FCC PART 18
MEASUREMENT AND TEST REPORT

For

Shenzhen Bens Intelligent Electric Appliance Co., Ltd

Chaguang Industrial Zone, Shahexi Road, Xili, Nanshan District,
Shenzhen, China

Model: BS20-SC1

Sep. 25, 2009

This Report Concerns:	**Equipment Type:**
☒ Original Report	Induction Cooker

Test Engineer:	Cawen He
Report Number:	MTI090925001RF
Test Date:	Sep. 10~22, 2009
Reviewed By:	Hebe Lee
Prepared By:	**MTI Technology Laboratory Ltd.** 10F,Yinxing Business Hotel, Xixiang Road, Bao'an District, Shenzhen, P.R.China. Tel: 86-755-8885 0135 Fax: 86-755-8885 0136

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of MTI Technology Laboratory Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant:	Shenzhen Bens Intelligent Electric Appliance Co., Ltd
Address of applicant:	Chaguang Industrial Zone, Shahexi Road, Xili, Nanshan District, Shenzhen, China
Manufacturer:	Shenzhen Bens Intelligent Electric Appliance Co., Ltd
Address of manufacturer:	Chaguang Industrial Zone, Shahexi Road, Xili, Nanshan District, Shenzhen, China

General Description of E.U.T

EUT Description:	Induction Cooker
Trade Name:	BENS
EUT Model No.:	BS20-SC1
Supplementary Model:	N/A
	Remark: supplementary models are only different in exterior with tested Model and with the same circuit construction.
Rated Voltage:	AC 120V, 60Hz

Remark: * *The test data gathered are from the production sample provided by the manufacturer.*

1.2 Test Standards

The following Declaration of Conformity report of EUT is prepared in accordance with

FCC Rules and Regulations PART18

The objective of the manufacturer is to demonstrate compliance with the described standards above.

1.3 Test Summary

For the EUT described above. The standards used were FCC PART 18 for Emissions.
Table 1: Tests Carried Out Under FCC PART 18

Standard	Test Items	Status
FCC PART 18	Disturbance Voltage at The Mains Terminals (9KHz To 30MHz)	√
	Radiated Disturbances (9KHz To 30MHz)	√

√ Indicates that the test is applicable
× Indicates that the test is not applicable

1.4 Test Methodology

All measurements contained in this report were conducted with CISPR 16-1: 2002, radio disturbance and immunity measuring apparatus, and CISPR16-2: 2002, Method of measurement of disturbances and immunity.

All measurement required was performed at laboratory of MTI Technology Laboratory Ltd., at 10F,Yinxing Business Hotel, Xixiang Road, Bao'an District, Shenzhen, P.R.China.

1.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

FCC – Registration No.: 167003

MTI Technology Laboratory 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 167003, May 04, 2009.

The facility also complies with the radiated and AC line conducted test site criteria set forth in CISPR 16-1: 2002, CISPR16-2: 2002.

1.6 Test Equipment List and Details

Table 1: Test Equipment for Emission Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal	Calibration Period
Spectrum Analyzer	ANRITSU	MS2651B	6200238856	2009/05	1 year
EMI Test Receiver	ROHDE&SCHWARZ	ESCS30	100307	2009/05	1 year
LISN	ROHDE&SCHWARZ	ESH3-Z5	100305	2009/05	1 year
Pulse Limiter	ROHDE&SCHWARZ	ESH3-Z2	100305	2009/05	1 year
Bilog Antenna	SCHWARZBECK	VULB 9163	9163-194	2009/05	1 year
50Ω Coaxial Switch	ANRITSU CORP	MP59B	6200283933	2009/05	1 year
Power Clamp	ROHDE&SCHWARZ	MDS21	100142	2009/05	1 year
Loop Antenna	Laplace Instrument Ltd	RF300	8006	2009/05	1 year
Cable	Resenberger	N/A	NO.1	N/A	N/A
Cable	SCHWARZBECK	N/A	NO.2	N/A	N/A
Cable	SCHWARZBECK	N/A	NO.3	N/A	N/A
DC Power Filter	DuoJi	DL2×30B	N/A	N/A	N/A
Single Phase Power Line Filter	DuoJi	FNF 202B30	N/A	N/A	N/A
3 Phase Power Line Filter	DuoJi	FNF 402B30	N/A	N/A	N/A
AC Power Source	California Instruments	5001iX-400	55689	2009/05	1 year
Test analyzer	California Instruments	PACS-1	72254	2009/05	1 year

Table 2: Test Equipment for Immunity Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal	Calibration Period
ESD Tester	HAEFELY	PESD 1610	H4001552	2009/05	1 year
EMCPRO System	Thermo	PRO-BASE	0403271	2009/05	1 year
Capacitive Clamp	Thermo	PRO-CCL	0403272	2009/05	1 year
Coupler decoupler for telecom lines	Thermo	CM-TEL-CD	0403273	2009/05	1 year
Magnetic field Tester	HAEFELY	MAG 100	150577	2009/05	1 year
AC Transformer	CHOKUN	TDGC2J-5	N/A	2009/05	1 year
Signal Generator	IFR	2032	203002/100	2009/05	1 year
Amplifier	AR	150W1000	301584	2009/05	1 year
Dual Directional Coupler	AR	DC6080	301508	2009/05	1 year
Power Head	AR	PH2000	301193	2009/05	1 year
Power Meter	AR	PM2002	302799	2009/05	1 year
Transmitting Antenna	AR	AT1080	28570	2009/05	1 year
Simulator	EMTEST	CWS 500C	0900-12	2009/05	1 year
CDN	EMTEST	CDN-M2	510010010010	2009/05	1 year
CDN	EMTEST	CDN-M3	0900-11	2009/05	1 year
Injection Clamp	EMTEST	F-2031-23MM	368	2009/05	1 year
Attenuator	EMTEST	ATT 6	0010222A	2009/05	1 year

2. SYSTEM TEST CONFIGURATION

2.1 Justification

The system was configured for testing in a typical fashion (as normally used by a typical user).

2.2 EUT Exercise Software

The EUT exercising program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software offered by manufacture, can let the EUT being normal operation.

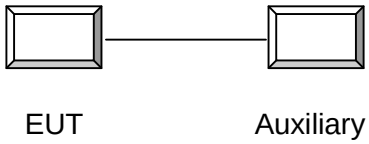
2.3 Special Accessories

As shown in section 2.5, interface cable used for compliance testing is shielded as normally supplied by Shenzhen Bens Intelligent Electric Appliance Co., Ltd, its respective support equipment manufacturers.

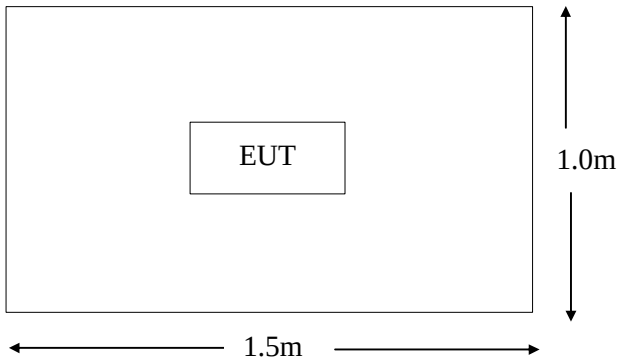
2.4 Equipment Modifications

The EUT tested was not modified by MTI.

2.5 Configuration of Test System



2.6 Test Setup Diagram



3. RADIATED DISTURBANCES

3.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ±4.0 dB.

3.2 Limit of Radiated Disturbances

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dBμV/m)
0.009-30	3	103.5

3.3 EUT Setup

The radiated emission tests were performed in the open area 3-meter test site, using the setup accordance with the CISPR 16-1: 2002, CISPR16-2: 2002. The specification used was FCC PART18 limits.

The EUT was placed on the center of the test table.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

3.4 Test Receiver Setup

According to FCC PART18 rules, the frequency was investigated from 0.009 to 30 MHz. During the radiated emission test, the test receiver was set with the following configurations:

Test Receiver Setting:

Detector……..Peak & Quasi-Peak
IF Band Width……..120 KHz
Frequency Range……0.009MHz to 30MHz
Turntable Rotated……0 to 360 degrees

Antenna Position:

Height……1m to 4m
Polarity……...Horizontal and Vertical

3.5 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings performed only when an emission was found to be marginal (within -10 dBμV of specification limits), and are distinguished with a "**QP**" in the data table.

3.6 Corrected Amplitude & Margin Calculation

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

Corr. Ampl. = Indicated Reading + Antenna Factor + Cable Factor - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dBμV means the emission is 7dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

Margin = Class B Limit –Corr. Ampl.

3.7 Radiated Emissions Test Result

Temperature (℃)	22~23
Humidity (%RH)	50~54
Barometric Pressure (mbar)	950~1000
EUT	Induction Cooker
M/N	BS20-SC1
Operating Mode	ON

Test data see following pages

Remark: (1) When PK reading is less than relevant limit 20dB, the QP reading and AV reading will not be recorded.
(2) Where QP reading is less than relevant AV limit, the AV reading will not be measured

3.8 Test Result

Pass

Radiated Emission Test Data

EUT: Induction Cooker
M/N: BS20-SC1
Operating Condition: ON
Test Site: 3m CHAMBER
Operator: Eva
Test Specification: AC 120V/60Hz

Antenna polarization: Horizontal						
Frequency	**Reading**	**Correct**	**Result**	**Limit**	**Margin**	**Remark**
(MHz)	**(dBuV/m)**	**Factor(dB)**	**(dBuV/m)**	**(dBuV/m)**	**(dB)**	
0.0450	34.58	7.21	41.79	103.50	-61.71	peak
2.1640	32.05	7.56	39.61	103.50	-63.89	peak
8.8200	37.21	7.75	44.96	103.50	-58.54	peak
13.2380	31.65	7.45	39.10	103.50	-64.40	peak
28.7680	38.11	7.67	45.78	103.50	-57.72	peak

Antenna polarization: Vertical						
Frequency	**Reading**	**Correct**	**Result**	**Limit**	**Margin**	**Remark**
(MHz)	**(dBuV/m)**	**Factor(dB)**	**(dBuV/m)**	**(dBuV/m)**	**(dB)**	
0.0640	37.15	6.89	44.04	103.50	-59.46	peak
1.9580	31.88	7.23	39.11	103.50	-64.39	peak
9.3820	30.65	6.96	39.61	103.50	-65.89	peak
16.5760	35.39	7.12	42.51	103.50	-60.99	peak
28.5520	38.24	6.74	44.98	103.50	-58.52	peak

4. CONDUCTED DISTURBANCES

4.1. Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is +2.4 dB.

4.2. Limit of Conducted Disturbances

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.

4.3. EUT Setup

The setup of EUT is according with CISPR 16-1: 2002, CISPR16-2: 2002 measurement procedure.

The EUT was placed center and the back edge of the test table.

The cables were draped along the test table and bundled to 30-40cm in the middle.

The spacing between the peripherals was 10 cm.

Maximum emission emitted from EUT was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation and the levels in the final result of the test were recorded with the EUT running in the operating mode that maximum emission was emitted.

4.4. Instrument Setup

The test receiver was set with the following configurations:
Test Receiver Setting:
Frequency Range……9 KHz to 30 MHz
Detector……..Peak & Quasi-Peak & Average
Sweep Speed……Auto
IF Band Width……..9 KHz

4.5. Test Procedure

During the conducted emission test, the EUT power cord was connected to the auxiliary outlet of the first Artificial Mains.
Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance using all installation combination.
All data was recorded in the peak detection mode. Quasi-peak and Average readings were only performed when an emission was found to be marginal (within -10 dBμV of specification limits). Quasi-peak readings are distinguished with a **"QP"**. Average readings are distinguished with a **"AV".**

4.6. Summary of Test Results

According to the data in section 3.6, the worst margin reading of:

EUT Configuration on Test

Induction Cooker		
Model Number	:	BS20-SC1
Serial Number	:	N/A
Applicant	:	Shenzhen Bens Intelligent Electric Appliance Co., Ltd

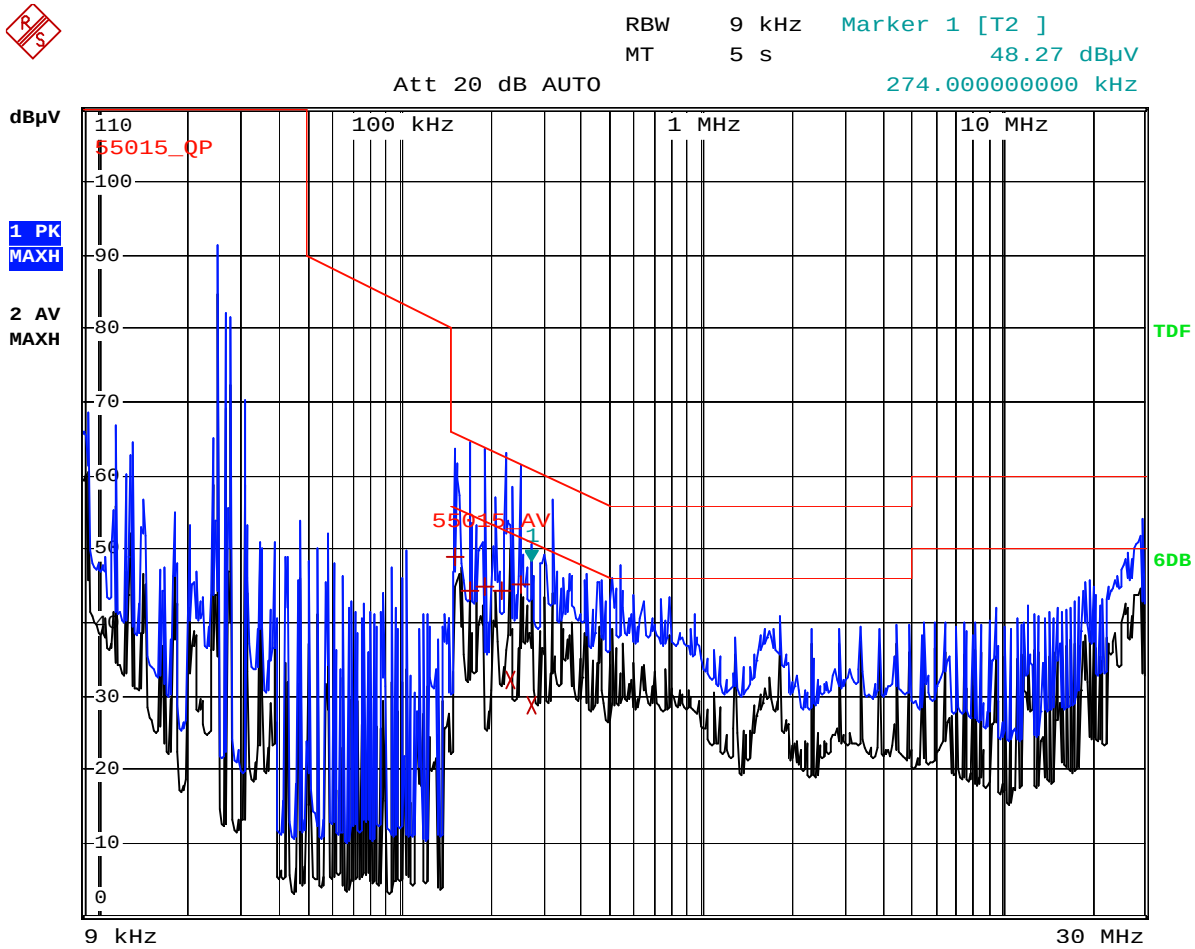
4.7. Test Result

PASS

Please refer to the following pages.

Conduction Emission Test Data

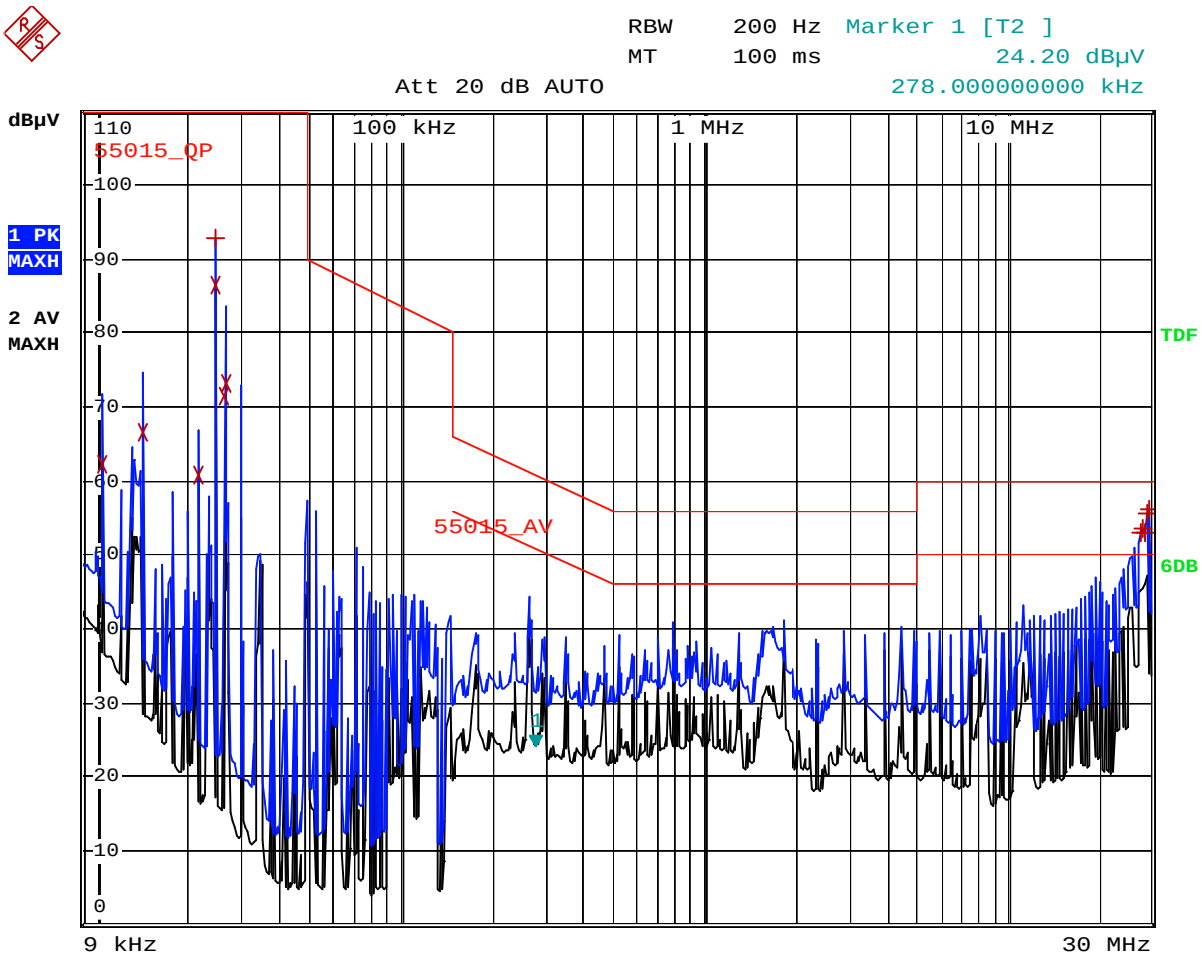
EUT: Induction Cooker
M/N: BS20-SC1
Operating Condition: ON
Test Site: 3m Shield
Operator: Seven
Test Specification: L 120V/60HZ



EDIT PEAK LIST (Final Measurement Results)			
Trace1:	55015_QP		
Trace2:	55015_AV		
Trace3:	---		
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
1 Quasi Peak	154 kHz	48.98	-16.80
1 Quasi Peak	170 kHz	44.37	-20.58
1 Quasi Peak	190 kHz	44.80	-19.23
1 Quasi Peak	222 kHz	44.26	-18.47
2 Average	230 kHz	32.26	-20.18
1 Quasi Peak	250 kHz	45.24	-16.51
2 Average	274 kHz	28.61	-22.38

Conduction Emission Test Data

EUT: Induction Cooker
M/N: BS20-SC1
Operating Condition: ON
Test Site: 3m Shield
Operator: Seven
Test Specification: N 120V/60HZ



EDIT PEAK LIST (Prescan Results)

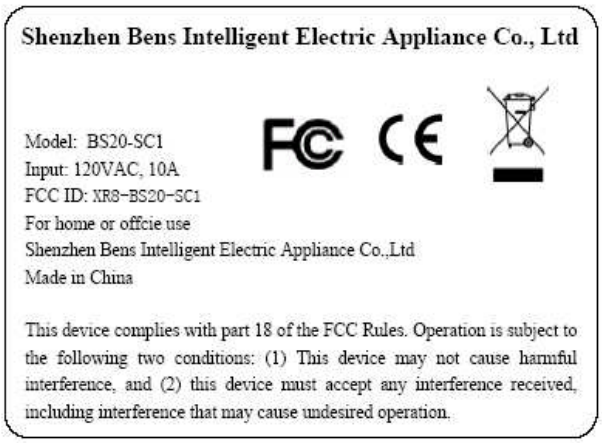
Trace1:	55015_QP
Trace2:	55015_AV
Trace3:	---

TRACE		FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
2	Average	10.36 kHz	62.14	
2	Average	14.04 kHz	66.48	
2	Average	21.4 kHz	60.76	
1	Max Peak	24.52 kHz	92.90	-17.09
2	Average	24.52 kHz	86.41	
2	Average	26.44 kHz	71.43	
2	Average	26.76 kHz	73.28	
1	Max Peak	27.57 MHz	52.87	-7.12
1	Max Peak	28.074 MHz	53.50	-6.49
1	Max Peak	28.614 MHz	53.02	-6.97
1	Max Peak	29.166 MHz	55.50	-4.49
1	Max Peak	29.686 MHz	56.06	-3.93

APPENDIX A - PRODUCT LABELING

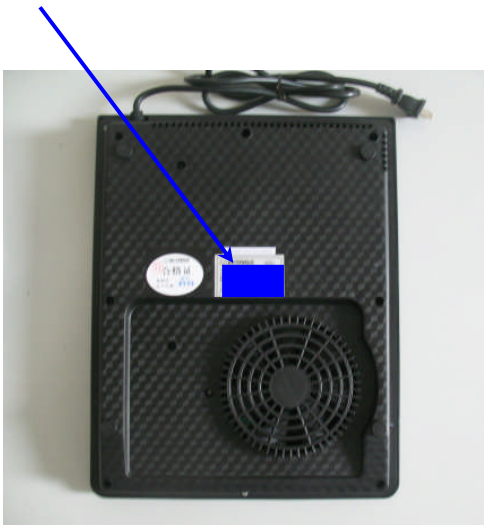
FCC ID Mark Label Specification

Specification: Text is Black or white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing and shall be affixed at a conspicuous location on the EUT or silk-screened onto the EUT.



Proposed Label Location on EUT

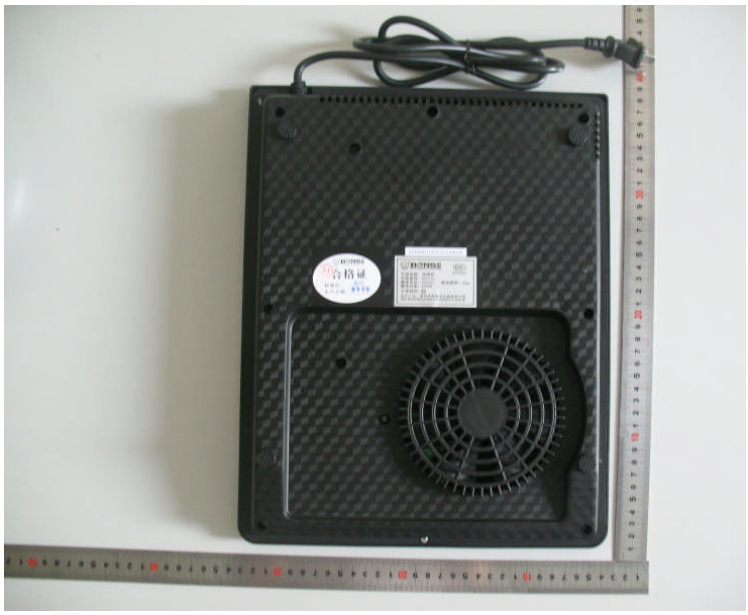
Proposed FCC ID Mark Location



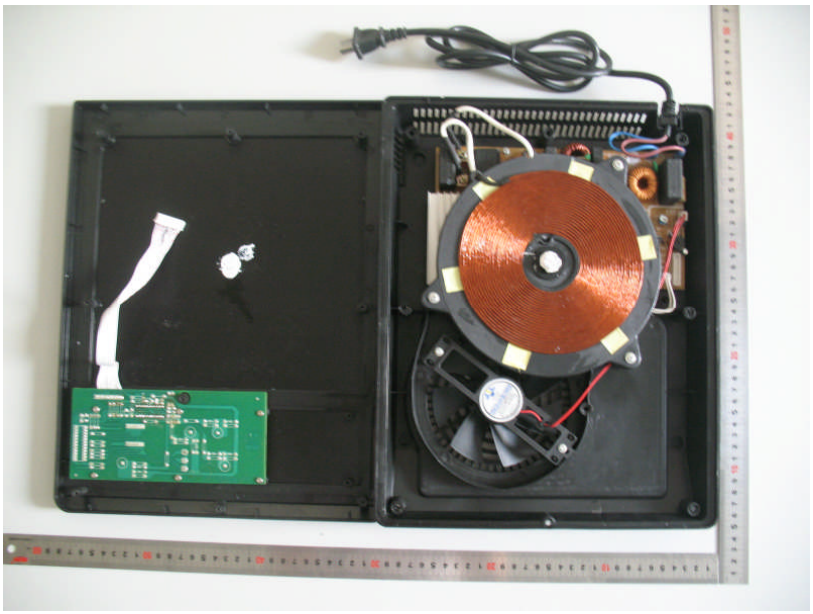
APPENDIX B - EUT PHOTOGRAPHS

EUT- Front View

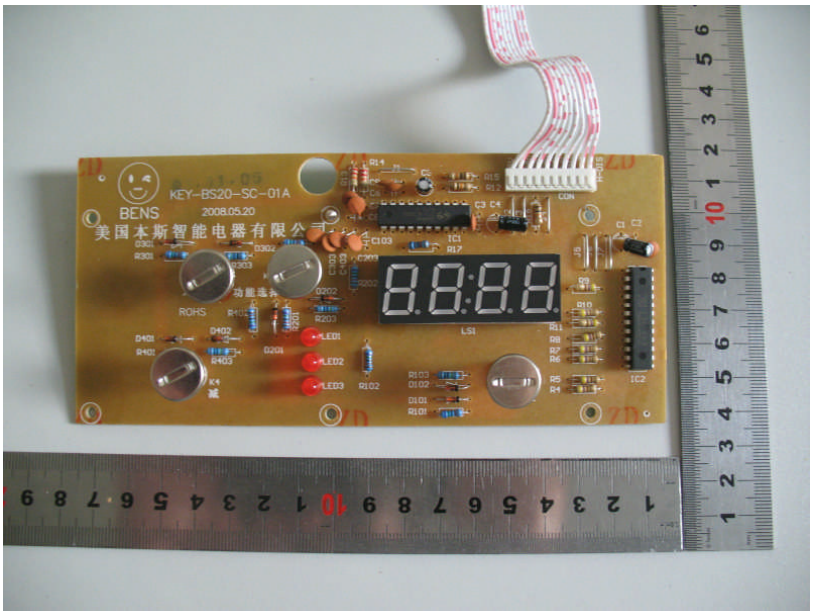
EUT- Back View

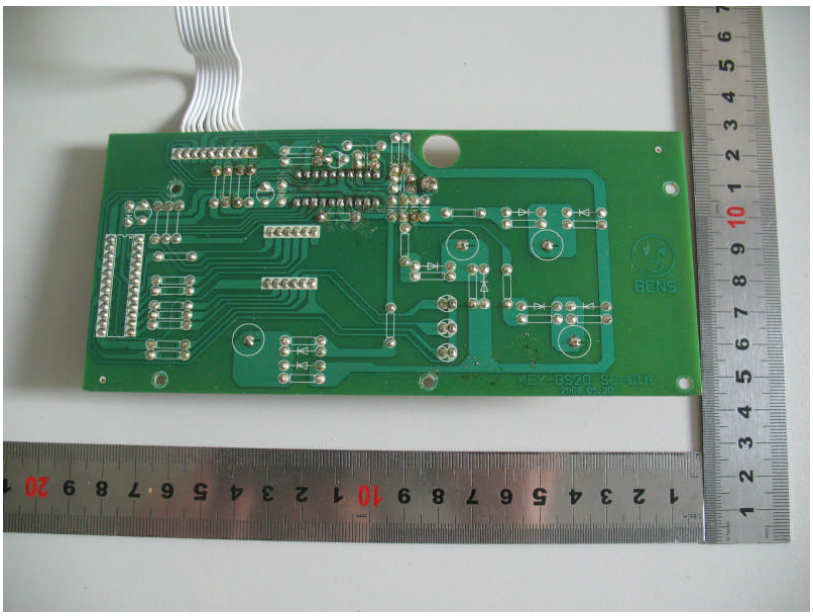


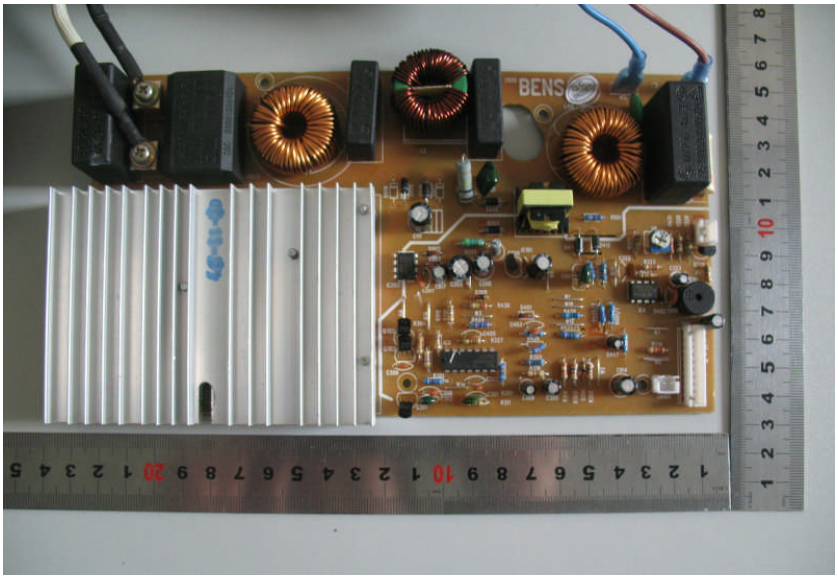
EUT- Open View

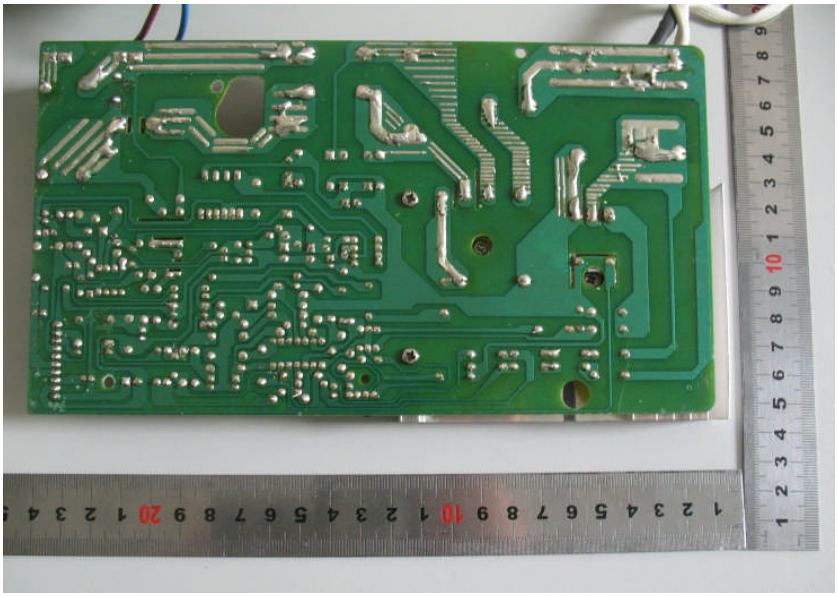


EUT- PCB View



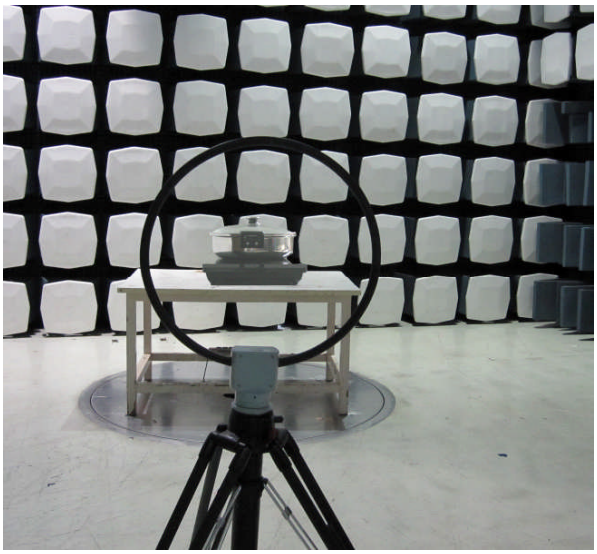
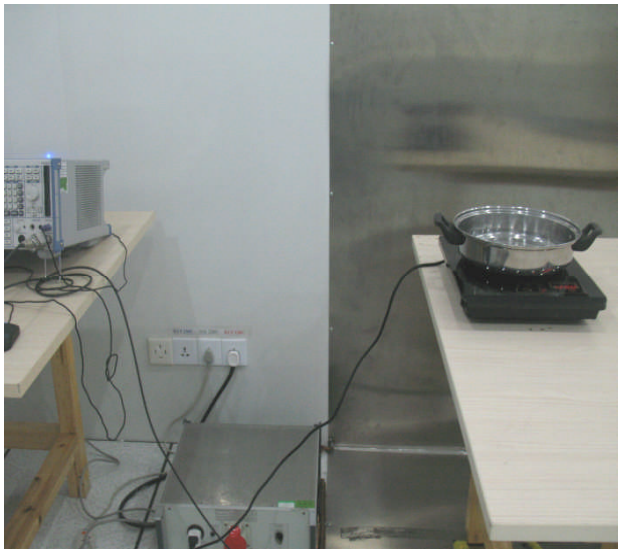



BENS



APPENDIX C - TEST SETUP PHOTOGRAPHS

Radiated Emission Test



Conducted Emission test