

Client Information:Guangdong Galanz Enterprises Co., Ltd.Applicant add.:No.25 South Ronggui Rd., Shunde, Foshan, Guangdong, P.R. ChinaProductInformation:Microwave OvenEUT Name:Microwave Oven					
Applicant: Guangdong Galanz Enterprises Co., Ltd. Applicant add.: No.25 South Ronggui Rd., Shunde, Foshan, Guangdong, P.R. China ProductInformation: EUT Name: Microwave Oven Microwave Oven					
Applicant add.: No.25 South Ronggui Rd., Shunde, Foshan, Guangdong, P.R. China ProductInformation: EUT Name: Microwave Oven Microwave Oven					
EUT Name: Microwave Oven					
Model No.: $RED(X)U(Y)H-(Z)$					
Brand Name: N/A					
FCC ID: UHW10048002					
Standards: 47 CFR PART 18:2015					
Prepared By:					
UL-CCIC Company Limited					
Add. : Electronic Building, Parage Electronic Industrial Park, No. 8 Nanyun Er Road, Guangzhou Science Park, Guangzhou, 510663 China					
Date of Receipt. May 16, 2017 Date of Test. May 16~Jun. 06, 2017					
This device described above has been tested by BZT Testing Technology Co., Ltd, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report. This report shall not be reproduced except in full, without the written approval of UL-CCIC Company Limited.					
Reviewed by: <u>Ean Shan</u> Approved by: <u>Jinda</u> Mi					



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1 TEST SUMMARY								
Electromagnetic Interference (EMI)								
Test	Test Requirement	Test Method	Class / Severity	Result				
Operating Frequency	47 CFR PART 18: 2015	FCC OST/ MP-5:1986	18.301	PASS				
Conducted Emission (150 kHz to 30 MHz)	47 CFR PART 18: 2015	FCC OST/ MP-5:1986	18.307(b)	PASS				
Radiated Emission (9 kHz to 30 MHz)	47 CFR PART 18: 2015	FCC OST/ MP-5:1986	18.305(b)	PASS				
Radiated Emission (30 MHz to 1 GHz)	47 CFR PART 18: 2015	FCC OST/ MP-5:1986	18.305(b)	PASS				
	2015							

Remark :

EUT: In this whole report EUT means Equipment Under Test.

Model named description:

RED(X)O(Y)H-(Z)

RED(X)0(Y)H-(Z)model designations:

R: denotes "Over-The-Range" model..

E: denotes one of the electric controller.

D: denotes the type of the cavity.

0: denote the output power is 1000W/950W

H: denotes the Pull-out type door

Variable (X): for sale area, including a combination of numbers, may be 42,45, 48,51 or 56, which don't affect the certification.

Variable (Y): It represents the differences of the appearance, including combination of letters and/or numbers, which don't affect the certification.

Variable (Z): may compose by one to six characters from A to Z and/or numbers from 0 to 9. It denotes one of the cosmetics of the microwave oven, which don't affect the certification.

RED480JAH-PA0H0A is identical to NS-OTR16SS8Q except for the model name and brand name.



2 GENERAL INFORMATION

2.1 CLIENT INFORMATION

Applicant:Guangdong Galanz Enterprises Co., Ltd.Address of Applicant:No.25 South Ronggui Rd., Shunde, Foshan, Guangdong, P.R. China

2.2 GENERAL DESCRIPTION OF E.U.T.

Product Description:	Microwave Oven
Model No.:	RED480JAH-PA0H0A/NS-OTR16SS8Q

2.3 DETAILS OF E.U.T.

Rated Supply (Voltage):	AC 120V 60Hz 1600W
Power Cable:	1.0m x 3 wires unscreened AC mains cable.

2.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with water.

Load for power output measurement :1000 milliliters of water in the beaker located in the centre of the oven

Load for frequency measurement :1000 milliliters of water in the beaker located in the centre of the oven Load for conducted and radiated emission measurement :1000 milliliters of water in the beaker located in the centre of the oven

2.5 DEVIATION FROM STANDARDS

None.

2.6 GENERAL TEST CLIMATE DURING TESTING

Temperature: 15-30 °C Humidity: 30~70 %RH Atmospheric Pressure: 860-1060 mbar

2.7 ABNORMALITIES FROM STANDARD CONDITIONS

None.

2.8 TEST LOCATION

BZT Testing Technology Co., Ltd

Buliding 17, Xinghua Road Xingwei industrial Park Fuyong, Baoan District,

Shenzhen, Guangdong, China

2.9 TEST FACILITY

FCC- Registration No: 701733



3 EQUIPMENT LIST

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Spectrum Analyzer	Agilent	E4407B	MY50140340	2016.10.23	2017.10.22
Test Receiver	R&S	ESCI	101427	2016.10.23	2017.10.22
Bilog Antenna	TESEQ	CBL6111D	34678	2014.11.24	2017.11.23
Horn Antenna	Schwarzbeck	BBHA 9120D(1201)	9120D-1343	2015.03.05	2018.03.04
Horn Antenna	Schwarzbeck	BBHA 9170	9170-0741	2016.03.06	2019.03.05
50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2016.10.23	2017.10.22
PreAmplifier	Agilent	8449B	60538	2016.10.23	2017.10.22
Loop Antenna	EMCO	6502	9003-2485	2016.03.06	2019.03.05
Preamplifier	Agilent	8449B	60538	2016.10.23	2017.10.22
Low frequency cable	EM	R01	N/A	NCR	NCR
High frequency cable	SCHWARZBECK	AK9515H	SN-96286/9628 7	NCR	NCR
Semi-anechoic chamber	Changling	966	N/A	2016.10.23	2017.10.22

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESPI	102086	2016.10.23	2017.10.22
LISN	R&S	ENV216	101242	2016.10.23	2017.10.22
LISN	EMCO	3810/2NM	000-23625	2016.10.23	2017.10.22
Conduction Cable	EM	C01	N/A	NCR	NCR
Shielding Room	Changling	854	N/A	2016.10.23	2017.10.22



4 EMISSION TEST RESULTS

4.1 OPERATING FREQUENCY

Test Requirement:	47 CFR PART 18
Test Method:	FCC OST/ MP-5
Test Date:	2017-06-05
Power Supply:	AC 120V 60Hz
Frequency Range:	2400-2500 MHz
Detector:	Peak
Limit:	

ISM equipment may be operated on any frequency above 9 KHz.And the frequency band 2400-2500MHz is allocated for use by ISM equipment. (§18.301)

ISM frequency	Tolerance
6.78 MHz	±15.0 kHz
13.56 MHz	±7.0 kHz
27.12 MHz	±163.0 kHz
40.68 MHz	±20.0 kHz
915 MHz	±13.0 MHz
2,450 MHz	±50.0 MHz
5,800 MHz	±75.0 MHz
24,125 MHz	±125.0 MHz
61.25 GHz	±250.0 MHz
122.50 GHz	±500.0 MHz
245.00 GHz	±1.0 GHz

4.1.1 E.U.T. OPERATION

Test the EUT in microwave mode with full power.

4.1.2 MEASUREMENT DATA

Operating Frequency	Test Result	Tolerance
(MHz)	(MHz)	(MHz)
2450	2448	±50



4.2 RF OUTPUT POWER MEASUREMENT

Test Requirement:	47 CFR PART 18
Test Method:	FCC OST/ MP-5
Test Date:	2017-06-05
Power Supply:	AC 120V 60Hz

4.2.1 E.U.T. OPERATION

Test the EUT in microwave mode with full power.

4.2.2 MEASUREMENT DATA

Mass of	Mass of the	Ambient	Initial	Final	Heatin	Power
water(g	container(g	temperature(°C	temperature(°C	temperature(°C	g	output(watts
)))))	time(S))
1000	358	26.3	25	46	120	788

Formula :

 $P = \frac{4.2 \times m_w(T_2 - T_1) + 0.9 \times m_c(T_2 - T_0)}{m_c(T_2 - T_0)}$

t

NOTE :

P is the microwave power output, in watts

mw is the mass of the water, in grams

mc is the mass of the container, in grams

To is the ambient temperature, in degrees Celsius

T1 is the initial temperature of the water, in degrees Celsius

 T_2 is the final temperature of the water, in degrees Celsius

t is the heating time, in seconds, excluding the magnetron filament heating-up time.



4.3 CONDUCTED EMISSIONS, 150 KHZ TO 30 MHZ

Test Requirement:	47 CFR PART 18
Test Method:	FCC OST/ MP-5
Test Date:	2017-06-05
Power Supply:	AC 120V 60Hz
Frequency Range:	150 KHz to 30 MHz
Detector:	Peak for pre-scan, Quasi-Peak and Average for the final result. (9 KHz Resolution Bandwidth for 150 KHz to 30 MHz)

Limit:

Frequency range	AC mains terminals dB (μV)				
	Quasi-peak	Average			
0.15 to 0.5	66 to 56 [*]	56 to 46 [*]			
0.5 to 5	56	46			
5 to 30	60	50			

Note1: The limit decreases linearly with the logarithm of the frequency in the range 0.05 MHz to 0.5 MHz.

Note2: The lower limit is applicable at the transition frequency.

4.3.1 E.U.T. OPERATION

Test the EUT in microwave mode with full power.



- 1. The mains terminal disturbance voltage test was conducted in a shielded room.
- 2. The EUT was connected to nominal power supply through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50µH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3. The tabletop EUT was placed upon a non-metallic table 1 m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
- 4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.



4.3.3 MEASUREMENT DATA

Pre-scan was performed with peak detected on both live and neutral cable. Quasi-peak & average measurements were performed at the frequencies which maximum peak emission level was detected. Please see the attached Quasi-peak and Average test results.

Live line:



No.	Frequency (MHz)	Reading (dBuV)	Correction (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1900	43.76	9.23	52.99	64.04	-11.05	QP
2	0.1900	29.08	9.23	38.31	54.04	-15.73	AVG
3	0.3180	33.29	9.18	42.47	59.76	-17.29	QP
4	0.3180	12.87	9.18	22.05	49.76	-27.71	AVG
5	1.8620	22.32	9.24	31.56	56.00	-24.44	QP
6	1.8620	10.16	9.24	19.40	46.00	-26.60	AVG
7	9.5900	39.39	9.47	48.86	60.00	-11.14	QP
8	9.5900	5.69	9.47	15.16	50.00	-34.84	AVG
9	13.6420	34.79	9.46	44.25	60.00	-15.75	QP
10	13.6420	5.27	9.46	14.73	50.00	-35.27	AVG
11	19.2420	34.86	9.88	44.74	60.00	-15.26	QP
12	19.2420	-3.39	9.88	6.49	50.00	-43.51	AVG



Quasi-peak and Average measurement:

No.	Frequency (MHz)	Reading (dBuV)	Correction (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1820	47.44	9.23	56.67	64.39	-7.72	QP
2	0.1820	24.97	9.23	34.20	54.39	-20.19	AVG
3	0.3740	38.69	9.36	48.05	58.41	-10.36	QP
4	0.3750	13.81	9.36	23.17	48.39	-25.22	AVG
5	1.5980	22.99	9.21	32.20	56.00	-23.80	QP
6	1.5980	11.61	9.21	20.82	46.00	-25.18	AVG
7	8.4980	26.46	9.39	35.85	60.00	-24.15	QP
8	8.4980	-0.19	9.39	9.20	50.00	-40.80	AVG
9	11.7860	36.32	9.47	45.79	60.00	-14.21	QP
10	11.7860	7.47	9.47	16.94	50.00	-33.06	AVG
11	15.5500	26.62	9.50	36.12	60.00	-23.88	QP
12	15.5500	1.31	9.50	10.81	50.00	-39.19	AVG



4.4 RADIATED EMISSIONS,	9 KHZ TO 25 GHZ				
Test Requirement:	47 CFR PART 18				
Test Method:	FCC OST/ MP-5				
Power Supply:	AC 120V 60Hz				
Test Date:	2017-06-05~07				
Frequency Range:	9 KHz to 25 GHz				
Measurement Distance:	3m				
Detector: Limit:	 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 100 KHz Resolution Bandwidth for 30MHz to 1,000MHz 1 MHz Resolution Bandwidth for 1,000MHz to 25,000MHz) (a) ISM equipment operation on a frequency specified in §18.301 is permitted unlimited radiated energy in the band specified for that frequency. (b) The field strength levels of emissions which lie outside the bands specified in §18.301,unless otherwise indicated, shall not exceed the following: 				
	RF Power generated by equipment(watts)	Field strength Limit(uV/m) @300m			
	Below 500 25				
	500 or more	25*SQRT(power/500)			

Power =787 W according to cluse7.2.2

Limit=20lg(25*SQRT(power/500))+20lg(300/3) @ 3m distance.

4.4.1 E.U.T. OPERATION

Test the EUT in microwave mode with full power.





9 KHz to 30 MHz



- 1. The magnetic emissions test was conducted in a semi-anechoic chamber.
- 2. The EUT was connected to AC power source through a mains power outlet which was bonded to the ground reference plane; The mains cables shall drape to the ground reference plane.
- 3. The tabletop EUT was placed upon a non-metallic table 1 m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
- Before final measurements of magnetic emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emission spectrum signature data plots of the EUT.

The frequencies of maximum emission were determined in the final magnetic emissions measurement, The physical arrangement of the test system and associated cabling was varied in order to determine the effect on the EUT's emissions in amplitude, direction and frequency. At each frequency, the EUT was rotated 360°, the antenna was supported in the vertical plane and be rotatable about a vertical axis. The antenna height was set at around 2 m above the ground reference plane.





- 1. The radiated emissions test was conducted in a semi-anechoic chamber.
- 2. Biconical and log periodic antenna was used for the frequency range from 30MHz to 1GHz
- 3. The EUT was connected to nominal power supply through a mains power outlet which was bonded to the ground reference plane; The mains cables were draped to the ground reference plane. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
- 4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT.

The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.





- 1. The radiated emissions test was conducted in a fully-anechoic chamber.
- 2. Horn antenna was used for the frequency above 1GHz
- 3. The EUT was connected to nominal power supply through a mains power outlet which was bonded to the ground reference plane; The mains cables were draped to the ground reference plane. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.
- 4. Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emission spectrum plots of the EUT.
- 5. The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.





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Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.

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Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.

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Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.





Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.





Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.

69.8

69.8

28.47

27.03

Peak

Peak

240.70

270.40

100

100

Vertical

Vertical

Pass

Pass

-7.85

-5.90

3

4

9636.682

14121.439

41.33

42.77



5 PHOTOGRAPHS

5.1 CONDUCTED EMISSIONS, 150 KHZ TO 30 MHZ TEST SETUP













5.3 EUT CONSTRUCTIONAL DETAILS



























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