FCC Part 18

TEST REPORT

For

Multi-functional induction cooker

MODEL NUMBER: HB3001U, HB3002U

REPORT NUMBER: 4788969893.1

FCC ID No.: 2ATJNHIR3004-1

ISSUE DATE: May 10, 2019

Prepared for

Dongguan Hyxion Metal Technology Co., Ltd
Yinghua Industry Park, Yaojun Village, Hongmei Town, Dongguan City, Guangdong Province, China

Prepared by

UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch
Room 101, Building 10, Innovation Technology Park,
Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China
Tel: +86 769 33817100
Fax: +86 769 33244054
Website: www.ul.com

Revision History

Rev.	Issue Date	Revisions	Revised By
--	05/10/2019	Initial Issue	

Summary of Test Results				
Standard	**Test Item**	**Limit**	**Result**	**Remark**
FCC CFR 47 Part 18	Conducted Disturbance	Class B	PASS	
	Radiated Disturbance below 1 GHz	Class B	PASS	
	Radiated Disturbance above 1 GHz	Class B	N/A	**NOTE (1)**

Note:
(1) "N/A" denotes test is not applicable in this Test Report
(2) This device operating fequrence is below 1.705MHz.

CONTENTS

1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name:	Dongguan Hyxion Metal Technology Co., Ltd
Address:	Yinghua Industry Park, Yaojun Village, Hongmei Town, Dongguan City, Guangdong Province, China

Manufacturer Information

Company Name:	Same as the applicant
Address:	Same as the applicant

EUT Information

EUT Name:	Multi-functional induction cooker
Model:	HB3001U
Brand:	N/A
Sample Status:	Normal
Sample ID:	*1
Sample Received Date:	Apr 25, 2019
Date of Tested:	Apr 26, 2019~May 10,2019

APPLICABLE STANDARDS	
STANDARDS	**TEST RESULTS**
FCC CFR 47 Part 18	**PASS**

Prepared By:

Chris Chen
Engineer Project Associate

Checked By:

Shawn Wen
Laboratory Leader

Approved By:

Stephen Guo

Laboratory Manager

2. TEST METHODOLOGY

All tests were performed in accordance with the standard FCC CFR 47 Part 18(FCC OST/ MP-5:1986)

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	**A2LA (Certificate No.: 4338.01)** Shenzhen STS Test Services Co., Ltd. has been assessed and proved to be in compliance with A2LA.

Note: All tests measurement facilities use to collect the measurement data are located at **1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road, Fuyong Street, Bao'an District, Shenzhen, Guangdong, China**

4. CALIBRATION AND UNCERTAINTY

4.1. Measuring Instrument Calibration

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Measurement Frequency Range	K	U(dB)
Conducted disturbance at mains terminals ports	0.15MHz ~ 30MHz	2	2.70 dB
Conducted disturbance at mains terminals ports	0.09MHz ~ 0.15MHz	2	3.18 dB
Radiated disturbance Test	0.09MHz ~ 30MHz	2	2.50 dB
Radiated disturbance Test	Below 1GHz	2	3.57 dB
Radiated disturbance Test	Above 1GHz	2	-- dB
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.			

5. EQUIPMENT UNDER TEST

5.1. Description of EUT

EUT Name	Multi-functional induction cooker		
EUT Discription	The device is a Multi-functional induction cooker		
Model	HB3001U		
Series Model	HB3002U		
Model Difference	There're all the design, construction, properties, components same; The product design includes 4 types of drive boards, A,B,C and D; model HB3001U contains each drive board, model HB3002U only 3 drive board were assembled.		
Rated Input	Dual phase 4 line 240V 60Hz 7200W		
Power Supply	--	Input	Dual phase 4 line 240V 60Hz
		Output	--
	--		

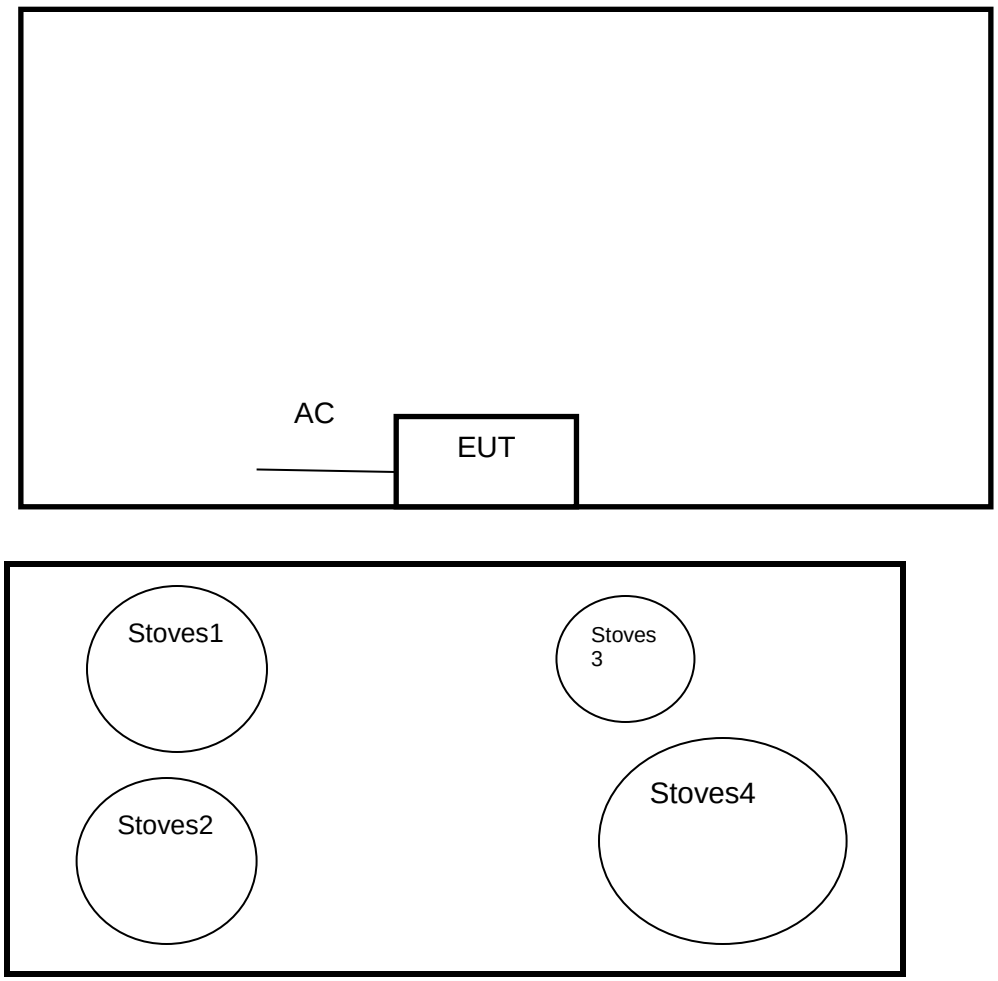
5.2. Test Mode

Test Mode	Description
Mode 1	Normal Working on stoves1
Mode 2	Normal Working on stoves2
Mode 3	Normal Working on stoves3
Mode 4	Normal Working on stoves4
Mode 5	Normal Working on 4 pcs stoves

5.3. EUT Accessory

Item	Accessory	Brand Name	Model Name	Description
1	Enamelware	/	/	Diameter18.5cm*Height14 cm
2	Enamelware	/	/	Diameter 11.5cm*Height14 cm

5.4. Block Diagram Showing the Configuration of System Tested



The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Specification	Series No.
1	3-phase transformer	--	16kVA	--	--

Item	Type of cable	Shielded Type	Ferrite Core	Length
--	--	--	--	--

6. MEASURING EQUIPMENT AND SOFTWARE USED

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
EMI Test Receiver	R&S	ESCI	101427	2018.10.13	2019.10.12
Active Loop Antenna	ZHINAN	ZN30900C	16035	2018.03.11	2021.03.10
Bi-log Antenna	TESEQ	CBL6111D	34678	2017.11.02	2020.11.01
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1343	2018.10.19	2021.10.18
Pre-amplifier(1G-18G)	SKET	LNPA-01018G-45	SK2018080901	2018.10.13	2019.10.12
Pre-amplifier(0.1M-3GHz)	EM	EM330	060665	2018.10.13	2019.10.12
Temperature & Humidity	Mieo	HH660	N/A	2018.10.11	2019.10.10
Spectrum Analyzer	Agilent	N9020A	MY49100060	2018.10.13	2019.10.12
Low frequency cable	EM	R01	N/A	NCR	NCR
High frequency cable	SCHWARZBECK	AK9515H	SN-96286/96287	NCR	NCR
Semi-anechoic chamber	Changling	966	N/A	2018.10.13	2019.10.12
RE Cable (9K-1G)	N/A	R01	N/A	2018.10.13	2019.10.12
RE Cable (1G-18G)	N/A	R02	N/A	2018.10.13	2019.10.12
LISN	SCHWARZBECK	NNLK 8129	8129178	2018.10.13	2019.10.12
LISN	ETS	3810/2NM	00023625	2018.10.11	2019.10.10
Absorbing Clamp	R&S	MDS-21	100668	2018.10.17	2019.10.16
CE Cable	N/A	C01	N/A	2018.10.13	2019.10.12
Power Meter	STS S094	PF9901	G100731CJ351244	2019.03.02	2020.03.01

NOTE: Equipments above have been calibrated and are in the period of validation.

7. EMISSION TEST

7.1. Conducted Disturbance Measurement

7.1.1. Limits of conducted disturbance voltage

(A) All other part 18 consumer devices:		
Frequency of emission (MHz)	**Conducted limit (dBμV)**	
	Quasi-peak	**Average**
0.009 to 0.05	110	--
0.05 to 0.15	90 to 80*	--
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

Note:

(1) The limit decreases linearly with the logarithm of the frequency in therange 0.05 MHz to 0.5MHz.

(2) The lower limit is applicable at the transition frequency.

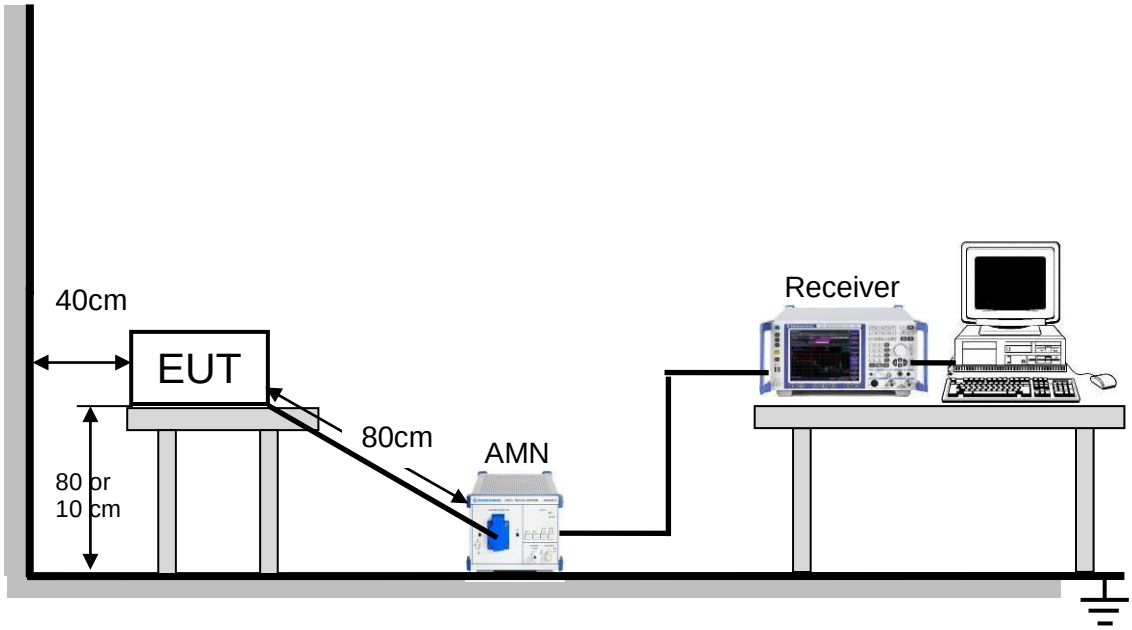
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15/0.45 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

7.1.2. Test Procedure

a. The EUT was placed 0.8 or 0.1 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item:EUT Test Photos.

7.1.3. Test Setup



For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

7.1.4. Test Environment

Temperature:	25.1℃
Humidity:	62%
ATM pressure:	101kPa

7.1.5. Test Mode

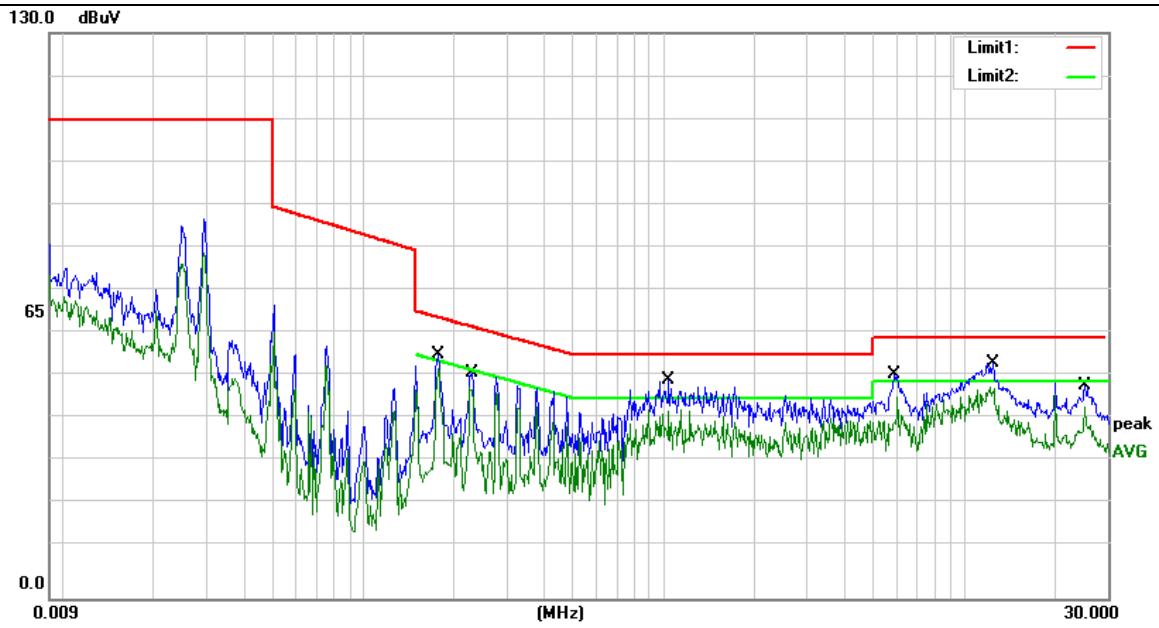
Pre-test Mode:	Mode 1-5
Final Test Mode:	Mode 5

Note: According to pre-test results, the final test mode is each independent function's worst case and only shown in the report.

7.1.6. Test Results

Test Mode:	Mode 5
Test Voltage:	AC 240V/60Hz
Mode:	Induction cooker function（7200W ）

Phase: Line1

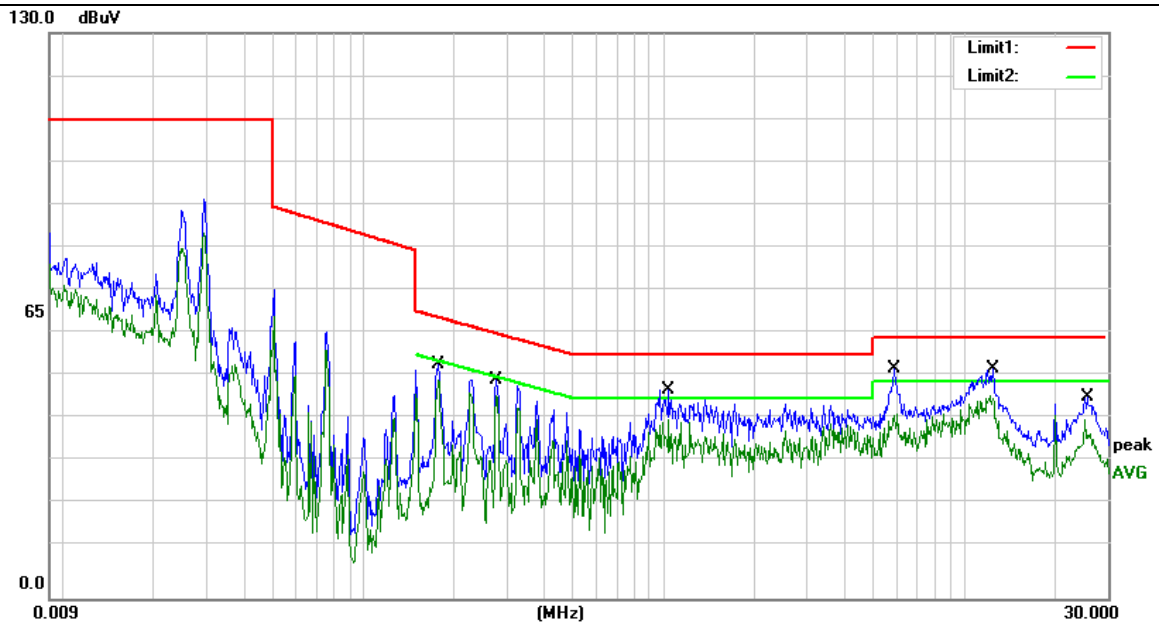


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1780	36.33	19.82	56.15	64.58	-8.43	QP
2	0.1780	33.05	19.82	52.87	54.58	-1.71	AVG
3	0.2300	31.87	19.99	51.86	62.45	-10.59	QP
4	0.2300	28.69	19.99	48.68	52.45	-3.77	AVG
5	1.0380	30.29	19.80	50.09	56.00	-5.91	QP
6	1.0380	23.64	19.80	43.44	46.00	-2.56	AVG
7	5.8700	31.44	19.91	51.35	60.00	-8.65	QP
8	5.8700	26.36	19.91	46.27	50.00	-3.73	AVG
9	12.4860	34.23	20.00	54.23	60.00	-5.77	QP
10	12.4860	28.55	20.00	48.55	50.00	-1.45	AVG
11	25.1820	28.66	20.29	48.95	60.00	-11.05	QP
12	25.1820	23.86	20.29	44.15	50.00	-5.85	AVG

Remark:
Result = Reading +Correct
Margin = Result - Limit

Test Mode:	Mode 5
Test Voltage:	AC 240V/60Hz
Mode:	Induction cooker function（7200W ）

Phase: Line2

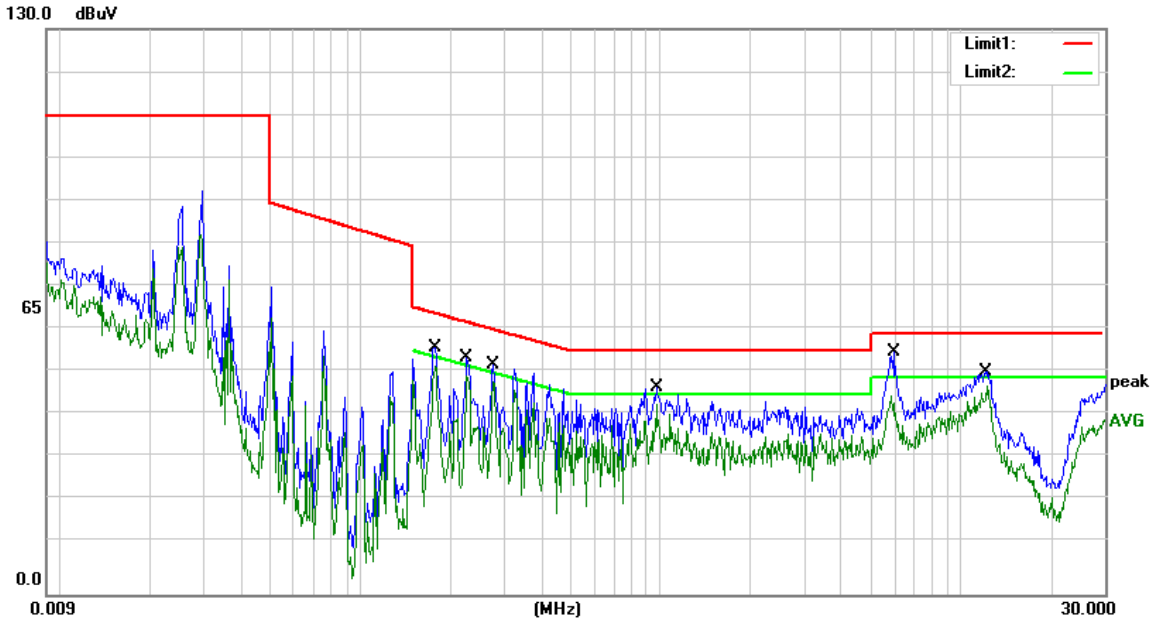


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1780	33.78	19.82	53.60	64.58	-10.98	QP
2	0.1780	32.35	19.82	52.17	54.58	-2.41	AVG
3	0.2780	30.02	20.18	50.20	60.88	-10.68	QP
4	0.2780	27.85	20.18	48.03	50.88	-2.85	AVG
5	1.0380	28.29	19.80	48.09	56.00	-7.91	QP
6	1.0380	20.68	19.80	40.48	46.00	-5.52	AVG
7	5.8700	32.94	19.91	52.85	60.00	-7.15	QP
8	5.8700	22.60	19.91	42.51	50.00	-7.49	AVG
9	12.4860	32.73	20.00	52.73	60.00	-7.27	QP
10	12.4860	26.55	20.00	46.55	50.00	-3.45	AVG
11	25.5700	25.95	20.31	46.26	60.00	-13.74	QP
12	25.5700	20.84	20.31	41.15	50.00	-8.85	AVG

Remark:
Result = Reading +Correct
Margin = Result - Limit

Test Mode:	Mode 5
Test Voltage:	AC 240V/60Hz
Mode:	Induction cooker function（7200W ）

Phase: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1780	37.05	19.82	56.87	64.58	-7.71	QP
2	0.1780	32.60	19.82	52.42	54.58	-2.16	AVG
3	0.2260	34.61	19.97	54.58	62.60	-8.02	QP
4	0.2260	30.23	19.97	50.20	52.60	-2.40	AVG
5	0.2780	32.63	20.18	52.81	60.88	-8.07	QP
6	0.2780	28.00	20.18	48.18	50.88	-2.70	AVG
7	0.9700	27.67	19.81	47.48	56.00	-8.52	QP
8	0.9700	21.71	19.81	41.52	46.00	-4.48	AVG
9	5.9540	35.98	19.91	55.89	60.00	-4.11	QP
10	5.9540	25.60	19.91	45.51	50.00	-4.49	AVG
11	12.0740	31.20	19.99	51.19	60.00	-8.81	QP
12	12.0740	27.99	19.99	47.98	50.00	-2.02	AVG

Remark:
Result = Reading +Correct
Margin = Result – Limit

7.2. Radiated Disturbance Measurement

7.2.1. Limits of radiated disturbance measurement

Detector:
Peak for pre-scan, Average for the final result
(200 Hz Resolution Bandwidth for 9 kHz to 150 kHz
9 kHz Resolution Bandwidth for 150 kHz to 30 MHz)

Limit 9KHz~30MHz:

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (uV/m)	Distance (meters)
Induction cooking ranges	Below 90 kHz	Any	1,500	[4]30
	On or above 90 kHz	Any	300	[4]30

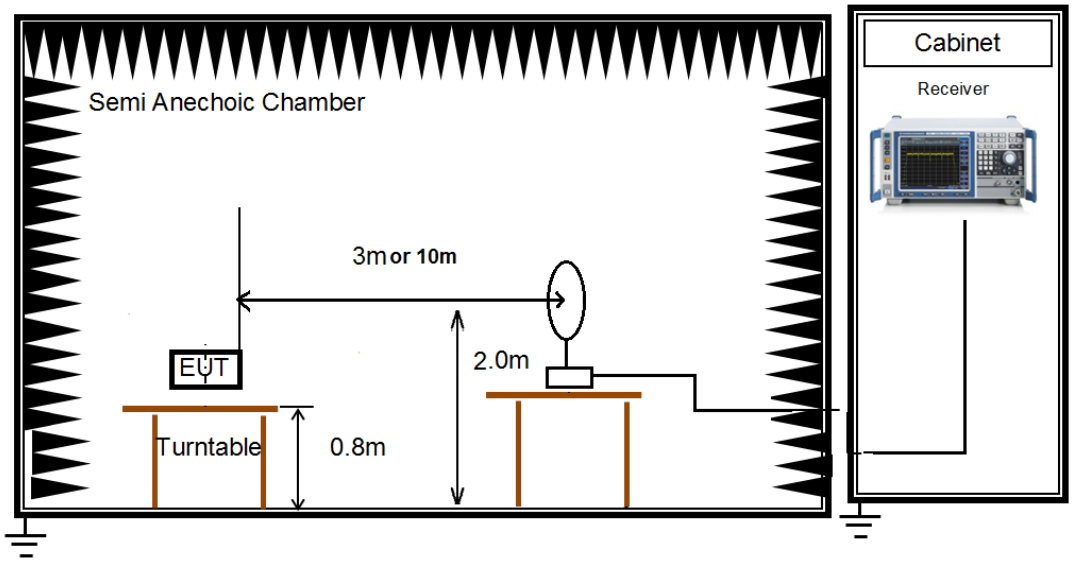
For Induction cooking ranges and the operating frequency is below 90 kHz, the field strength limit is 1,500μV/m@30m,
i.e. 20lg(1500)+40lg(30/3)=63.52+40=103.52dBuV/m
@3m distance.

7.2.2. Test Procedure

a. The measuring distance of at 3m shall be used for measurements at frequency up to 1GHz.
b. The EUT was placed on the top of a rotating table 0.8 or 0.1 meters above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For the actual test configuration, please refer to the related Item:EUT Test Photos.

7.2.3. Test Setup

(a) Radiated Disturbance Test Set-Up Frequency 9 KHz to 30 MHz



For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

7.2.4. Test Environment

Radiated Disturbance - below 1 GHz		Radiated Disturbance - above 1 GHz	
Temperature:	24.8℃	Temperature:	N/A
Humidity:	65%	Humidity:	N/A
ATM pressure:	101kPa	ATM pressure:	N/A

7.2.5. Test Mode

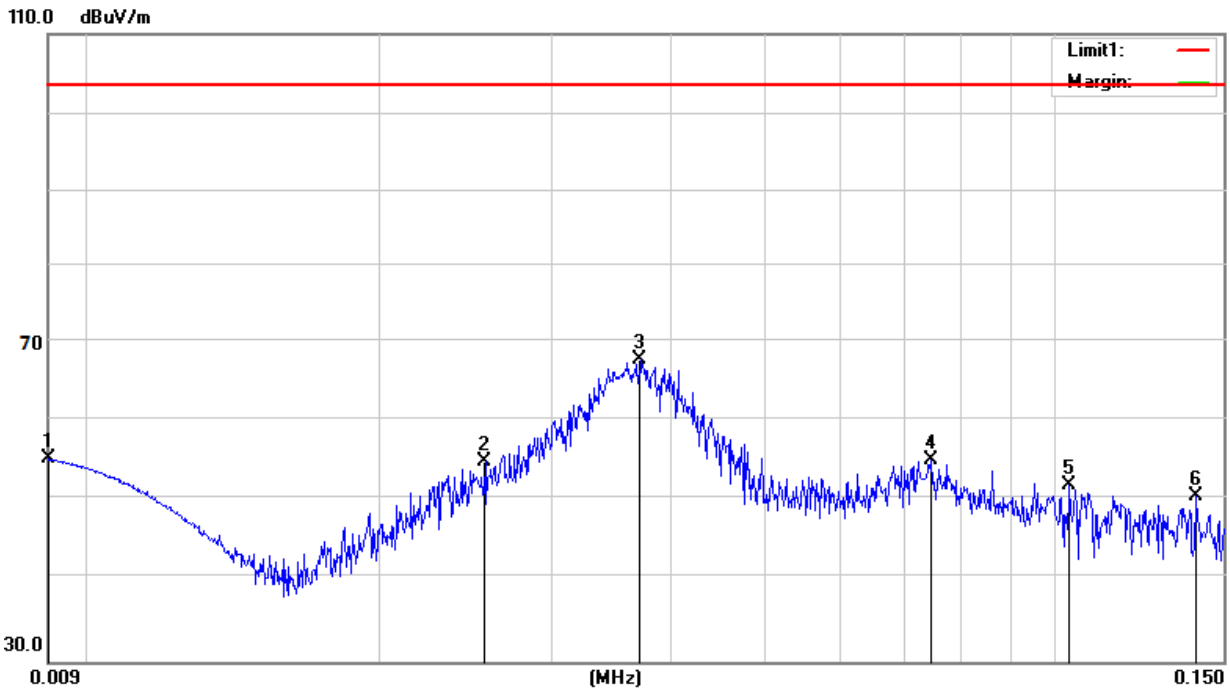
Radiated Disturbance - below 1 GHz		Radiated Disturbance - above 1 GHz	
Pre-test Mode:	Mode 1-5	Pre-test Mode:	N/A
Final Test Mode:	Mode 5	Final Test Mode:	N/A

Note: According to pre-test results, the final test mode is each independent function's worst case and only shown in the report.

7.2.6. Test Results – 0.009~0.15MHz

Test Mode:	Mode 5
Test Voltage:	AC 240V/60Hz
Mode:	Induction cooker function（7200W ）

Polarization: Vertical

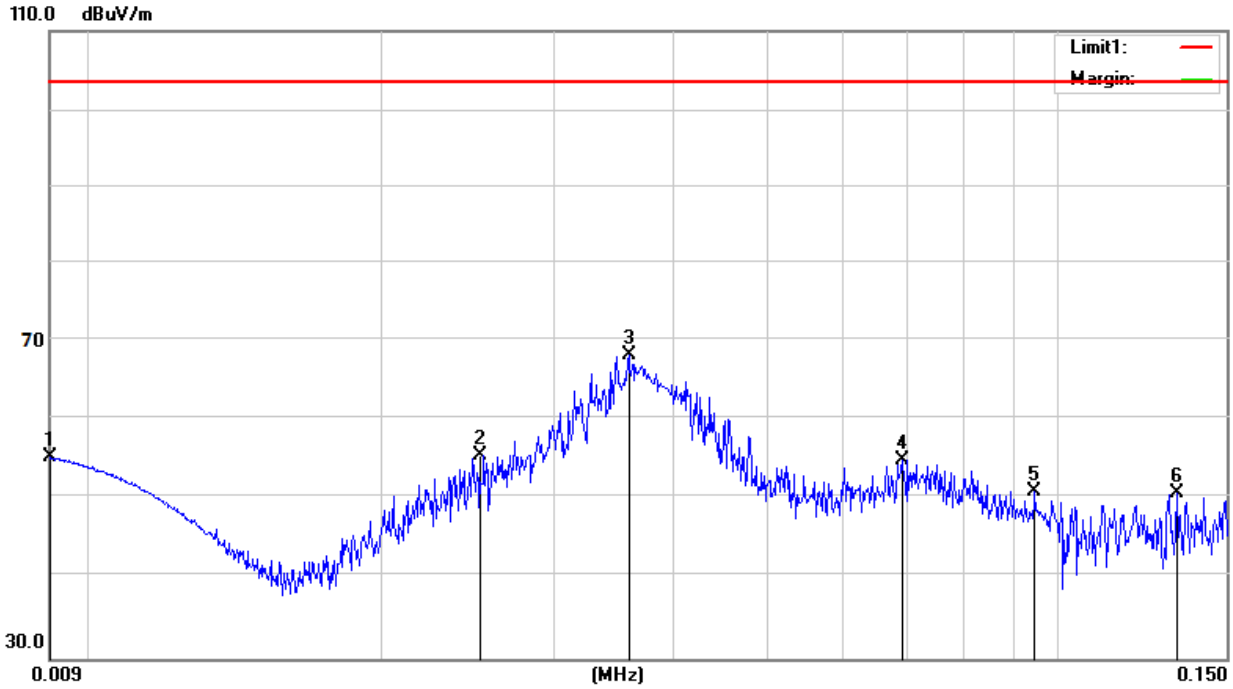


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.0090	35.36	19.31	54.67	103.52	-48.85	QP
2	0.0256	34.40	20.00	54.40	103.52	-49.12	QP
3	0.0371	47.47	19.77	67.24	103.52	-36.28	QP
4	0.0743	35.73	18.84	54.57	103.52	-48.95	QP
5	0.1038	33.72	17.61	51.33	103.52	-52.19	QP
6	0.1406	32.39	17.55	49.94	103.52	-53.58	QP

Remark:
Result = Reading +Correct
Margin = Result – Limit
Note: All the QP vaule were below limit more than 10dB

Test Mode:	Mode 5
Test Voltage:	AC 240V/60Hz
Mode:	Induction cooker function（7200W ）

Polarization: Horizontal



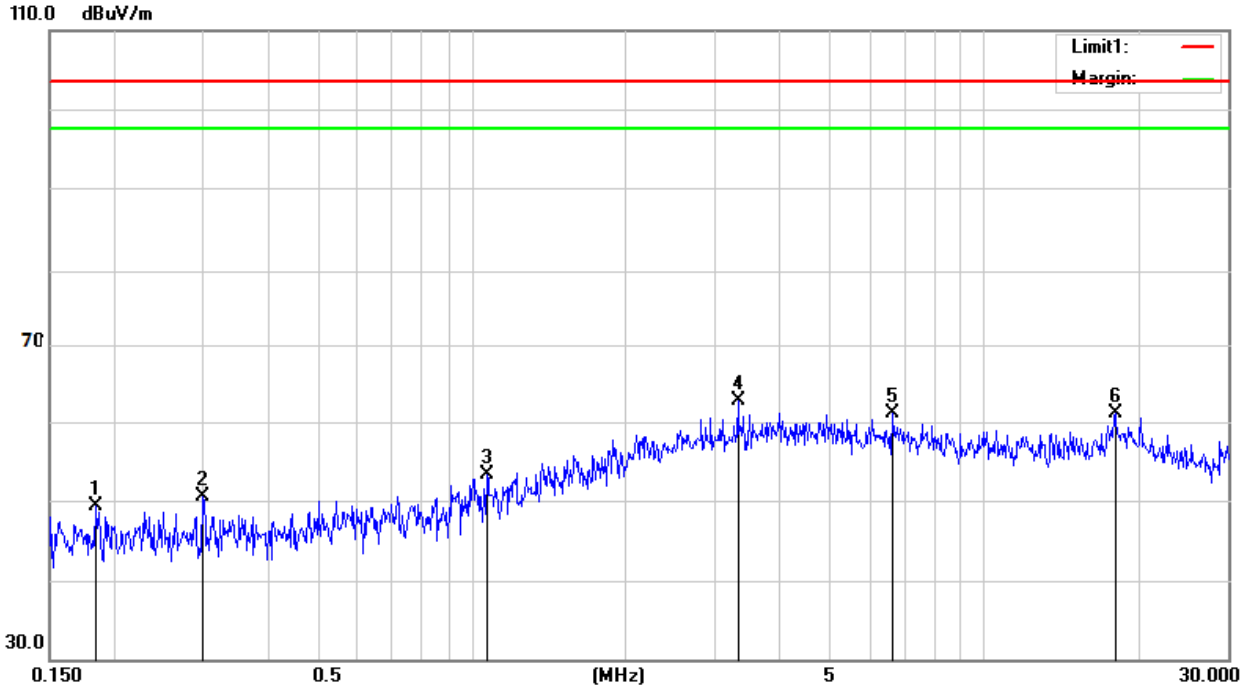
No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.0090	35.41	19.31	54.72	103.52	-48.80	QP
2	0.0252	27.91	27.03	54.94	103.52	-48.58	QP
3	0.0360	42.95	24.78	67.73	103.52	-35.79	QP
4	0.0690	31.71	22.62	54.33	103.52	-49.19	QP
5	0.0947	28.45	21.85	50.30	103.52	-53.22	QP
6	0.1333	28.12	21.93	50.05	103.52	-53.47	QP

Remark:
Result = Reading +Correct
Margin = Result – Limit
Note: All the QP vaule were below limit more than 10dB

7.2.7. Test Results – 0.15~30MHz

Test Mode:	Mode 5
Test Voltage:	AC 240V/60Hz
Mode:	Induction cooker function（7200W ）

Polarization: Vertical

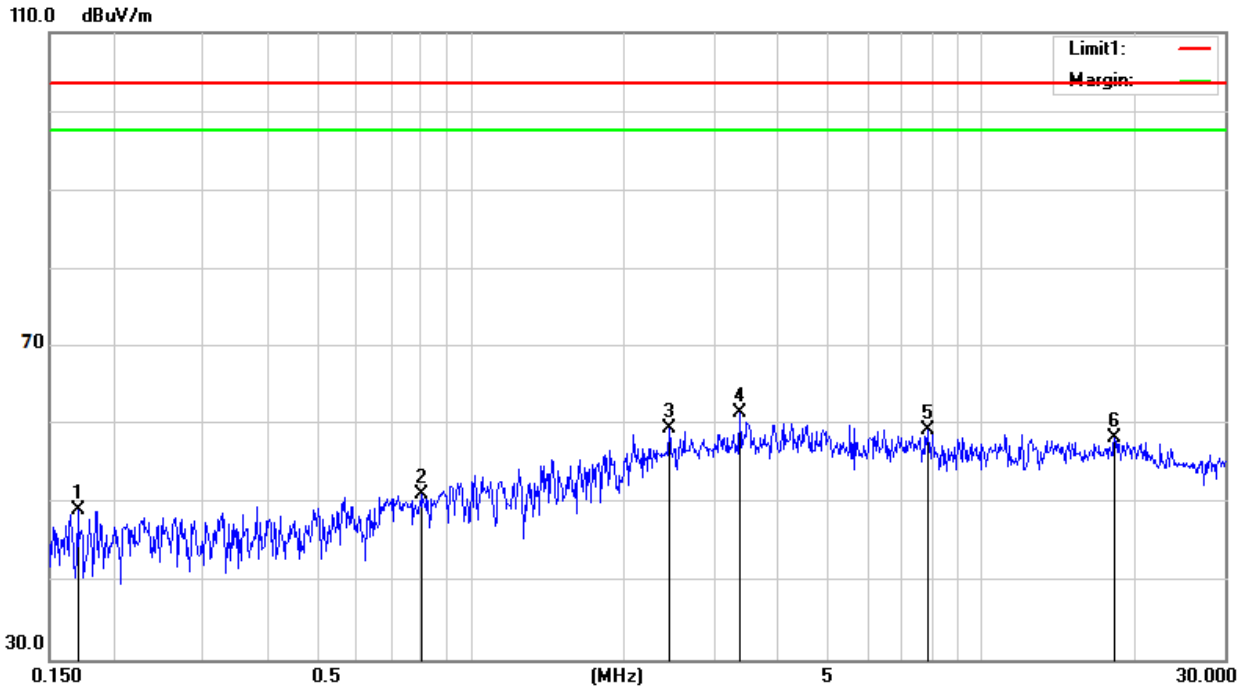


No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1844	30.88	18.42	49.30	103.52	-54.22	QP
2	0.2987	30.26	20.15	50.41	103.52	-53.11	QP
3	1.0710	33.01	20.26	53.27	103.52	-50.25	QP
4	3.3105	42.36	20.25	62.61	103.52	-40.91	QP
5	6.6272	40.57	20.48	61.05	103.52	-42.47	QP
6	18.0393	38.93	22.19	61.12	103.52	-42.40	QP

Remark:
Result = Reading +Correct
Margin = Result – Limit
Note: All the QP vaule were below limit more than 10dB

Test Mode:	Mode 5
Test Voltage:	AC 240V/60Hz
Mode:	Induction cooker function（7200W ）

Polarization: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1703	26.48	22.15	48.63	103.52	-54.89	QP
2	0.8044	28.92	21.76	50.68	103.52	-52.84	QP
3	2.4474	38.01	21.03	59.04	103.52	-44.48	QP
4	3.3635	40.41	20.75	61.16	103.52	-42.36	QP
5	7.8516	41.58	17.34	58.92	103.52	-44.60	QP
6	18.2316	38.64	19.21	57.85	103.52	-45.67	QP

Remark:
Result = Reading +Correct
Margin = Result – Limit

Appendix I: Photographs of EMC Test Configuration

Conducted Disturbance

Radiated Disturbance

Appendix II: Photographs of the EUT

External
Refer to Appendix report 4788969893.1A1

Internal

Refer to Appendix report 4788969893.1-A2

END OF REPORT