FCC PART 18

TEST REPORT

For

Fruto Industrial International Ltd.

Unit 1921, 19/F, China Shine Plaza, No. 3-15 Lin He Road west, Tian He, Guangzhou, China

FCC ID: ZBNC18-20

Report Type:	**Product Type:**
Class II Permissive Change	Induction cooker

Test Engineer:	Webb Liu (Webb Liu)
Report Number:	RSZ140903550-00A1
Report Date:	2014-09-16
Reviewed By:	Dick Zhang (Dick Zhang) EMC Leader
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Fruto Industrial International Ltd.*'s product, model number: *C18-20 (FCC ID: ZBNC18-20)* or the "EUT" in this report is a *Induction cooker*, which was measured approximately: 40.0 cm (L) x 30.0 cm (W) x 7.0 cm (H), the rated with input voltage: AC 120V/60Hz. The highest operating frequency is 65 kHz.

**All measurement and test data in this report was gathered from production sample serial number: 1409007 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2014-09-03.*

Objective

This report is prepared on behalf of *Fruto Industrial International Ltd.* in accordance with Part 2-Subpart J, and Part 18-Subparts A, B and C of the Federal Communication Commissions rules and regulations.

The objective of the manufacturer is to determine the EUT of compliance with FCC Part 18 limits.

This is the CIIPC application of the device. The difference between the original device and the current one is as follows:

Part	Original	New
MAIN PCB	YLS-EF PCB	EG PCB
	Without sheet-contact process	Sheet--contact process
	MKP-X2 at C16 site	MKP-X2 at C4 site
	Chokes at L3 site	Chokes at L2 site
Control PCB	Control winding is 4 needles	Control winding is 6 needles
Thermal Fuse	Without Thermal Fuse	Added Thermal Fuse

For the changes made to the device, all the test items were performed.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with MP-5, FCC Methods of Measurements of Radio Noise Emissions from ISM Equipment, February 1986. All measurements were performed at Bay Area Compliance Laboratory Corporation. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on December 06, 2010. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

OPERATING CONDITION/TEST CONFIGURATION

Justification

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

EUT Exercise Software

No exercise software was used.

Special Accessories

No special accessory was used.

Equipment Modifications

No modification was made to the EUT tested.

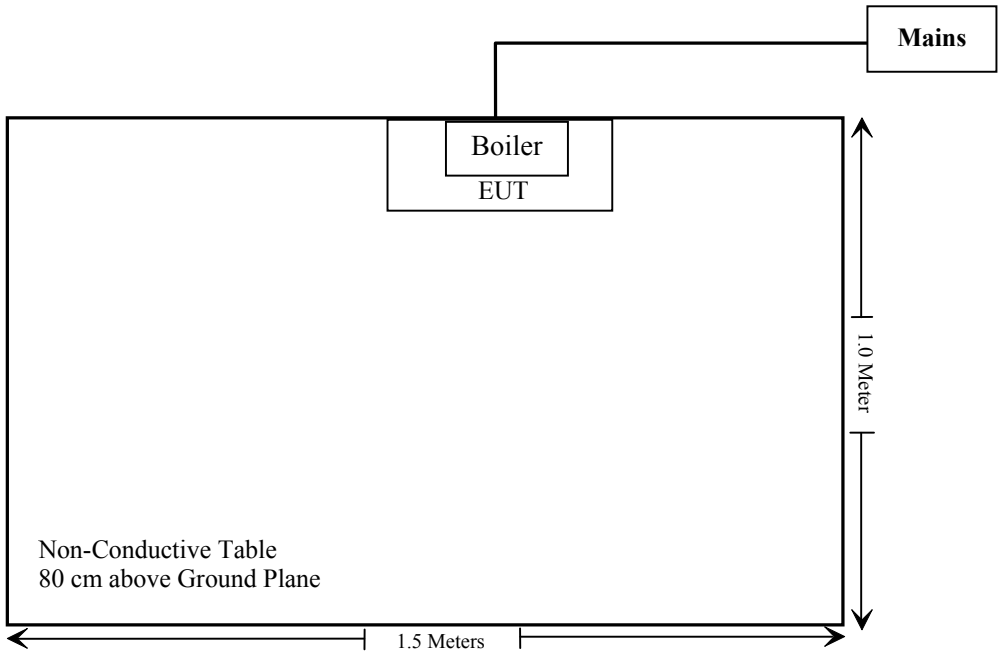
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
N/A	Socket	N/A	140217

External Cable

Cable Description	Length (m)	From Port	To
Un-shielding Un-detachable AC Power Cable	1.8	Mains	Socket

Block Diagram of Test Setup



SUMMARY OF TEST RESULT

FCC Rules	Description of Test	Results
§18.307	AC Line Conducted Emissions	Compliance
§18.305	Field Strength	Compliance

FCC §18.307 - AC LINE CONDUCTED EMISSIONS

Applicable Standard

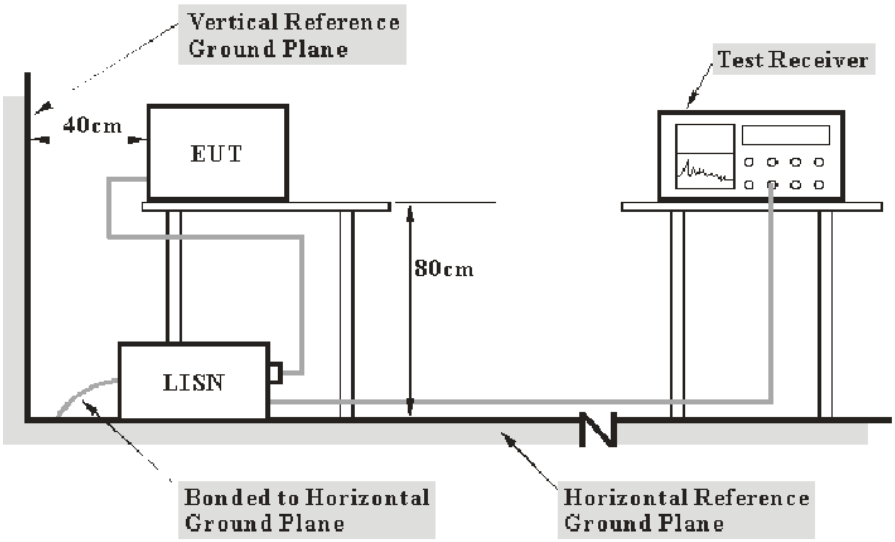
Conduction limits. For the following equipment, when designed to be connected to the public utility (AC) power line the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies shall not exceed the limits in the following tables. Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal using a 50 μH/50 ohms line impedance stabilization network (LISN).

All Induction cooking ranges and ultrasonic equipment

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 *The tighter limits shall apply at the boundary between two frequency ranges

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with MP-5: 1986 measurement procedure. Specification used was with the FCC Part 18 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The EUT was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 9 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
9 kHz – 150 kHz	200 Hz
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the EUT was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-Peak detection and Average detection mode.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2014-06-03	2015-06-03
Rohde & Schwarz	2nd L.I.S.N.	ESH3-Z5	100113	N/A	N/A
Rohde & Schwarz	Pulse limiter	ESH3Z2	DE25985	2014-05-14	2015-05-14
Rohde & Schwarz	1st L.I.S.N.	ENV216	3560.6650.12-101613-Yb	2014-06-09	2015-06-09
Rohde & Schwarz	CE Test software	EMC 32	V8.53	-	-

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 18.307(a), the worst margin reading as below:

9.5 dB at0.198000 MHz in the **Line** conducted mode

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL., $U_{(Lm)}$ is less than U_{cispr}, if L_m is less than L_{lim}, it implies that the EUT complies with the limit.

Test Data

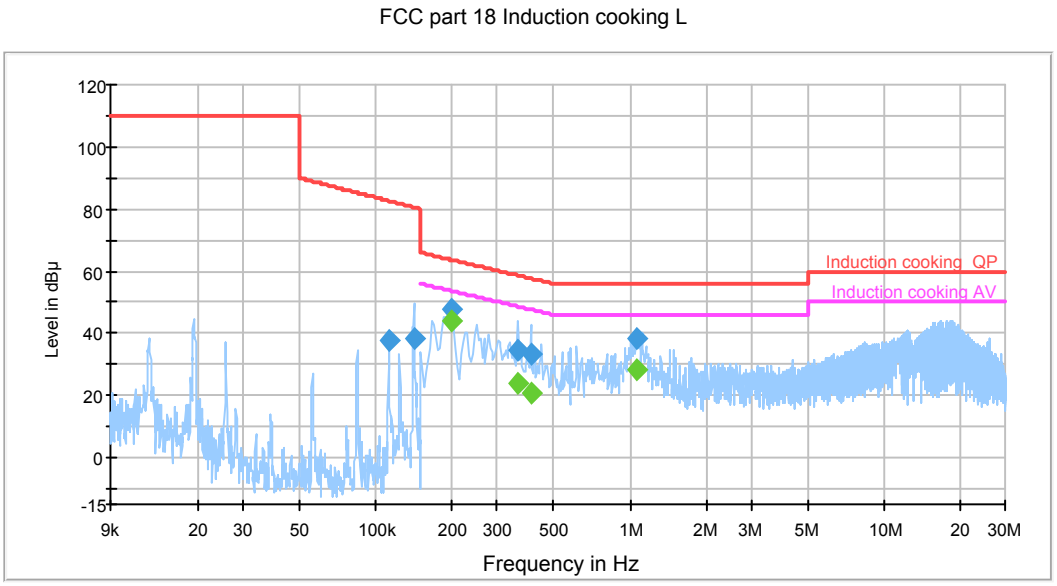
Environmental Conditions

Temperature:	25℃
Relative Humidity:	50 %
ATM Pressure:	100.0 kPa

Testing was performed by Webb Liu on 2014-09-15.

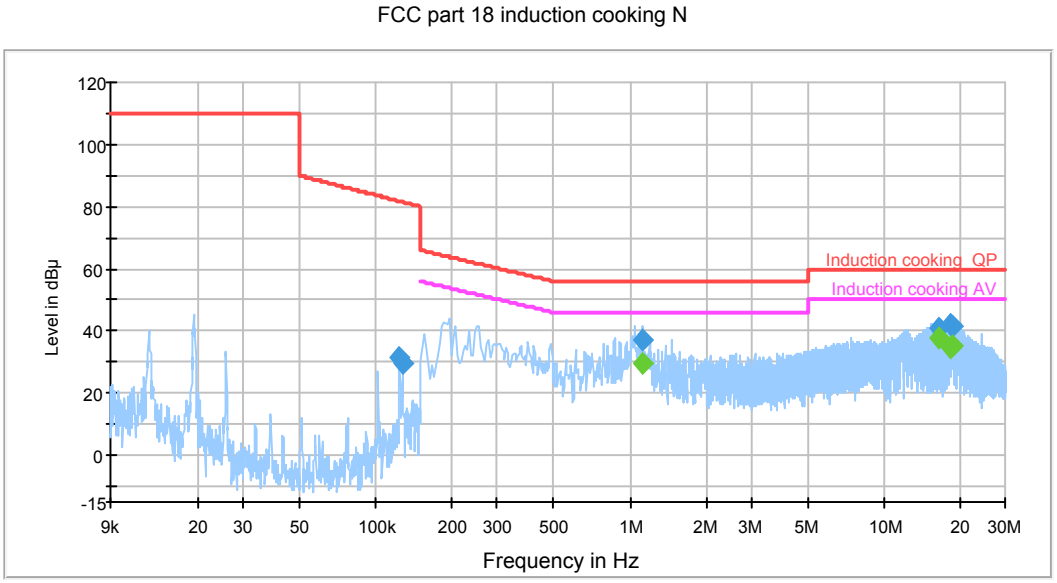
Test Mode: Max output power and hot water

AC 120V/60 Hz, Line:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.112189	37.8	19.6	82.6	44.8	QP
0.140854	38.6	19.6	80.6	42.0	QP
0.198000	48.0	19.6	63.7	15.7	QP
0.198000	44.2	19.6	53.7	9.5	Ave.
0.362000	34.6	19.5	58.7	24.1	QP
0.362000	23.8	19.5	48.7	24.9	Ave.
0.406000	33.5	19.5	57.7	24.2	QP
0.406000	20.6	19.5	47.7	27.1	Ave.
1.066000	38.2	19.5	56.0	17.8	QP
1.066000	28.0	19.5	46.0	18.0	Ave.

AC 120V/ 60 Hz, Neutral:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
1.126000	29.8	19.6	81.7	50.5	QP
1.126000	29.8	20.0	60.0	18.0	QP
1.126000	29.8	20.0	50.0	15.4	Ave.
16.402000	37.7	19.6	81.5	51.7	QP
16.402000	37.7	20.0	60.0	18.3	QP
16.402000	37.7	20.0	50.0	15.0	Ave.
18.270000	34.6	19.5	56.0	18.9	QP
18.270000	34.6	19.5	46.0	16.2	Ave.
18.550000	35.0	19.9	60.0	18.8	QP
18.550000	35.0	19.9	50.0	12.3	Ave.

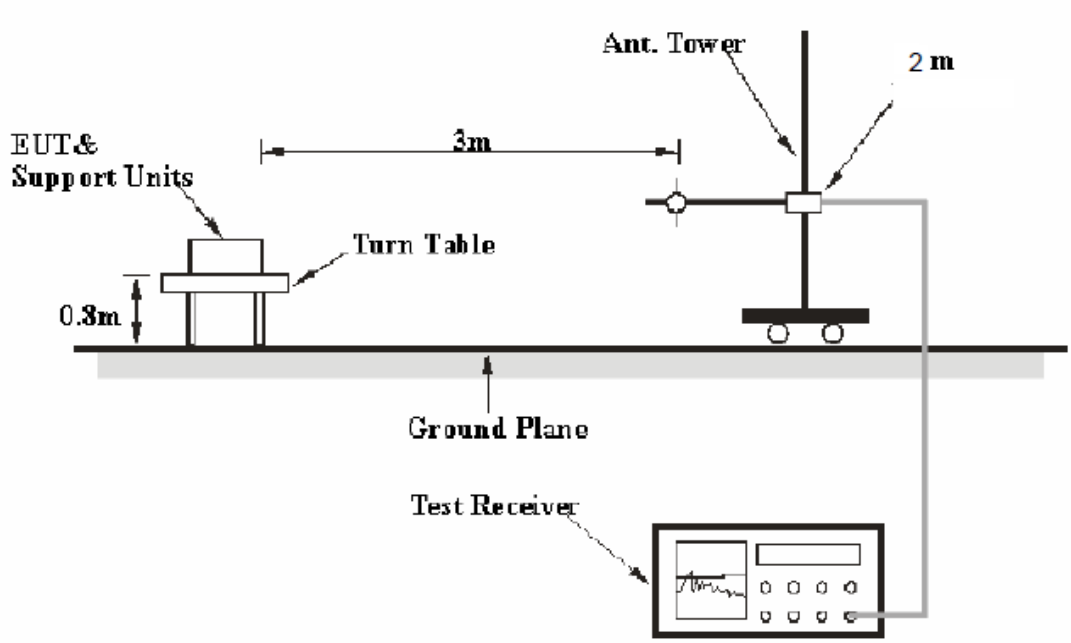
Note:
1) Corrected Amplitude = Reading + Correction Factor
2) Correction Factor =LISN/ISN VDF (Voltage Division Factor) + Cable Loss + Pulse Limiter Attenuation
3) Margin = Limit – Corrected Amplitude

FCC §18.305 – FIELD STRENGTH

Applicable Standard

FCC §18.305(b)

EUT Setup



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the FCC MP - 5.

The EUT was connected to 240 VAC/60 Hz power source.

EMI Test Receiver Setup and Spectrum Analyzer Setup

The system was investigated from 9 kHz to 1000 MHz.

During the radiated emission test, the EMI test receiver and Spectrum Analyzer were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
9 kHz – 150 kHz	200 Hz	1 kHz	200 Hz	QP
150 kHz – 30 MHz	9 kHz	30 kHz	9 kHz	QP
30MHz – 1000 MHz	100 kHz	300 kHz	120kHz	QP

Test Procedure

During the conducted emission test, the EUT was connected to the AC floor outlet.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak detection mode.

Corrected Amplitude Calculation

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

Corrected Amplitude = Reading + Antenna Factor + Cable Loss

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

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
ETS-LINDGREN	Passive Loop Antenna	6512	00029604	2011-11-30	2014-11-29
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2013-11-12	2014-11-12
TDK	Chamber	Chamber A	2#	2012-10-15	2015-10-15
HP	Amplifier	HP8447E	1937A01046	2014-05-06	2015-05-06
R&S	Auto test Software	EMC32	V9.10	-	-

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	25℃
Relative Humidity:	50 %
ATM Pressure:	100.0 kPa

The testing was performed by Webb Liu on 2014-09-15

Test Mode: Max output power and hot water

1)9 kHz-30 MHz

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Detector (PK/QP/Ave.)	Direction (Degree)	Height (m)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
0.19	72.15	QP	148	2	60.2	83.52	11.37
1.80	70.16	QP	86	2	41.2	83.52	13.36
8.01	69.56	QP	281	2	33.0	83.52	13.96
10.20	66.59	QP	95	2	32.2	83.52	16.93
19.98	68.46	QP	192	2	31.4	83.52	15.06
22.21	67.89	QP	318	2	31.2	83.52	15.63

2)30 MHz – 1000 MHz

Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (deg)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)	Remark
31.308375	32.14	103.0	V	0.0	-7.1	83.52	51.38	QP
40.978750	26.48	100.0	V	326.0	-14.1	83.52	57.04	QP
58.711500	35.57	155.0	V	173.0	-19.9	83.52	47.95	QP
66.548125	29.19	155.0	V	217.0	-19.6	83.52	54.33	QP
84.458250	26.80	170.0	V	0.0	-19.1	83.52	56.72	QP
86.435625	28.74	127.0	V	304.0	-19.4	83.52	54.78	QP

******END OF REPORT******