

FCC CERTIFICATION TEST REPORT

FOR

Applicant	:	Zhongshan Youlong Electrical Appliances Co.,Ltd.
Address	:	Qiangye South Road,Maxin Industrial Zone, Huangpu, 538429, Zhongshan , Guangdong , China
Equipment under Test	:	Induction cooker
Model No	:	YL-K9, YL-A2A, YL-D12
FCC ID	:	SAUYLK9
Manufacturer	:	Zhongshan Youlong Electrical Appliances Co.,Ltd.
Address	:	Qiangye South Road,Maxin Industrial Zone, Huangpu, 538429, Zhongshan , Guangdong , China

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

Add: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City,
Guangdong Province, China, 523808

Tel: +86-0769-22891499 [Http://www.dgddt.com](http://www.dgddt.com)

REPORT

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TEST REPORT DECLARE

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Address	:	Qiangye South Road,Maxin Industrial Zone, Huangpu, 538429, Zhongshan , Guangdong , China

Test Standard Used:

FCC Part 18:2012; FCC/OST MP-5 (1986)

We Declare:

The equipment described above is tested by Dongguan Dongdian Testing Service Co., Ltd and in the configuration tested the equipment complied with the standards specified above (class B). The test results are contained in this test report and Dongguan Dongdian Testing Service Co., Ltd is assumed of full responsibility for the accuracy and completeness of these tests.

After test and evaluation, our opinion is that the equipment provided for test compliance with the requirement of the above FCC standards.

Report No:	DDT-F130012		
Date of Test:	2013/01/18	Date of Report:	2013/01/19

Prepared By:


Leo Liu/Engineer

Approved By:

Jamy Yu/EMC Manager

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

1. Summary of test results

Description of Test Item	Standard	CLASS	Results
Power Line Conducted Emission Test (9KHz to 30MHz)	FCC Part 18:2012; FCC/OST MP-5 (1986)	18.307(a)	PASS
Radiated Emission Test (9KHz to 30MHz)	FCC Part 18:2012; FCC/OST MP-5 (1986)	18.305(b)	PASS
Note: A pre-test was performed on the EUT in cooking mode with max, mid and low power in order to find the worst case. Test the EUT in cooking mode with max power for the compliance test as the worst case was found.			

2. General test information

2.1. Description of EUT

EUT* Name	: Induction cooker
Model Number	: YL-K9, YL-A2A, YL-D12
Difference of Model Number	: No any difference
EUT function description	: Please reference user manual of this device
Power supply	: AC 120V, 60Hz
EUT Class	: Class B, intended primarily for use in the domestic environment
Work frequency	: 0.02MHz to 0.03MHz
Date of Receipt	: 2013/01/05
Sample Type	: Series production

Note: EUT is the ab. of equipment under test.

2.2. Accessories of EUT

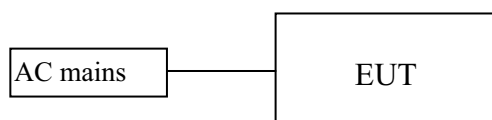
Description of Accessories	Manufacturer	Model number or Type	Other
/	/	/	/

2.3. Assistant equipment used for test

Description of Assistant equipment	Manufacturer	Model number or Type	Other
/	/	/	/

2.4. Block diagram EUT configuration for test

For EUT ON:



(EUT: Induction cooker)

2.5. Test environment conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature range:	21-25°C
Humidity range:	40-75%
Pressure range:	86-106kPa

2.6. Test laboratory

Dongguan Dongdian Testing Service Co., Ltd

Add: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808 Tel: +86-0769-22891499 <http://www.dgddt.com>

FCC Registration Number: 270092

2.7. Measurement uncertainty

Test Item	Uncertainty
Uncertainty for Power line Conduction emission test	2.94dB (9KHz-150KHz)
	2.44dB (150KHz-30MHz)
Uncertainty for Radiation Emission test (9KHz-150KHz)	3.41dB
Uncertainty for Radiation Emission test (150KHz-30MHz)	3.12dB

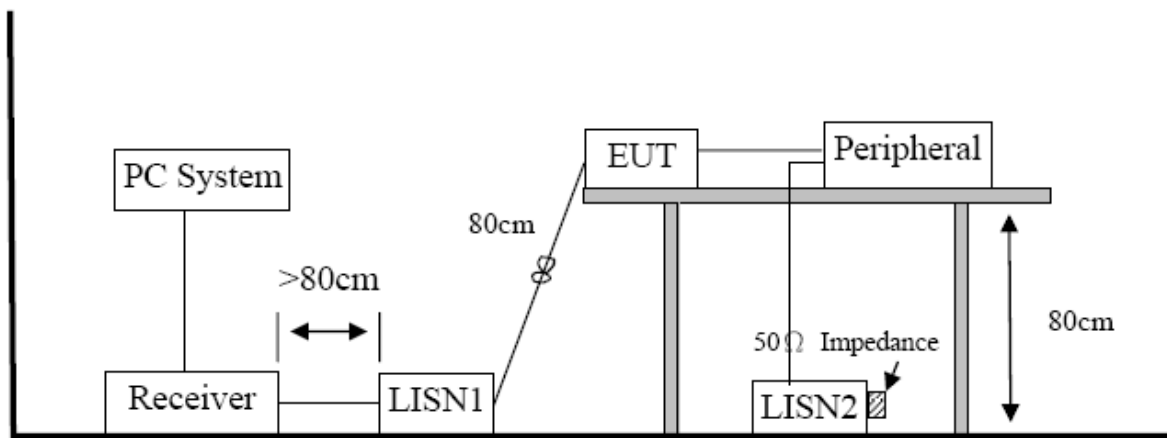
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

3. Power Line Conducted Emission Test

3.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Test Receiver	R&S	ESU8	100316	2012/11/26	1 Year
2	LISN	R&S	ENV216	101109	2012/11/26	1 Year
3	Pulse Limiter	R&S	ESH3-Z2	101242	2012/11/26	1 Year
4	RF Cable	R&S	R01	10403	2012/11/26	1Year

3.2. Block diagram of test setup



3.3. Power Line Conducted Emission Limits

Frequency	Quasi-Peak Level dB(μV)	Average Level dB(μV)
9kHz ~ 50KHz	110	/
50KHz ~ 150KHz	90 to 80	/
150KHz ~ 500KHz	66 to 56	56 to 46
500KHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	59

Note: The lower limit shall apply at the transition frequencies.

3.4. Test Procedure

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 3.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per FCC/OST MP-5 (1986).

All support equipment power received from a second LISN.

Emissions were measured on each current carrying line of the EUT using an EMI Test Receiver connected

to the LISN powering the EUT.

The Receiver scanned from 9KHz to 30MHz for emissions in each of the test modes.

During the above scans, the emissions were maximized by cable manipulation.

The test mode(s) described in clause 2.4 were scanned during the preliminary test.

After the preliminary scan, we found the test mode producing the highest emission level.

The EUT configuration and worse cable configuration of the above highest emission levels were recorded for reference of the final test.

EUT and support equipment were set up on the test bench as per the configuration with highest emission level in the preliminary test.

A scan was taken on both power lines, Neutral and Line, recording at least the six highest emissions.

Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 200Hz for 9 KHz to 150 KHz measure and 10 KHz for 150 KHz to 30MHz measure.

3.5. Test Result

PASS. (See below detailed test result)

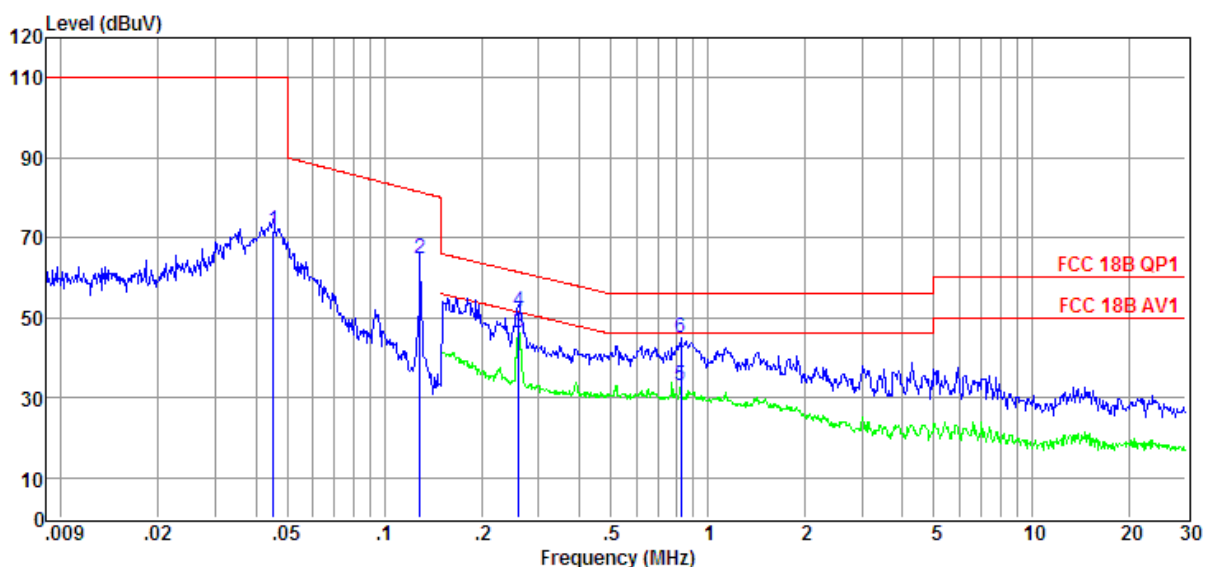
Note1: A pre-test was performed on the EUT in cooking mode with max, mid and low power in order to find the worst case. Test the EUT in cooking mode with max power for the compliance test as the worst case was found.

Note2: All emissions not reported below are too low against the prescribed limits.

Conducted Emission Test Result

Test Site	: DDT 1# Shield Room	E:\2012 test data\ 20121217CE.EM6
Test Date	: 2013-01-18	Tested By : Jerry
EUT	: Induction cooker	Model Number : YL-K9
Power Supply	: AC 120V/60Hz	Test Mode : Operation
Condition	: Temp:24.5'C,Humi:55%	LISN : 2012 ENV216/LINE

Data : 2



Item	Freq	Read Level	LISN Factor	Cable Loss	Pluse Limiter Factor	Result Level	Limit Line	Over Limit	Detector	Phase
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)		
1	0.05	52.12	9.69	0.04	9.89	71.74	110.00	-38.26	QP	LINE
2	0.13	44.97	9.64	0.04	9.90	64.55	81.39	-16.84	QP	LINE
3	0.26	26.66	9.63	0.04	9.89	46.22	51.44	-5.22	Average	LINE
4	0.26	31.89	9.63	0.04	9.89	51.45	61.44	-9.99	QP	LINE
5	0.83	13.30	9.69	0.05	9.88	32.92	46.00	-13.08	Average	LINE
6	0.83	25.30	9.69	0.05	9.88	44.92	56.00	-11.08	QP	LINE

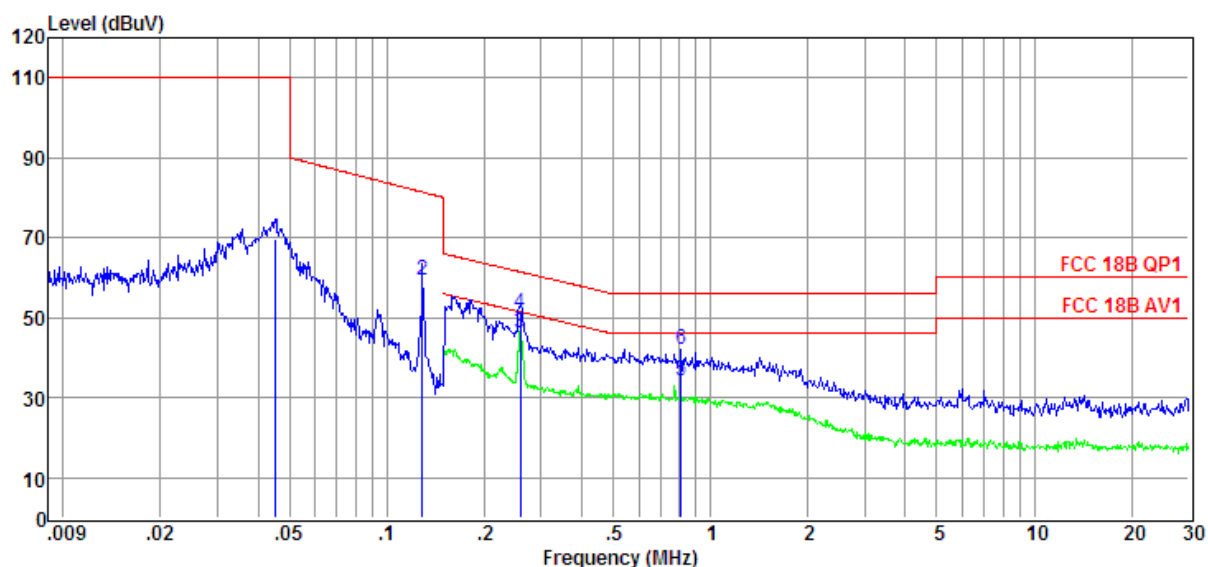
Note: 1. Result Level = Read Level + LISN Factor + Pluse Limiter Factor + Cable loss

2. If QP Result comply with AV limit, AV Result is deemed to comply with AV limit

Conducted Emission Test Result

Test Site	: DDT 1# Shield Room	E:\2012 test data\ 20121217CE.EM6
Test Date	: 2013-01-18	Tested By : Jerry
EUT	: Induction cooker	Model Number : YL-K9
Power Supply	: AC 120V/60Hz	Test Mode : Operation
Condition	: Temp:24.5'C,Humi:55%	LISN : 2012 ENV216/NEUTRAL

Data : 4



Item	Freq	Read Level	LISN Factor	Cable Loss	Pluse Limiter Factor	Result Level	Limit Line	Over Limit	Detector	Phase
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)		
1	0.05	50.18	9.63	0.04	9.89	69.74	110.00	-40.26	Peak	NEUTRAL
2	0.13	39.79	9.82	0.04	9.90	59.55	81.39	-21.84	QP	NEUTRAL
3	0.26	26.79	9.64	0.04	9.89	46.36	51.47	-5.11	Average	NEUTRAL
4	0.26	31.71	9.64	0.04	9.89	51.28	61.47	-10.19	QP	NEUTRAL
5	0.81	14.67	9.66	0.05	9.88	34.26	46.00	-11.74	Average	NEUTRAL
6	0.81	22.67	9.66	0.05	9.88	42.26	56.00	-13.74	QP	NEUTRAL

Note: 1. Result Level = Read Level + LISN Factor + Pluse Limiter Factor + Cable loss

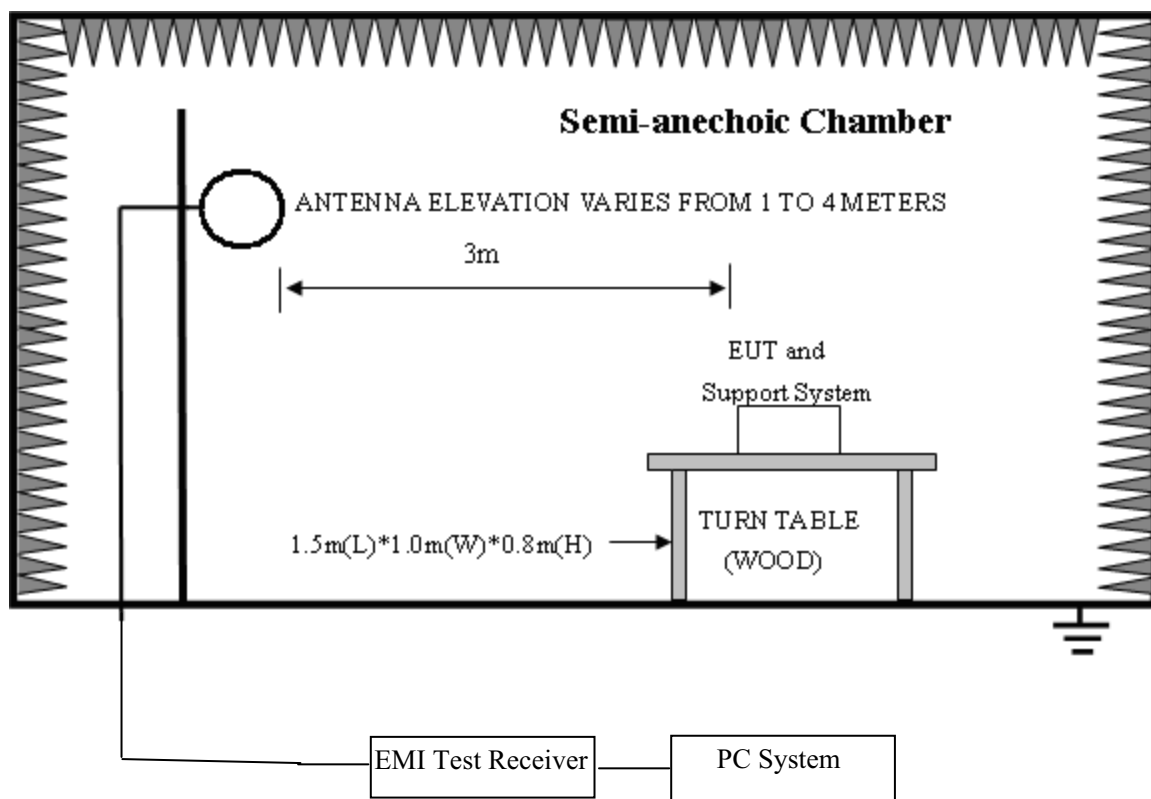
2. If QP Result comply with AV limit, AV Result is deemed to comply with AV limit

4. Radiated emission test

4.1. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	EMI Test Receiver	R&S	ESU8	100316	2012/11/26	1Y
2	Loop antenna	TESEQ	HLA6120	20129	2012/11/26	1Y
3	RF Cable	R&S	R01	10403	2012/11/26	1Y
4	RF Cable	R&S	R02	10512	2012/11/26	1Y

4.2. Block diagram of test setup



4.3. Radiated emission limit

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	430
	On or above 90 kHz	Any	300	430

For Induction cooking ranges and the operation frequency is below 90KHz, the field strength limit is 1500uV/m@30m, i.e. $20\lg(1500)+20\lg(30/3)=63.52+20=83.52\text{dBuV/m}@3\text{m distance}$.

4.4. Test Procedure

Procedure of Preliminary Test

The EUT and Support equipment, if needed, were put placed on a non-metallic table, 80cm above the ground plane.

Configuration EUT to simulate typical usage as described in clause 2.4 and test equipment as described in clause 4.2 of this report.

All I/O cables were positioned to simulate typical actual usage as per FCC/OST MP-5 (1986).

Mains cables, telephone lines or other connections to auxiliary equipment located outside the test are shall drape to the floor, be fitted with ferrite clamps or ferrite tubes placed on the floor at the point where the cable reaches the floor and then routed to the place where they leave the turntable. No extension cords shall be used to mains receptacle.

The antenna was placed at 3 meter away from the EUT as stated in FCC/OST MP-5 (1986). The antenna connected to the Spectrum Analyzer via a cable and at times a pre-amplifier would be used.

The Receiver quickly scanned from 9KHz to 30MHz. The EUT test program was started. Emissions were scanned and measured rotating the EUT to 360 degrees and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

The test mode(s) described in clause 2.4 were scanned during the preliminary test:

After the preliminary scan, we found the test mode producing the highest emission level. The EUT and cable configuration, antenna position, polarization and turntable position of the above highest emission level were recorded for the final test.

Procedure of Final Test

EUT and support equipment were set up on the turntable as per the configuration with highest emission level in the preliminary test.

The Receiver scanned from 9KHz to 30MHz. Emissions were scanned and measured rotating the EUT to 360 degrees, varying cable placement and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarization, to maximize the emission reading level.

Recorded at least the six highest emissions. Emission frequency, amplitude, antenna position, polarization and turntable position were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit and only Q.P. reading is presented.

The test data of the worst-case condition(s) was recorded.

The bandwidth of test receiver is set at 200Hz for 9 KHz to 150 KHz measure and 10 KHz for 150 KHz to 30MHz measure.

4.5. Test result

PASS. (See below detailed test result)

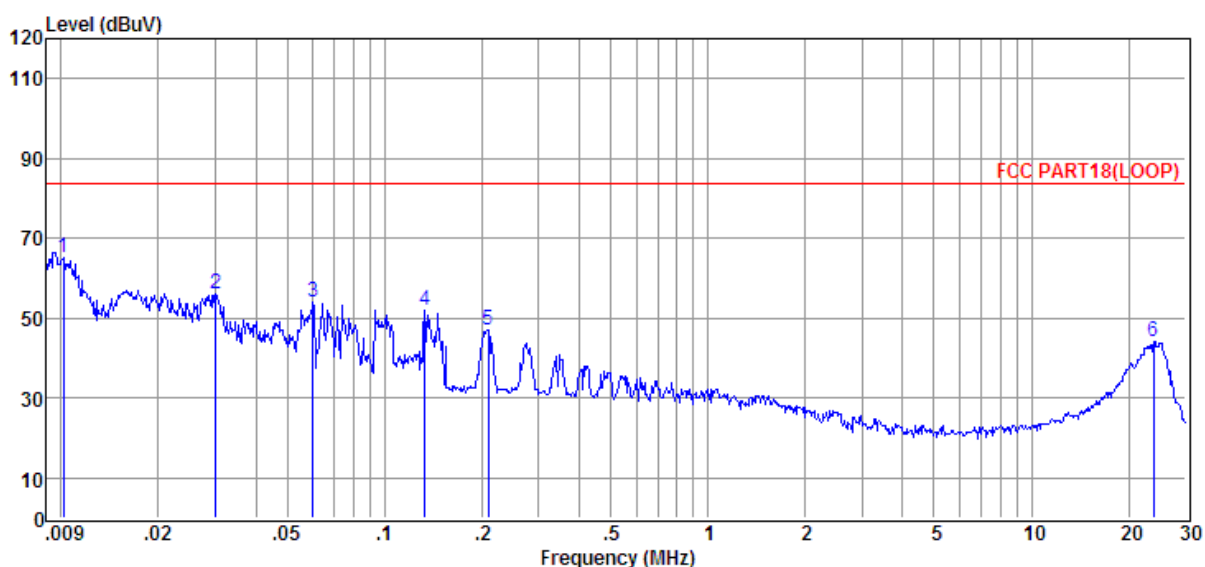
Note1: A pre-test was performed on the EUT in cooking mode with max, mid and low power in order to find the worst case. Test the EUT in cooking mode with max power for the compliance test as the worst case was found.

Note2: All emissions not reported below are too low against the prescribed limits.

Test Site : DDT 1# Chamber
Test Date : 2013-01-18
EUT : Induction cooker
Power Supply : AC 120V/60Hz
Condition : Temp:24.5'C,Humi:55%
Memo :

E:\2012 test data\ 20121217RE.EM6
Tested By : Jerry
Model Number : YL-K9
Test Mode : Operation
Polarization : HORIZONTAL

Data : 98

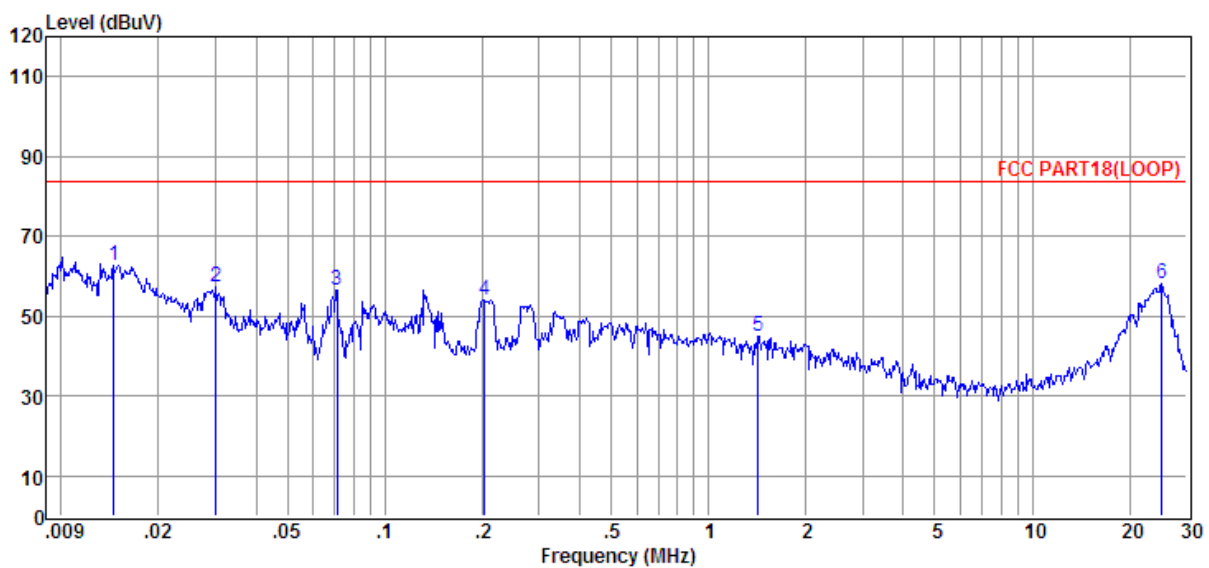


Item (Mark)	Freq (MHz)	Read Level (dBμV)	Transducer Factor (dB)	Result Level (dBμV)	Limit Line (dBμV)	Over Limit (dB)	Detector	Polarization
1	0.01	55.18	9.99	65.17	83.52	-18.35	Average	HORIZONTAL
2	0.03	46.34	9.77	56.11	83.52	-27.41	Average	HORIZONTAL
3	0.06	44.11	9.78	53.89	83.52	-29.63	Average	HORIZONTAL
4	0.13	42.06	9.75	51.81	83.52	-31.71	Average	HORIZONTAL
5	0.21	37.12	9.69	46.81	83.52	-36.71	Average	HORIZONTAL
6	23.91	34.07	10.2	44.27	83.52	-39.25	Average	HORIZONTAL

Note: Transducer =Antenna Factor + Cable loss
 Level = Read Level + Transducer

Test Site : DDT 1# Chamber **E:\2012 test data\ 20121217RE.EM6**
Test Date : 2013-01-18 **Tested By** : Jerry
EUT : Induction cooker **Model Number** : YL-K9
Power Supply : AC 120V/60Hz **Test Mode** : Operation
Condition : Temp:24.5'C,Humi:55% **Polarization** : VERTICAL
Memo :

Data : 101



Item (Mark)	Freq (MHz)	Read Level (dBμV)	Transducer Factor (dB)	Result Level (dBμV)	Limit Line (dBμV)	Over Limit (dB)	Detector	Polarization
1	0.01	52.61	9.95	62.56	83.52	-20.96	Average	VERTICAL
2	0.03	47.48	9.76	57.24	83.52	-26.28	Average	VERTICAL
3	0.06	46.86	9.73	56.59	83.52	-26.93	Average	VERTICAL
4	0.13	44.27	9.76	54.03	83.52	-29.49	Average	VERTICAL
5	0.21	35	9.84	44.84	83.52	-38.68	Average	VERTICAL
6	23.91	47.71	10.27	57.98	83.52	-25.54	Average	VERTICAL

Note: Transducer =Antenna Factor + Cable loss
 Level = Read Level + Transducer