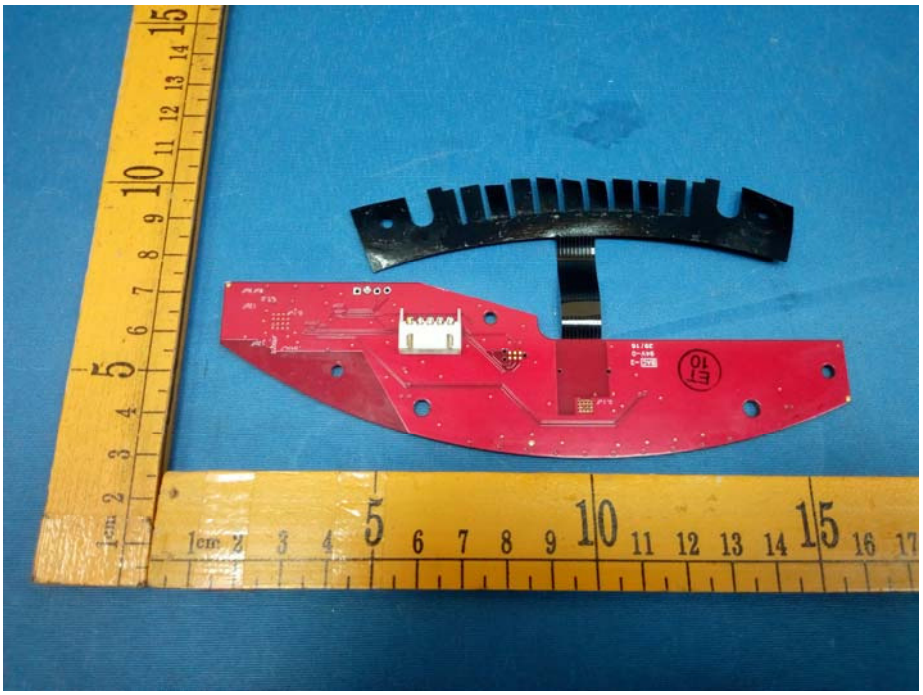



MY-02


MY-02







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