FCC PART 18

TEST REPORT

For

Fruto Industrial International Ltd.

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

FCC ID: ZBNC18-16

Report Type:	Product Type:
Original Report	INDUCTION COOKTOP RANGE

Report Number:	RSZ170926551-00
Report Date:	2017-10-30
Reviewed By:	Hill He EMC Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Fruto Industrial International Ltd.*'s product, model number: *C18-23 (FCC ID: ZBNC18-16)* or the "EUT" in this report is a *INDUCTION COOKTOP RANGE*, which was measured approximately: 37.0 cm (L) * 29 cm (W) * 5.6 cm (H), the rated with input voltage: AC 120V/60Hz. The operating frequency is 28 kHz.

Note: The serial models: C18-16 and C18-23 are identical; they have the same or similar structure, PCB, Material and function to the testing product. The difference between them is little parameters. C18-23 was selected for fully testing, the detailed information can be referred to the declaration which was stated and guaranteed by the applicant.

**All measurement and test data in this report was gathered from production sample serial number: 1709087 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2017-09-26.*

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 compliance with FCC Part 18 limits.

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.

Measurement Uncertainty:

Item			Expanded Measurement uncertainty
AC Power Line Conducted Emissions			2.20 dB (k=2, 95% level of confidence)
Radiated emission	30MHz~200MHz	Horizontal	4.58 dB (k=2, 95% level of confidence)
		Vertical	4.59 dB (k=2, 95% level of confidence)
	200MHz~1 GHz	Horizontal	4.83 dB (k=2, 95% level of confidence)
		Vertical	5.85 dB (k=2, 95% level of confidence)
	1 GHz~6 GHz	Horizontal/Vertical	4.08 dB (k=2, 95% level of confidence)
	Above 6 GHz	Horizontal/Vertical	4.59 dB (k=2, 95% level of confidence)
Occupied Bandwidth			±0.5kHz
Temperature			±1.0℃

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China.

Bay Area Compliance Laboratories Corp. (Shenzhen) has been accredited to ISO/IEC 17025 by CNAS (Lab code: L2408). And accredited to ISO/IEC 17025 by NVLAP (Lab code: 200707-0), the FCC Designation No. CN5001 under the KDB 974614 D01.

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.

Bay Area Compliance Laboratories Corp. (Shenzhen) was registered with ISED Canada under ISED Canada Registration Number 3062B.

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 modifications were made to the EUT tested.

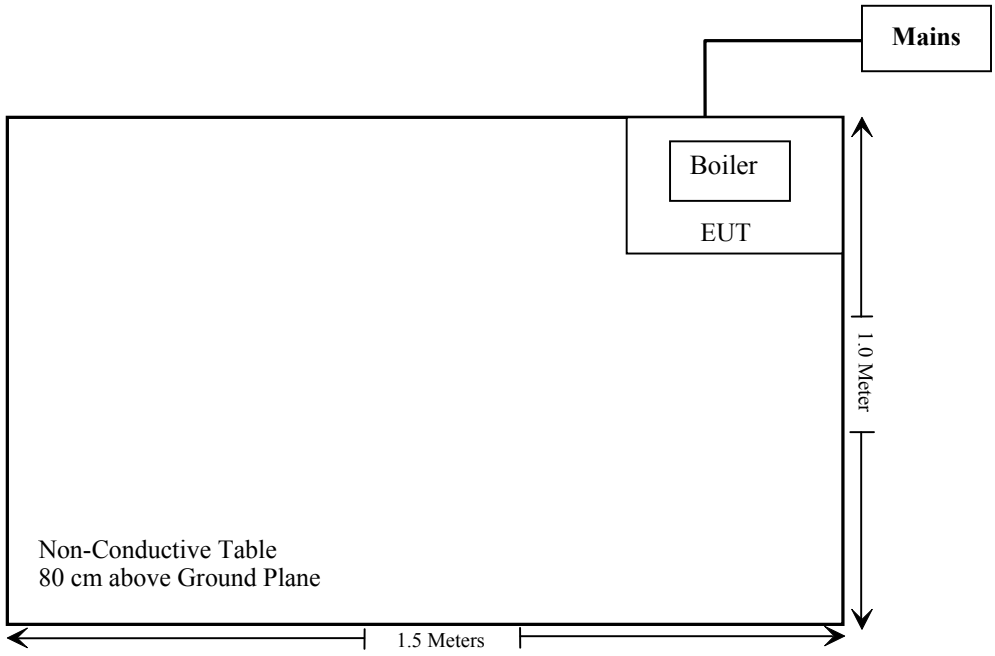
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
OUKE	Boiler	N/A	N/A

External Cable List and Details

Cable Description	Length (m)	From/Port	To
Un-shielding Un-detachable AC Cable	1.0	EUT	LISN

Block Diagram of Test Setup



TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
CONDUCTED EMISSIONS					
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2016-10-19	2017-10-19
Rohde & Schwarz	LISN	ENV216	3560.6650.12-101613-Yb	2016-12-07	2017-12-07
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2017-05-21	2017-11-19
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
RADIATED EMISSIONS					
HP	Amplifier	HP8447E	1937A01046	2017-05-21	2017-11-19
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2016-12-07	2017-12-07
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-17	2017-12-16
TDK	Chamber	Chamber A	2#	2016-12-05	2019-12-05
R&S	Auto test Software	EMC32	V9.10	NCR	NCR
ETS-LINDGREN	PASSIVE LOOP	6512	29604	2014-12-24	2017-12-24

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

SUMMARY OF TEST RESULT

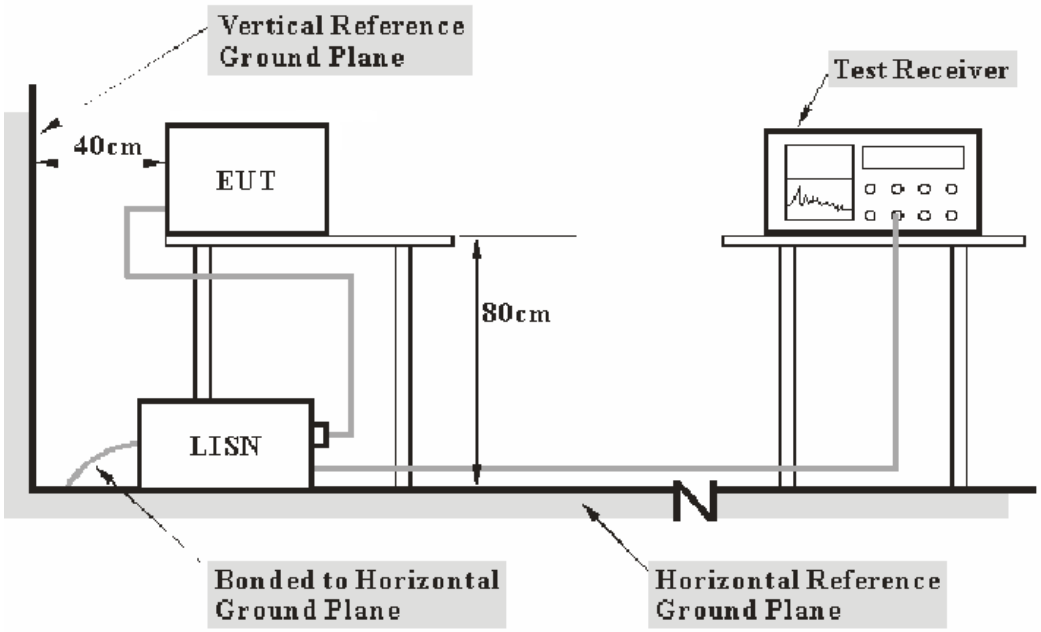
FCC Rules	Description of Test	Results
§18.307	AC Line Conducted Emissions	Compliance
§18.305	Field Strength	Compliance

FCC §18.307 - AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §18.307

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.

The socket was connected to a 120 VAC/ 60Hz 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

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

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

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC PART 18,

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

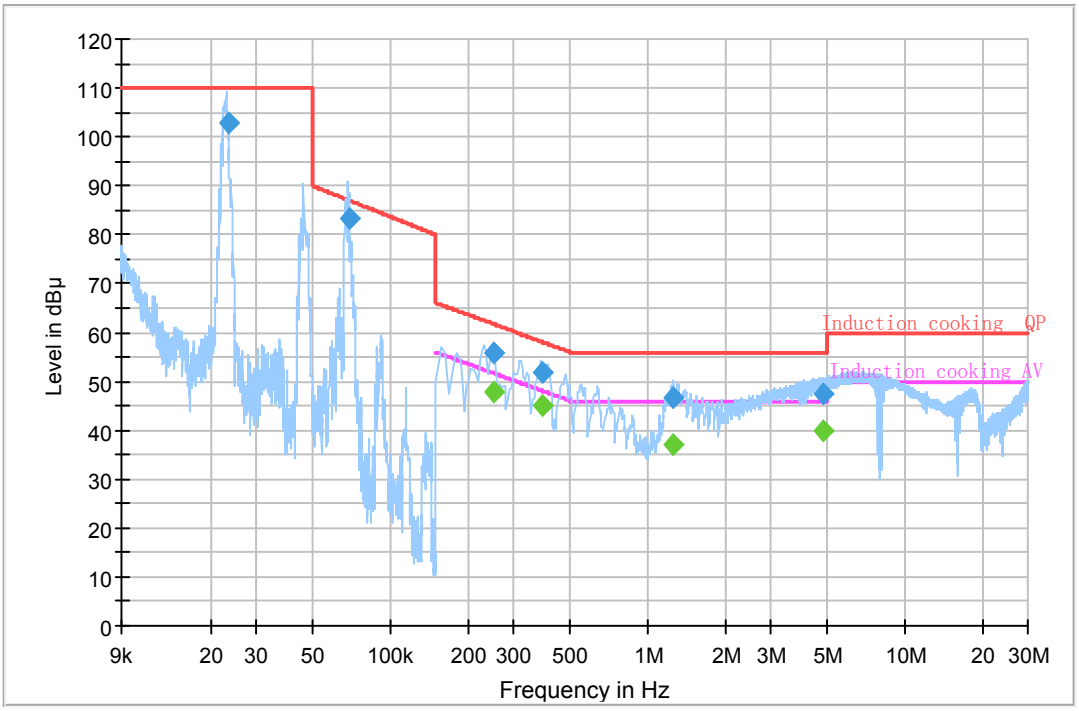
Temperature:	25 ℃
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Joson Xiao on 2017-09-30.

Test Mode: Cooking

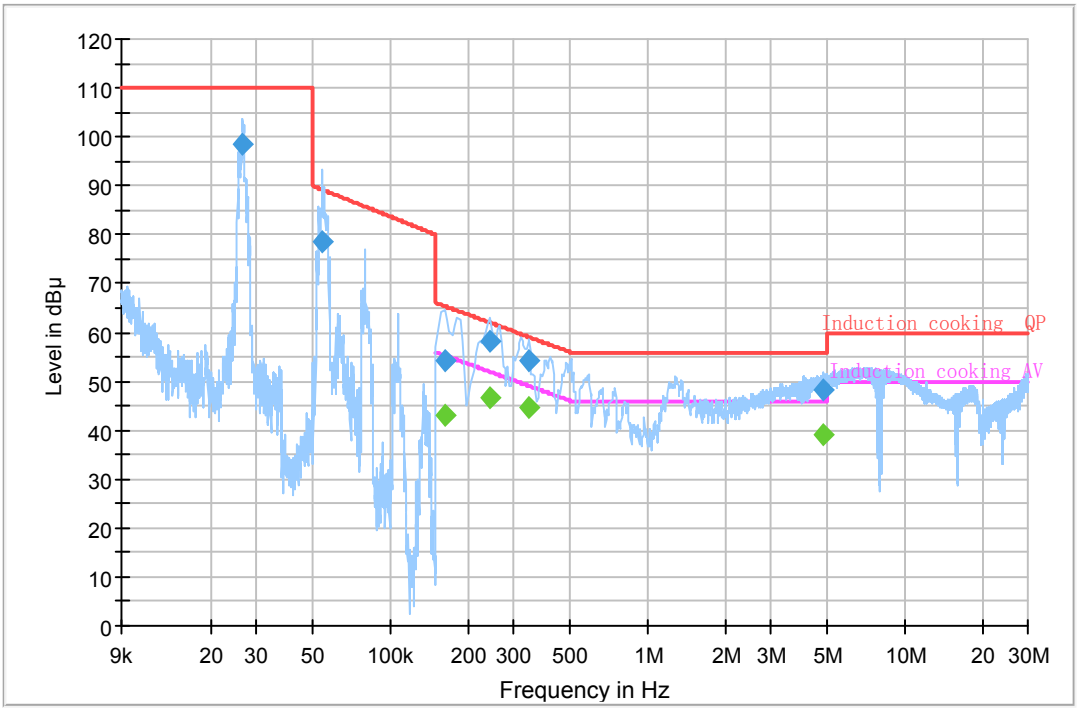
Model:C18-23

AC 120V/60 Hz, Line:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.023317	102.8	20.2	110.0	7.2	QP
0.069414	83.2	20.2	87.0	3.8	QP
0.253500	55.8	20.2	61.6	5.9	QP
0.391790	51.9	20.2	58.0	6.1	QP
1.243310	46.6	20.1	56.0	9.4	QP
4.766090	47.6	20.1	56.0	8.4	QP
0.253500	48.0	20.2	51.6	3.6	Ave.
0.391790	44.9	20.2	48.0	3.1	Ave.
1.243310	37.1	20.1	46.0	9.0	Ave.
4.766090	39.7	20.1	46.0	6.3	Ave.

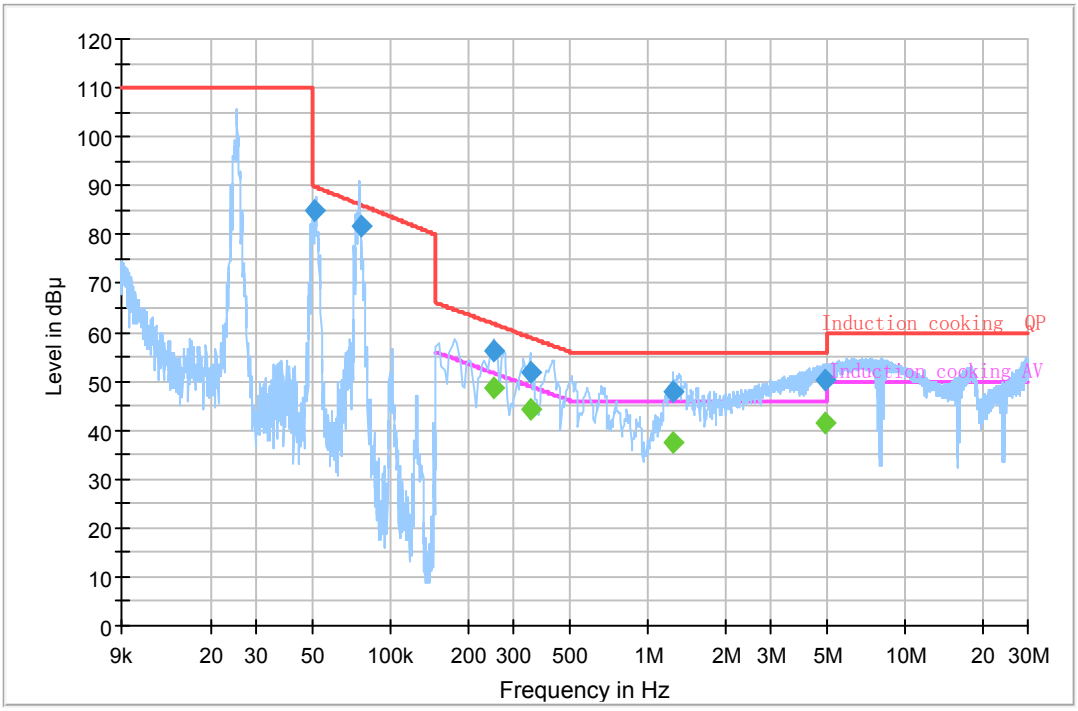
AC 120V/ 60 Hz, Neutral:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.026474	98.4	20.2	110.0	11.6	QP
0.054349	78.4	20.2	89.2	10.8	QP
0.162000	54.1	20.2	65.4	11.2	QP
0.242000	58.1	20.2	62.0	3.9	QP
0.346000	54.2	20.2	59.1	4.9	QP
4.814000	48.2	20.1	56.0	7.8	QP
0.162000	43.2	20.2	55.4	12.2	Ave.
0.242000	46.7	20.2	52.0	5.3	Ave.
0.346000	44.5	20.2	49.1	4.6	Ave.
4.814000	39.0	20.1	46.0	7.0	Ave.

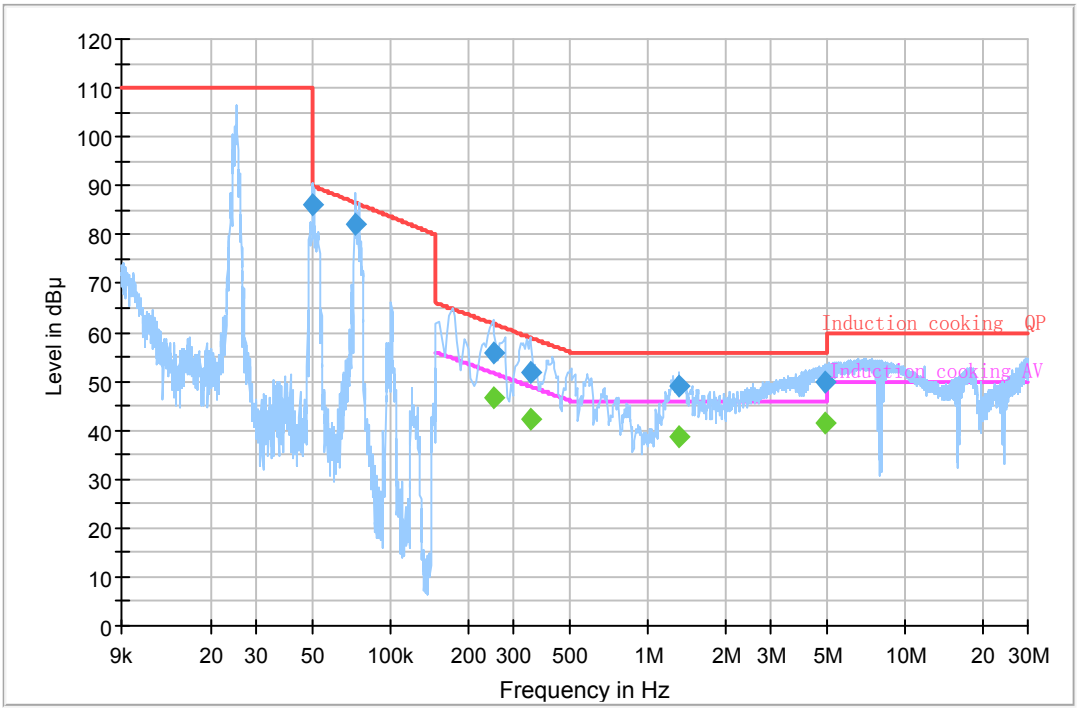
Model:C18-16

AC 120V/60 Hz, Line:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.050722	84.9	20.2	89.9	5.0	QP
0.076554	81.8	20.2	86.1	4.3	QP
0.253500	56.3	20.2	61.6	5.4	QP
0.352750	52.0	20.2	58.9	6.9	QP
1.243190	48.0	20.1	56.0	8.0	QP
4.916110	50.1	20.1	56.0	5.9	QP
0.253500	48.6	20.2	51.6	3.1	Ave.
0.352750	44.4	20.2	48.9	4.5	Ave.
1.243190	37.6	20.1	46.0	8.5	Ave.
4.916110	41.4	20.1	46.0	4.6	Ave.

AC 120V/ 60 Hz, Neutral:



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
0.050074	86.0	20.2	90.0	4.0	QP
0.073195	82.1	20.2	86.5	4.5	QP
0.250000	55.8	20.2	61.8	6.0	QP
0.350000	51.9	20.2	7.1	7.0	QP
1.314000	48.9	20.1	56.0	7.1	QP
4.898000	50.0	20.1	56.0	6.0	QP
0.250000	46.7	20.2	51.8	5.1	Ave.
0.350000	42.3	20.2	49.0	6.7	Ave.
1.314000	38.9	20.1	46.0	7.1	Ave.
4.898000	41.4	20.1	46.0	4.6	Ave.

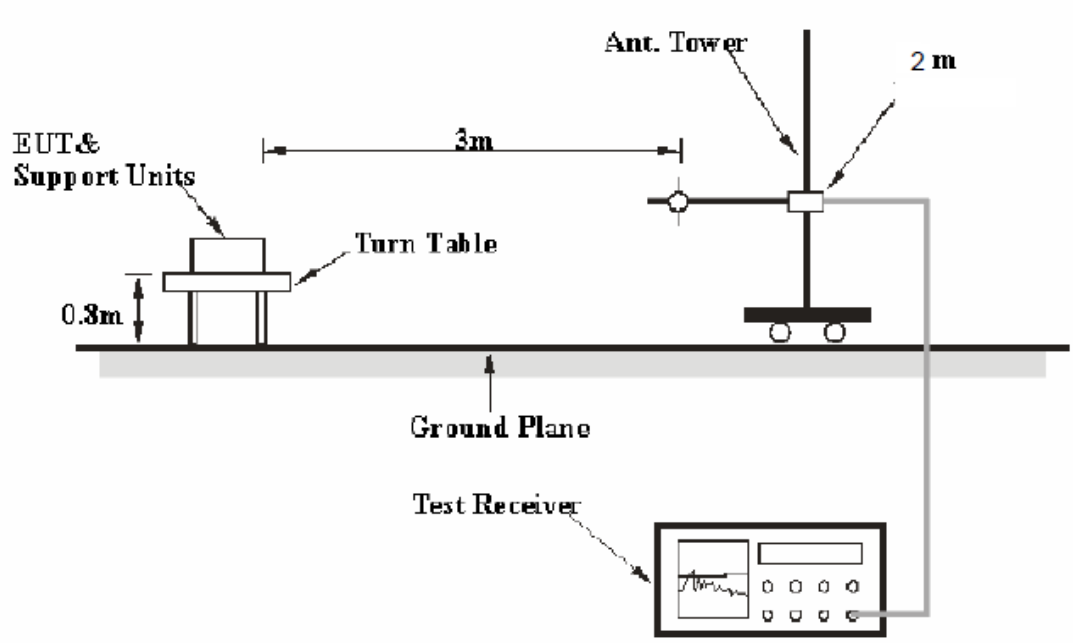
Note:
1) Corrected Amplitude = Reading + Correction Factor
2) Correction Factor =LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter
3) Margin = Limit – Corrected Amplitude

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 120 VAC/60 Hz power source.

EMI Test Receiver Setup and Spectrum Analyzer Setup

The system was investigated from 9kHz 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 & Margin 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 = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

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

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 18,

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 and Plots

Environmental Conditions

Temperature:	25 ℃
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Joson Xiao on 2017-09-30.

Test Mode: Cooking

Model:C18-23

***9kHz-30 MHz*:**

Frequency (KHz)	Corrected Amplitude (dBμV/m)	Detector (PK/QP)	Antenna height (cm)	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
30.445500	49.02	QP	100.0	303.0	0.0	103.52	54.5
37.074750	47.62	QP	106.0	279.0	-4.3	103.52	55.9
42.138500	38.91	QP	106.0	298.0	-7.7	103.52	64.61
136.123000	43.30	QP	186.0	280.0	-4.8	103.52	60.22
145.069750	39.66	QP	206.0	77.0	-4.6	103.52	63.86
206.669750	40.99	QP	167.0	48.0	-5.7	103.52	62.53

Note: 1) Within measurement uncertainty.
2) The radiation limits (3m distance) = 20*log1500+40*log (30/3）= 103.52 （dBuV/m）

***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
0.96	42.16	120	V	271	48.0	83.52	41.36	QP
1.06	45.82	130	V	168	46.2	83.52	37.70	QP
1.14	39.17	130	V	72	46.2	83.52	44.35	QP
2.08	40.57	100	H	56	40.9	83.52	42.95	QP
2.61	41.77	100	H	183	40.9	83.52	41.75	QP
3.41	38.46	140	H	172	40.9	83.52	45.06	QP

Model:C18-16

***9kHz-30 MHz*:**

Frequency (KHz)	Corrected Amplitude (dBμV/m)	Detector (PK/QP)	Antenna height (cm)	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
32.019625	50.23	QP	109.0	313.0	-1.1	103.52	53.29
35.737750	51.22	QP	100.0	321.0	-3.4	103.52	52.3
43.696125	39.48	QP	100.0	288.0	-8.9	103.52	64.04
121.543625	43.53	QP	274.0	92.0	-5.8	103.52	59.99
136.277000	43.22	QP	202.0	281.0	-4.8	103.52	60.3
152.764625	39.62	QP	221.0	283.0	-4.6	103.52	63.9

Note: 1) Within measurement uncertainty.
2) The radiation limits (3m distance) = 20*log1500+40*log (30/3）= 103.52 （dBuV/m）

***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
0.37	45.18	110	V	114	55.6	83.52	38.34	QP
0.98	46.22	140	V	173	48.0	83.52	37.30	QP
1.07	41.08	130	V	81	46.2	83.52	42.44	QP
1.76	42.77	150	H	47	46.2	83.52	40.75	QP
2.14	39.97	100	H	57	40.9	83.52	43.55	QP
2.83	40.11	100	H	231	40.9	83.52	43.41	QP

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