

FCC Part 18

TEST REPORT

For

commerical microwave oven

MODEL NUMBER: P180M18ASL-A0, P180M18(X)-(Y)

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Prepared for

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	10/15/2020	Initial Issue	



Summary of Test Results						
Standard	Test Item Test Method		Class / Severity	Result		
	Conducted Emission (150 kHz to 30 MHz)	FCC OST/ MP-5:1986	18.307(b)	PASS		
	Radiated Emission (9 kHz to 30 MHz)	FCC OST/ MP-5:1986	18.305(b)	PASS		
FCC CER 47 Part 18	Radiated Emission (30 MHz to1 GHz)	FCC OST/ MP-5:1986	18.305(b)	PASS		
	Radiation Hazard	FCC OST/ MP-5:1986	Clause 3.1	PASS		
	Operating Frequency	FCC OST/ MP-5:1986	Clause 4.5	PASS		
	Output Power Measurement	FCC OST/ MP-5:1986	Clause 4.3	PASS		
Remark :						

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

Model named description: /

This report only tests the microwave part.



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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: Address:	Guangdong Galanz Enterprises Co., Ltd. 25 Ronggui Nan Road, Shunde, Foshan, Guangdong, China
Manufacturer Information	
Company Name:	Guangdong Galanz Enterprises Co., Ltd.
Address:	25 Ronggui Nan Road, Shunde, Foshan, Guangdong, China
EUT Information	
EUT Name:	commerical microwave oven
Model:	P180M18ASL-A0
Series Model:	P180M18(X)-(Y)
Model difference:	Refert to section 5.1 for details
Brand:	Galanz
Sample Status:	Normal
Sample ID:	2009262-1X
Sample Received Date:	Oct 12, 2020
Date of Tested:	Oct 12, 2020 ~ Oct 15, 2020

APPLICABLE STANDARDS				
STANDARDS TEST RESULTS				
FCC CFR 47 Part 18	PASS			

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2. TEST METHODOLOGY

All tests were performed in accordance with the standard FCC CFR 47 Part 18 (FCC MP-5).

3. FACILITIES AND ACCREDITATION

Note: All tests measurement facilities use to collect the measurement data are located at A 1/F, Building B, Zhuoke Science Park, No.190 Chongqing Road, HepingShequ, Fuyong Sub-District, Bao'an District, Shenzhen, Guang Dong, China



4. CALIBRATION AND UNCERTAINTY

4.1. Measuring Instrument Calibration

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Measurement Frequency Range	к	U(dB)		
Conducted disturbance at mains terminals ports	0.15MHz ~ 30MHz	2	3.83 dB		
Radiated disturbance Test	Below 1GHz	2	5.6 dB		
Radiated disturbance Test	Above 1GHz	2	5.8 dB		
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.					

5. EQUIPMENT UNDER TEST

5.1. Description of EUT

EUT Name	commerical microwave oven	
EUT Discription	The device is a microwave oven	
Model	P180M18ASL-A0	
Series Model:	P180M18(X)-(Y) Variable (X) may be AL,AP, APH, DAPH, ASL,ASP,ATL,ATP,EL,EP, ESL,ESP, ETL,ETP, ML,MP, MSL,MSP,MTL,MTP,MYL. Variable (Y) may compose by one to five characters from A to Z and/or numbers from 0 to 9. It represents the differences of the appearance color.	
Model Difference	Only the appearance is different for each model.	
Rated Input	AC 208-240V,60Hz (2 Phase)	

5.2. Test Mode

Test Mode	Description
Mode 1	Maximum microwave power

Note:The EUT has been tested independently.

5.3. EUT Accessory

ltem	Accessory	Brand Name	Model Name	Description	
N/A	N/A	N/A	N/A	N/A	



5.4. Block Diagram Showing the Configuration of System Tested



The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Specification	Series No.
Load for power output measurement :1000 milliliters of water in the backer located in the center of the					

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

Load for frequency measurement :1000 milliliters of water in the beaker located in the center of the oven;

Load for measurement of radiation on second and third harmonic; Two loads, one of 700 and the other of 300 milliliters, of water are used. Each load is tested both with the beaker located in the center of the oven and with it in the right front corner.

Load for all other measurements: 700 milliliters of water, with the beaker located in the center of the oven.

Item	Type of cable	Shielded Type	Ferrite Core	Length



6. MEASURING EQUIPMENT AND SOFTWARE USED

	Conducted Disturbance						
Used	Equipment	Manufacturer	Model	No.	Serial No.	Last Cal.	Next Cal.
\checkmark	EMI Test Receiver	R&S	ESC		101427	2020.10.12	2021.10.11
\checkmark	LISN	R&S	ENV2	216	101242	2020.10.12	2021.10.11
\checkmark	LISN	ETS	3810/2	2NM	00023625	2020.10.12	2021.10.11
\checkmark	CE Cable	N/A	C0 ²	1	N/A	2020.10.13	2021.10.12
	Temperature & Humidity	Mieo	HH6	60	N/A	2020.10.13	2021.10.12
\checkmark	Power Meter	EVERFINE	PF98	00	804053	2020.10.10	2021.10.09
V	Dual live wire transformer	Tianzhen	JMB-10	KVA	N/A	2020.10.12	2021.10.11
\checkmark	Testing Sof	tware		EZ	Z-EMC(Ver.S	TSLAB-03A1 CI	Ε)
			Softwa	are			
Used	Des	scription		Mar	nufacturer	Name	Version
\checkmark	Test Software for	Conducted Emis	sions		Farad	EZ-EMC	Ver. UL-3A1
Radiated Disturbance							
Used	Equipment	Manufacturer Model No.		Serial No.	Last Cal.	Next Cal.	
\checkmark	EMI Test Receiver	R&S		CI	101427	2020.10.12	2021.10.11
\checkmark	Bi-log Antenna	TESEQ	CBL6	111D	34678	2020.10.12	2022.10.11
\checkmark	Horn Antenna	SCHWARZBECK	CHWARZBECK BBHA 9120		1343	2020.10.12	2022.10.11
	Pre-amplifier(1- 26.5G)	Agilent	844	19B	3008A0238 3	2020.10.12	2021.10.11
	Pre-amplifier(0.1M- 3GHz)	EM EM330		060665	2020.10.12	2021.10.11	
\checkmark	Spectrum Analyzer	Agilent	N90	20A	MY491000 60	2020.10.12	2021.10.11
\checkmark	RE Cable (9K-1G)	N/A	R	01	N/A	2020.10.12	2021.10.11
\checkmark	RE Cable (1-26G)	N/A	R)2	N/A	2020.10.12	2021.10.11
\checkmark	Temperature & Humidity	Mieo	нн	660	N/A	2020.10.13	2021.10.12
\checkmark	Active Loop Antenna	ZHINAN	ZN30	900C	16035	2019.07.11	2021.07.10
\checkmark	Dual live wire transformer	Tianzhen	JMB-1	0KVA	N/A	2020.10.12	2021.10.11
\checkmark	✓ Testing Software EZ-EMC(Ver.STSLAB-03A1 RE)						
Software							
Used	d Description			Mar	ufacturer	Name	Version
	Test Software for	Radiated Emiss	sions		Farad	EZ-EMC	Ver. UL-3A1
		Radiation	Hazaro	d Distu	urbance		
Used	Equipment	Manufacturer		Model	No.	Serial No.	Last Cal.
V	MICROWAVE SURVEY METER	Lutron		EMF-	839	2020.10.10	2021.10.09

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7. EMISSION TEST

7.1. Radiation Hazard

7.1.1. Limits of Radiation Hazard

Maximum Emission, mW/cm²

1.00

7.1.2. Test Procuedure

The EUT was set-up according to the FCC MP-5 and FCC Part 18 for Radiation Hazard Measurement. The measurement was using a microwave leakage meter to measure the Radiation leakage in the asreceived condition with the oven door closed. A 1000ml water load in a beaker was located in the center of the oven and the Microwave Oven was set to maximum power. While the oven operating, the microwave meter will check the leakage and then record the maximum leakage.



For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

7.1.3. Test Datas

Condition	Maximum Emission, mW/cm ²
А	0.2555
В	0.1324
С	0.1277
D	0.1322
E	0.1731
F	0.1386
G	
M. UNCERTAINTY:	0.0002

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7.2. Operating Frequency

7.2.1. Limits of Operating Ferquency

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 13.56 MHz ±7.0 Hz 27.12 MHz ±163. 40.68 MHz ±20.0 915 MHz ±13.0 2,450 MHz ±50.0 5,800 MHz ±75.0 24,125 MHz ±125. 61.25 GHz ±250. 122.50 GHz ±500. 245.00 GHz ±10.0	kHz KHz 0 kHz kHz MHz MHz 0 MHz 0 MHz 0 MHz 0 MHz 0 MHz 3 Hz

7.2.2. Test Procuedure

- a. FREQUENCY FOR NORMAL VOLTAGE The operating frequency was measured using a spectrum analyzer. Starting with the EUT at room temperature, a 1000mL water load was placed in the center of the oven and the oven was operated at maximum output power. The fundamental operating frequency was monitored until the water load was reduced to 20 percent of the original load.
- b. FREQUENCY FOR LINE VOLTAGE

The EUT was operated / warmed by at least 10 minutes of use with a 1000 mL water load at room temperature at the beginning of the test. Then the operating frequency was monitored as the input voltage was varied between 80 and 125 percent of the nominal rating.

7.2.3. Test Datas

ltem	START Frequency (MHz)	STOP Frequency (MHz)	Detector
FREQUENCY FOR NORMAL VOLTAGE	2402.8	2500.0	Peak
FREQUENCY FOR LINE VOLTAGE	2401.5	2498.4	Peak



7.3. RF Output Power Measurement

7.3.1. Test Procuedure

Formula :

$$P = \frac{4.2 \times m_w(T_2 - T_1) + 0.5 \times m_c(T_2 - T_0)}{t}$$

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 T2 is the final temperature of the water, in degrees Celsius t is the heating time, in seconds, excluding the magnetron filament heating-up time.

7.3.2. EUT operation

The EUT in microwave mode with full power.

7.3.3. Test Datas

Mass of	Mass of the	Ambient	Initial	Final	Heating	Power
water(g)	container(g)	temperature(°C)	temperature(°C)	temperature(°C)	time(S)	output(watts)
1000	480	24.7	27	66	120	1455.86





7.4. Conducted Disturbance Measurement

7.4.1. Limits of conducted disturbance voltage

(A) All other part 18 consumer devices:				
	Conducted limit (dBµV)			
Frequency of emission (MHz)	Quasi-peak	Average		
0.15-0.5	66 to 56*	56 to 46*		
0.5-5	56	46		
5-30	60	50		

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

I ne following table is the setting of the receiver	The	following	table	is the	setting	of the	receiver
---	-----	-----------	-------	--------	---------	--------	----------

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

7.4.2. Test Procedure

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. LISN at least 80 cm from nearest part of EUT chassis.
- d. For the actual test configuration, please refer to the related Item:EUT Test Photos.



7.4.3. Test Setup



For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

7.4.4. Test Environment

Temperature:	26.5°C
Humidity:	66%
ATM pressure:	101kPa

7.4.5. Test Mode

Pre-test Mode:	Mode 1
Final Test Mode:	Mode 1

Note: According to pre-test results, the final test mode is each independent function's worst case and only shown in the report.



7.4.6. Test Results

Test Mode:	Mode 1
Test Voltage:	AC 240V/60Hz



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	
1	0.2140	39.63	20.39	60.02	63.05	-3.03	QP
2	0.2140	24.60	20.39	44.99	53.05	-8.06	AVG
3	0.3900	33.90	20.55	54.45	58.06	-3.61	QP
4	0.3900	18.00	20.55	38.55	48.06	-9.51	AVG
5	0.8140	26.08	20.23	46.31	56.00	-9.69	QP
6	0.8140	10.58	20.23	30.81	46.00	-15.19	AVG
7	1.7220	32.10	20.15	52.25	56.00	-3.75	QP
8	1.7220	7.92	20.15	28.07	46.00	-17.93	AVG
9	12.9820	30.86	19.96	50.82	60.00	-9.18	QP
10	12.9820	23.95	19.96	43.91	50.00	-6.09	AVG
11	22.1620	27.08	20.64	47.72	60.00	-12.28	QP
12	22.1620	11.01	20.64	31.65	50.00	-18.35	AVG

Remark:

Result = Reading +Correct Margin = Result - Limit

Factor = Insertion loss + Cable loss



AVG

QP

AVG

QP

AVG

QP

AVG

QP

AVG

Test Mode:	Mode 1
Test Voltage:	AC 240V/60Hz



38.87

46.05

29.74

50.78

38.83

48.15

56.00

46.00

60.00

50.00 60.00

50.00

60.00

50.00

-9.28

-9.95

-16.26

-9.22

-11.17

-9.85

-11.02

-8.69

-14.43

20.56

20.15

20.15

19.86

19.86

-				
9	12.6220	30.21	19.94	50.15
10	12.6220	19.04	19.94	38.98
11	20.4940	30.66	20.65	51.31
12	20.4940	14.92	20.65	35.57

18.31

25.90

9.59

30.92

18.97

Remark:

4

5

6

7

8

Result = Reading +Correct

Margin = Result – Limit

Factor = Insertion loss + Cable loss

0.3860

1.8420

1.8420

9.7780

9.7780



7.5. Radiated Disturbance Measurement

7.5.1. Limits of radiated disturbance measurement

Field strength limits

(1) ISM equipment operating on a frequency specified in §18.301 is permitted unlimited radiated energy in the band specified for that frequency.

(2) The field strength levels of emissions which lie outside the bands specified in §18.301, unless otherwise indicated, shall not exceed the following:

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (uV/m)	Distance (meters)
Any type unless otherwise	Any ISM	Below 500	25	300
specified (miscellaneous)	frequency	500 or more	25 × SQRT(power/500)	1300

Power =1455.86W according to 7.3 calculated value

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

NOTE:

- (1) The limit for radiated test was performed according to;
- (2) The tighter limit applies at the band edges;
- (3) Emission level (dBuV/m) = 20log Emission level (uV/m), 3m Emission level = 30m Emission level + 20log(30m/3m);

The following table is the setting of the receiver

	0. #
Receiver Parameters	Setting
Attenuation	dB
Start Frequency	0.009 MHz
Stop Frequency	25GHz
IF Bandwidth	200Hz,9 kHz,120 kHz, 1MHz



7.5.2. Test Procedure

- a. The measuring distance of at 3m shall be used for measurements at frequency up to 1GHz.
- b. The EUT was placed on the top of a rotating table 1.0 meters above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For the actual test configuration, please refer to the related Item:EUT Test Photos.

7.5.3. Test Setup

(a) Radiated Disturbance Test Set-Up Frequency 30MHz - 1GHz





(b) Radiated Disturbance Test Set-Up Frequency above 1GHz





(C) Radiated Disturbance Test Set-Up Frequency 9KHz-30MHz



For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

7.5.4. Test Environment

Radiated Disturbance - below 1 GHz		Radiated Disturbance - above 1 GHz	
Temperature:	26.1°C	Temperature:	26.1°C
Humidity:	48%	Humidity:	48%
ATM pressure:	101kPa	ATM pressure:	101kPa

7.5.5. Test Mode

Radiated Disturbance - below 1 GHz		Radiated Disturbance - above 1 GHz	
Pre-test Mode:	Mode 1	Pre-test Mode:	Mode 1
Final Test Mode:	Mode 1	Final Test Mode:	Mode 1

Note: According to pre-test results, the final test mode is each independent function's worst case and only shown in the report.

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7.5.6. Test Results – below 1GHz(30~1000MHz)

Test Mode:	Mode 1
Test Voltage:	AC 240V/60Hz



Result = Reading +Correct

Margin = Result – Limit

Factor= Cable Loss +Antenna Factor-Amplifier Gain

The measured PK/QP value is lower than the Average limit



Test Mode:	Mode 1
Test Voltage:	AC 240V/60Hz



Remark:

Result = Reading +Correct

Margin = Result – Limit

Factor= Cable Loss +Antenna Factor-Amplifier Gain

The measured PK/QP value is lower than the Average limit



7.5.7. Test Results – above 1GHz

Test Mode:	Mode 1
Test Voltage:	AC 240V/60Hz





Test Mode:	Mode 1
Test Voltage:	AC 240V/60Hz





Test Mode:	Mode 1
Test Voltage:	AC 240V/60Hz





Test Mode:	Mode 1
Test Voltage:	AC 240V/60Hz







Test Mode:	Mode 1
Test Voltage:	AC 240V/60Hz



The measured PK/QP value is lower than the Average limit



7 5 0

Tact Deculte

1.5.3.1651 1.6511 1.5011	
Test Mode:	Mode 1
Test Voltage:	AC 240V/60Hz

150KU- 20MU-



Remark:

Result = Reading +Correct

Margin = Result - Limit

Factor= Cable Loss +Antenna Factor-Amplifier Gain

The measured PK/QP value is lower than the Average limit



Appendix I: Photographs of EMC Test Configuration

Conducted Disturbance



Radiated Disturbance below 1GHz



Radiated Disturbance above 1GHz



Radiated Disturbance above 9KHz-30MHz





Power Test



Radiation Hazard



END OF REPORT