FCC CFR47 PART 18 SUBPART C

ISM EQUIPMENT

TEST REPORT

FOR

MICROWAVE OVEN

Model: P70B20(X)-(Y) (Testing case: P70B20AL-D5)

Magnetron Model: Galanz, M24FA-410A

Brand Name: Galanz

Test Report No.: 09CA7021-01

FCC ID: UHW7020002

Prepared for

GUANGDONG GALANZ ENTERPRISE (GROUP)CO.,LTD.

25 RONGGUI NAN ROAD, RONGGUI SHUNDE, GUANGDONG

P.R.C.528305

ACCORDING TO

FCC PART 18 INDUSTRIAL, SCIENTIFIC AND MEDICAL EQUIPMENT

&

FCC/0ST MP-5(1986) FCC METHODS OF MEASUREMENTS OF RADIO NOISE EMISSION FROM INDUSTRIAL, SCIENTIFIC AND MEDICAL EQUIPMENT

Prepared By: Vegia Huang

Reviewed By: Yanhan Lu

QC Manager: Valley.Wang

Test Report Released By _____ **11/08/2008**

Name **Date**

List Attached Files

Exhibit Type	File Description	File Name
Test report	Test report	UHW7020002 -Test report .pdf
Operation Description	Operation Description	UHW7020002 -operationdescription .pdf
External Photos	External Photos	UHW7020002 -external photos
Internal Photos	Internal Photos	UHW7020002 -Internal photos
Block Diagram	Block Diagram	UHW7020002 -block diagram.pdf
Schematics	Schematics	UHW7020002 -schematics.pdf
ID Label/ Location	ID Label/ Location	UHW7020002 -label & location.pdf
User Manual	User Manual	UHW7020002 -user manual .pdf
Test setup Photos	Test setup Photos	UHW7020002 -test setup photos

GUANGDONG ATC-LAB CO., LTD. 528305
205# YINGFENG BUILDING RONGGUI RD RONGGUI SHUNDE FOSHAN GUANGDONG CHINA
TE: 86-757-28375537, FAX: 86-757-28375535

Test Location

Tests performed at Galanz in a certified Ansi Semi-Anechoic Chamber and Shielded Room.

Test Site Location
EMC Laboratory
Guangdong Galanz Enterprises Co., Ltd
25 South Ronggui Rd., Shunde, Foshan, Guangdong, China.
Tel: 86-757-23612785
Fax: 86-757-23612537

In compliance with the site registration requirements of section 2.948 of the FCC rules to perform EMI measurements for the general public.
FCC Registration Number: 580210

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Opinions and Interpretations

This test report relates to the above mentioned equipment under test (EUT). Without permission of ATC-Lab Guangdong Group, this report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark on this or similar products. The manufacturer has sole responsibility of continued compliance of the device.

Statement of Measurement Uncertainty

The data and results referenced in the document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities that can account for a nominal measurement error. Furthermore, component and process variability of devices similar to that tested may result in additional deviation.

Administrative Data

Test Sample	**Microwave oven**
Model Numbers	**P70B20(X)-(Y)**
Model Tested	**P70B20AL-D5**
Brand Name	**Galanz**
Date Tested	**Nov 05, 2008—Nov 07, 2008**
Applicant	**Guangdong Galanz Enterprises Co., Ltd.** **25 ronggui nan Rd., Shunde, Foshan, Guangdong , China**
Telephone	**86-757-23612785**
Fax	**86-757-23612537**
Manufacturer	**Guangdong Galanz Enterprises Co., Ltd.** **25 ronggui nan Rd., Shunde, Foshan, Guangdong , China**

EUT DESCRIPTION

Guangdong Galanz Enterprises Co., Ltd. Model tested P70B20AL-D5 (Refer to the EUT in this report) is a Microwave Oven.

Specifications:

Power consumption	**120Vac 60Hz, 1050W**
Output	**700W**
Operation frequency	**2450Hz**
Magnetron brand	**Galanz**
Magnetron number	**M24FA-410A**
Outside dimensions(HxWxD)	**10.3*17.8*14.4 in.**
Cavity dimensions(HxWxD)	**8.1*11.8*11.9 in.**
Capacity	**0.7 cu.ft**
Cooking uniformity	**Turntable System(Φ9.7")**
Net weight	**Approx.23.8lb.**

Type of Deriver

P70B20(X)-(Y) model designations:
P: Only the Microwave functions.
70: denote the output power is 700W
B: denote the style of the oven.
20: denote different capacity in 20 liters.

Variable (X) may be
L,P,J,SL,SP,SJ,TL,TJ,AL,AP,AJ,ASL,ASP,ATL,ATP,EL,EP,EJ,ESL,ESP,ESJ,ETL,ETP,ETJ,ML,MP,MJ,MSL,MSP,MSJ,MTL,MTP,MTJ.
"L" and "J" is pull-out type door, P is push-button type door. When there is no letter before "L","P" and "J", denotes mechanical control model; When there is "A" , "E" or "M" denote the electrical control model. "S" denotes stainless steel cavity; "T" denotes the gray cavity; When there is neither "S" nor "T" before "L", "P" or "J", denotes the epoxy painted cavity.

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.

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Test Summary

The Electromagnetic Compatibility Requirements on model tested P70B20AL-D5 for this test is stated below. All results listed in this report relate exclusively to this above mentioned model as the Equipment under Test. This report confers no approval or endorsement upon any other component, host or sub-system used in the test set-up

Emission Tests				
Specifications	**Description**	**Test results**	**Test point**	**Remark**
FCC Part 18:2004 FCC/OST MP-5:1986 ANSI C63.4:2003	Radiation Hazard Measurement	Passed	Enclosure	Attachment 1
FCC Part 18:2004 FCC/OST MP-5:1986 ANSI C63.4:2003	Input Power Measurement	Passed	AC Input Port	Attachment 2
FCC Part 18:2004 FCC/OST MP-5:1986 ANSI C63.4:2003	RF Output Power Measurement	Passed	EUT	Attachment 3
FCC Part 18:2004 FCC/OST MP-5:1986 ANSI C63.4:2003	Operating Frequency Measurement	Passed	EUT	Attachment 4
FCC Part 18:2004 FCC/OST MP-5:1986 ANSI C63.4:2003	Conducted Emission	Passed	AC Input Port	Attachment 5
FCC Part 18:2004 FCC/OST MP-5:1986 ANSI C63.4:2003	Radiated Emission	Passed	Enclosure	Attachment 6

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Load for Microwave Ovens

For all measurements the energy developed by the oven was absorbed by a dummy load consisting of a quantity of tap water in a beaker. If the oven was provided with a shelf or other utensil support, this support was in its initial normal position. For ovens rated at 1000 watts or less power output, the beaker contained quantities of water as listed in the following subparagraphs, for ovens rated at more than 1000 watts output, each quantity was increased by 50% for each 500 watts or fraction thereof in excess of 1000 watts, additional beakers were used if necessary

- **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.**

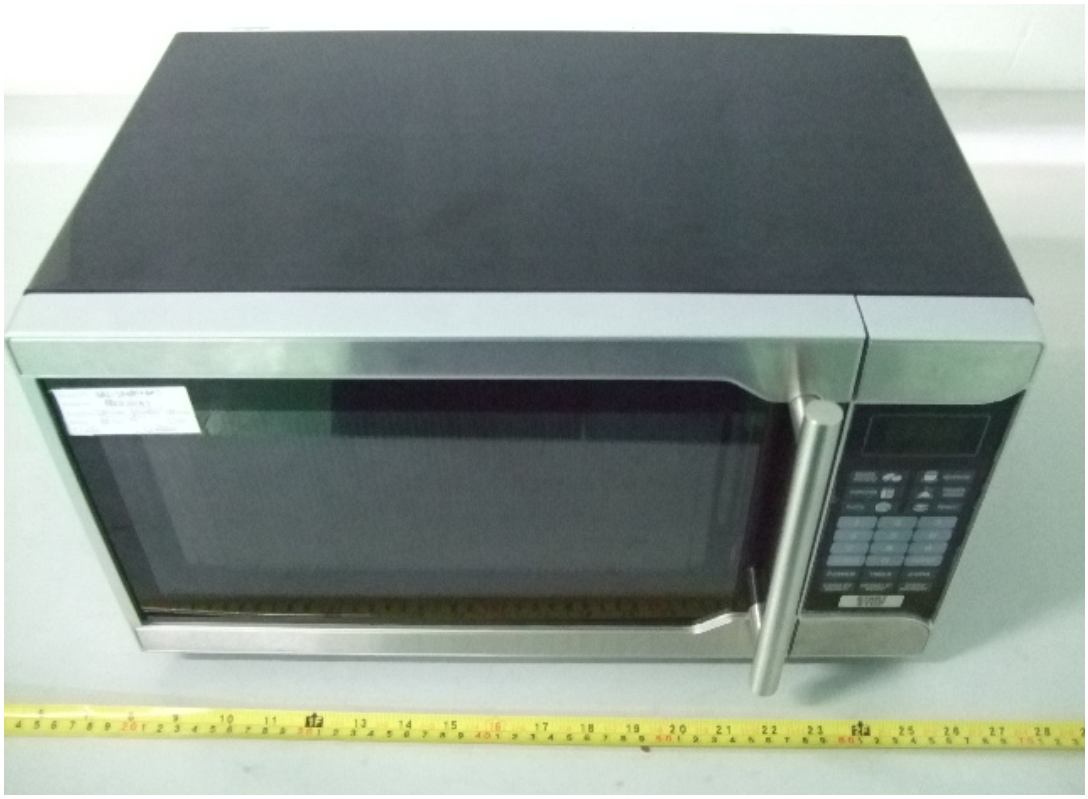
- **load for measurement of radiation on second and third harmonic : Two loads, one of 700 and the other of 300 milliliters, of water are used , Each load is tested both with the beaker located in the center of the oven and with it in the right front corner.**

- **Load for all other measurements: 700 milliliters of water, with the beaker located in the center of the ovens**

Equipment Modification

Any modifications installed previous to testing by Guangdong Galanz Enterprises Co., Ltd will be incorporated in each production model sold or leased in United States

EUT Sample Photos for model _____



Front and top view

Door open view

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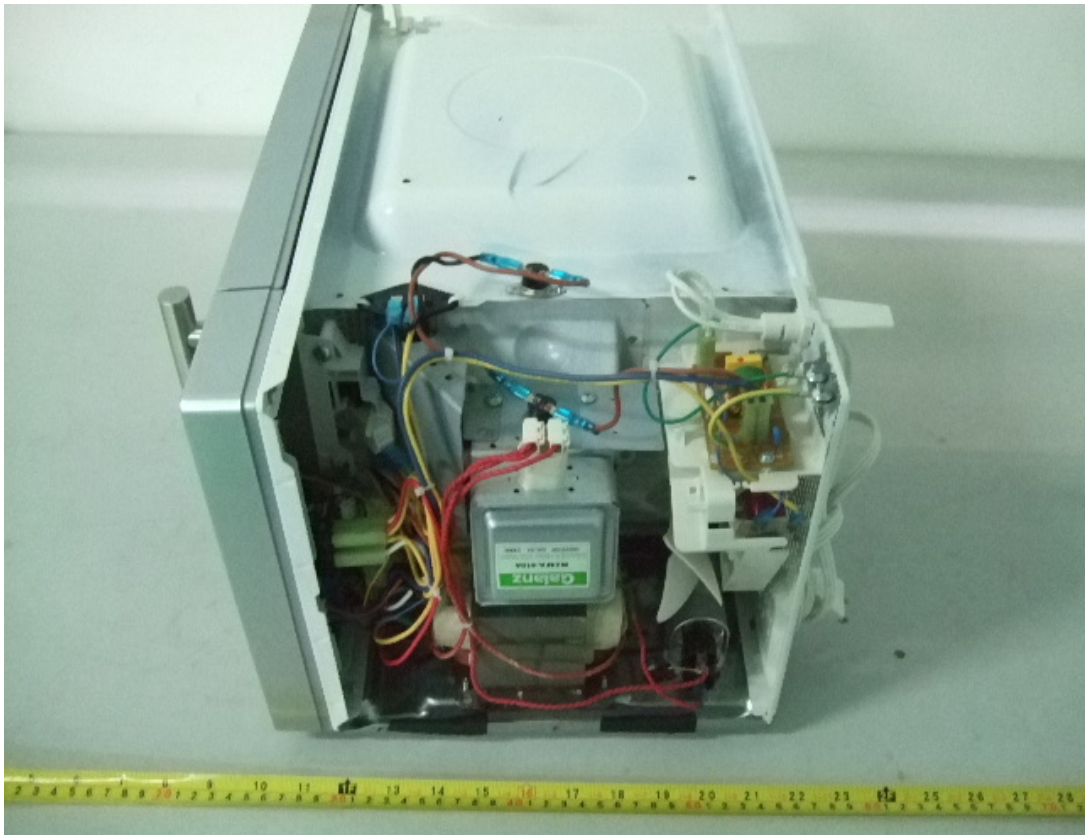
Rear View of EUT



Uncovered View from right side

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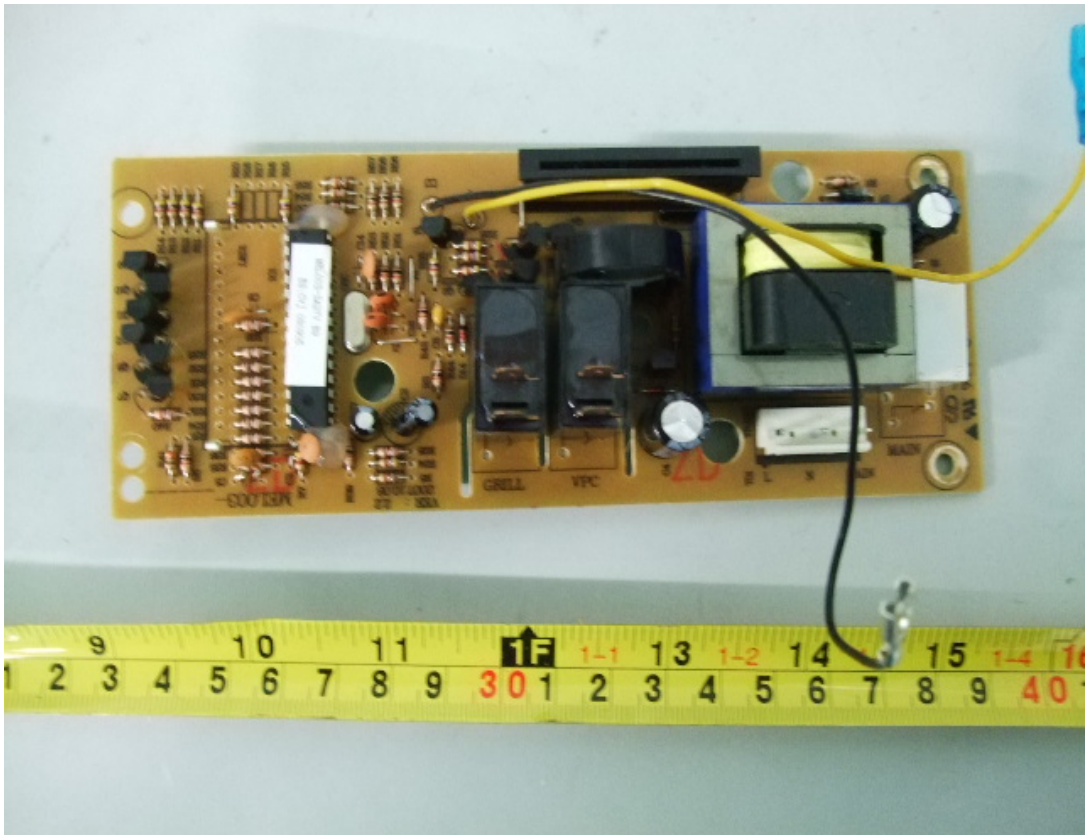
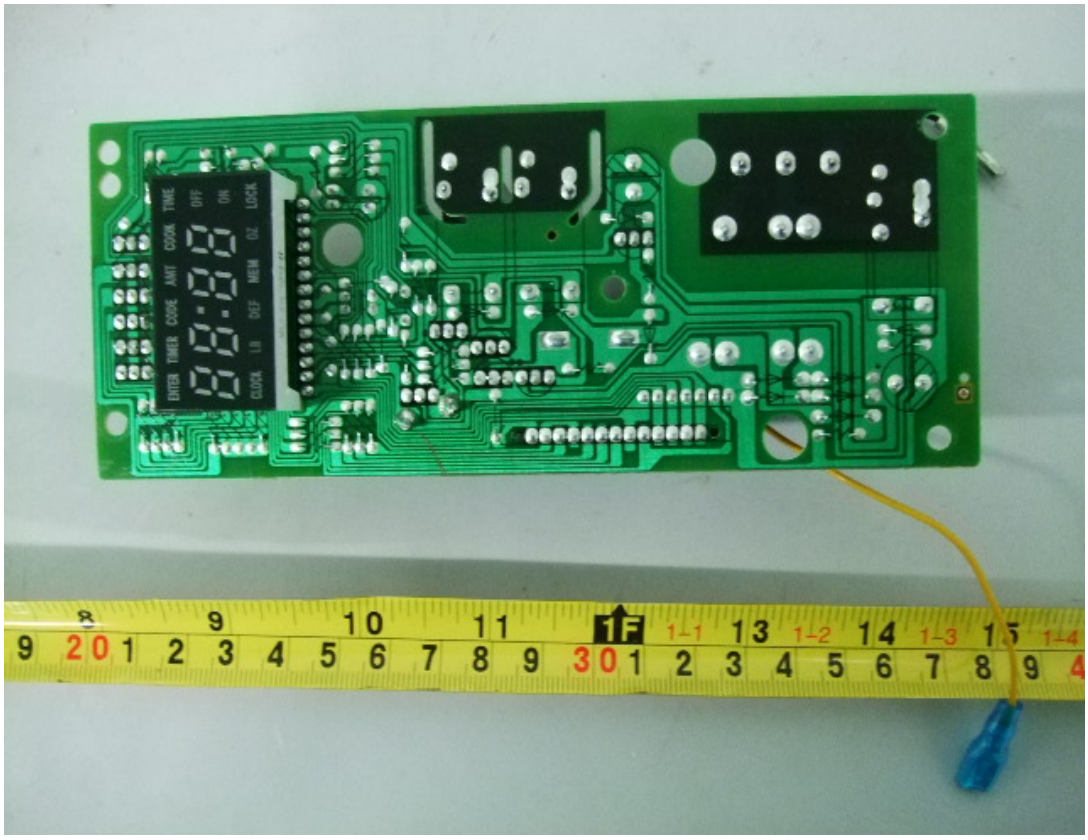


Front view of Main board



Back view of Main board

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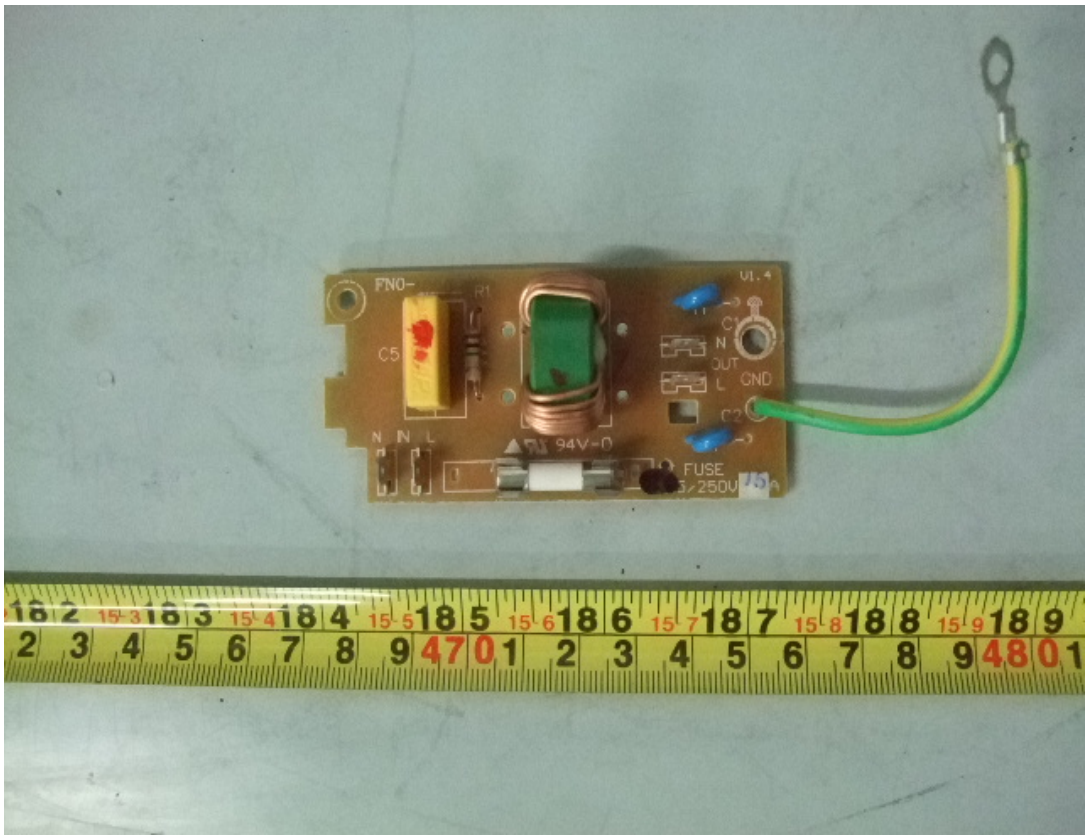
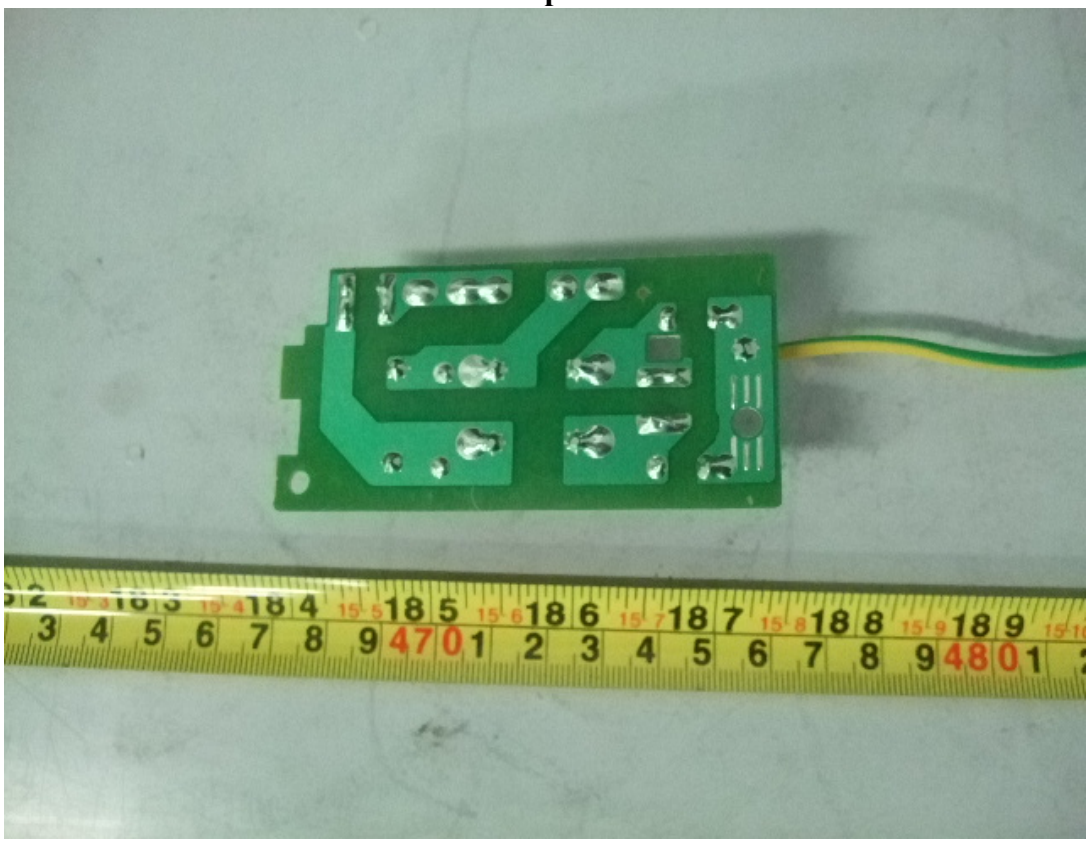


Front View of AC power filter board



Back of View AC power filter board

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View of Magnetron

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Test System Details

EUT					
Model Numbers	**P70B20(X)-(Y)**				
Model tested	**P70B20AL-D5**				
Description	**Microwave Oven**				
Manufacturer	**Guangdong Galanz Enterprises Co., Ltd**				
Support Equipment					
N/A					
Cable Description					
Description	**From**	**To**	**Length Meters**	**Shielded Y/N**	**Ferrite Y/N**
Power cord	**EUT**	**Plug**	**1.05**	**N**	**N**

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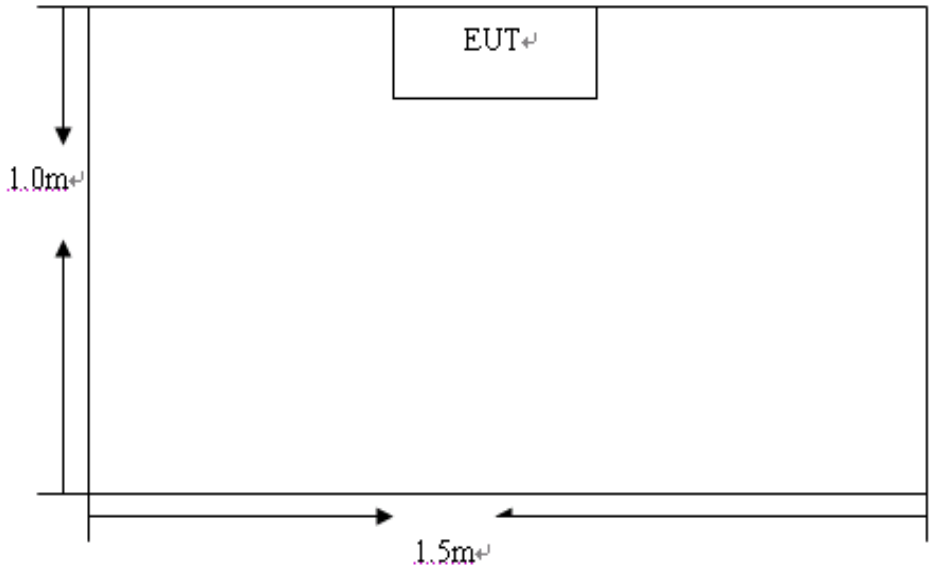
Configuration of Tested System



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ATTACHMENT 1-RADIATION HAZARD TEST

Client: Guangdong Galanz Enterprises Co Ltd	**Test Standard: FCC Part 18**
Model Numbers: P70B20(X)-(Y)	**Product: Microwave Oven**
Model Tested: P70B20AL-D5	**EUT Designation: Home or Office**
Temperature: 23℃	**Humidity: 41%RH**
ATM Pressure: 101kPa	**Grounding: Through AC power cord**
Tested By: Vegia Huang	**Date of Test: Nov 05, 2008**

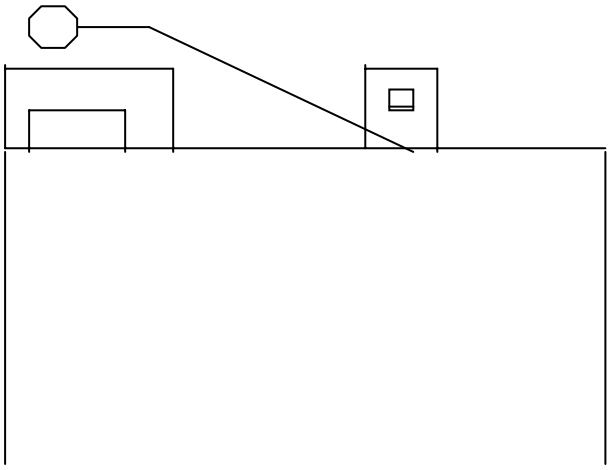
Test Reference	ANSI C63.4: 2003, FCC/OST MP-5:1986
Test Procedure	The EUT was set up according to the FCC MP-5 and FCC Part 18 for Radiation Hazard Measurement. The measurement was using a microwave leakage meter to measure the Radiation leakage in the as-received condition with the oven door closed. 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
Tested Range	N/A
Test Voltage	120VAC/60Hz
Results	There was no microwave leakage exceeding a power level of 0.48mW/cm^2 observed at any point 5cm or more from the external surface of the oven. A maximum of 1.0 mW/cm^2 is allowed in accordance with the applicable FCC standards. Hence, microwave leakage in the as-received condition with the oven door closed was below the maximum allowed. The test results relate only to the equipment under test provided by client.
Changes or Modifications	There were no modifications installed by Galanz test personnel
M. Uncertainty	0.01 mW/cm^2

Test Equipment List

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Field Monitor	ETS	AR FM5004	A0304252	2008-01-22	2009-01-21
Electric Field probe	ETS	AR FP6001	A0304302	2008-01-22	2009-01-21
Note: All testing were performed using internationally recognized standard. All test instruments were calibrated and traceable to the National Institute of Standards and Technology.					

Radiation Hazard Test Set-up

Microwave Leakage Tester



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Radiation Hazard Test Setup

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ATTACHMENT 2-INPUT POWER MEASUREMENT

Client: Guangdong Galanz Enterprises Co Ltd	**Test Standard: FCC Part 18**
Model Numbers: P70B20(X)-(Y)	**Product: Microwave Oven**
Model Tested: P70B20AL-D5	**EUT Designation: Home or Office**
Temperature: 23℃	**Humidity: 41%RH**
ATM Pressure: 101kPa	**Grounding: Through AC power cord**
Tested By: Vegia Huang	**Date of Test: Nov 05, 2008**

Test Reference	ANSI C63.4: 2003 , FCC/OST MP-5:1986
Test Procedure	The EUT was set up according to the FCC MP-5 and 18 for input power measurement, The input power and current was measured using a power analyzer. 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 is operating, use a voltmeter and an ampere-meter to test the AC input voltage and current.
Tested Range	N/A
Test Voltage	120VAC/60Hz
Results	Based on the measured input power , the EUT was found to be operating within the intended specifications The test results relate only to the equipment under test provided by client
Changes or Modifications	There were no modifications installed by Galanz test personnel
M. Uncertainty	±5W

Test Data

Input Voltage Vac/Hz	Input Current amps	Measured Input power(watt)	Rated input power(watt)
120V/60Hz	9.43	1132	1050

Test Equipment List

Test equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Power frequency test system	Ainuo	AN8716PX	058704273	2008-07-06	2009-07-06
Note: All testing were performed using internationally recognized standard. All test instruments were calibrated and traceable to the National Institute of Standards and Technology.					

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Input Power Test Setup

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ATTACHMENT 3-RF OUTPUT POWER MEASUREMENT

Client: Guangdong Galanz Enterprises Co Ltd	**Test Standard: FCC Part 18**
Model Numbers: P70B20(X)-(Y)	**Product: Microwave Oven**
Model Tested: P70B20AL-D5	**EUT Designation: Home or Office**
Temperature: 23℃	**Humidity: 40%RH**
ATM Pressure: 101kPa	**Grounding: Through AC power cord**
Tested By: Vegia Huang	**Date of Test: Nov 05, 2008**

Test Reference	ANSI C63.4: 2003 , FCC/OST MP-5:1986
Test Procedure	The EUT was set up according to the FCC MP-5 and 18 for RF power measurement, The Caloric method was used to determine maximum RF output power. 1) A 1000ml water load in a beaker is located in the center of the oven. 2) Measure and record the initial temperature of the 1000ml water load. 3) Start and keep the oven operating at maximum output power for 120 seconds. 4) At the end of the 120 seconds, measure and record the final temperature of the 1000ml water load. 5) Calculate the RF output power RF Output Power (W) = 4.2 x 1000 x (Final Temp – Initial Temp) / 120
Tested Range	N/A
Test Voltage	120VAC/60Hz
Results	RF output power =661.5W The test results relate only to the equipment under test provided by client
Changes or Modifications	There were no modifications installed by Galanz test personnel.
M. Uncertainty	±0.3℃

Test Data

Quality of water(ml)	Starting temperature(℃)	Final temperature(℃)	Elapsed time (seconds)	RF output power(watt)
1000	18.2	37.1	120	661.5

Test Equipment List

Test equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Data Acquisition	TES	TES-1310	021108782	2008-04-04	2009-04-04
Note: All testing were performed using internationally recognized standard. All test instruments were calibrated and traceable to the National Institute of Standards and Technology.					

RF Output Power Test Set-up

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ATTACHMENT 4-OPERATING FREQUENCY MEASUREMENT

Client: Guangdong Galanz Enterprises Co Ltd	**Test Standard: FCC Part 18**
Model Numbers: P70B20(X)-(Y)	**Product: Microwave Oven**
Model Tested: P70B20AL-D5	**EUT Designation: Home or Office**
Temperature: 22℃	**Humidity: 40%RH**
ATM Pressure: 100.9kPa	**Grounding: Through AC power cord**
Tested By: Vegia Huang	**Date of Test: Nov 05, 2008**

Test Reference	ANSI C63.4: 2003 , FCC/OST MP-5:1986
Test Procedure	The EUT was set up according to the FCC MP-5 and 18 for Operating Frequency measurement 1) The Variation of frequency with time The operating frequency was measured using a spectrum analyzer, starting with EUT at room temperature, a 1000ml water load in a breaker was located in the center of the oven, set a spectrum analyzer with antenna at 3 meters distance from the oven and 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. 2) The variation of frequency with Line Voltage. The operating frequency was measured using a spectrum analyzer. The EUT was operated/ warmed by at least 10 minutes of use with a 1000ml 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
Tested Range	2450±50MHz
Test Voltage	120VAC/60Hz
Results	Refer to following pages for details of the variation in operating frequency with time & line voltage measurement
Changes or Modifications	There were no modifications installed by Galanz test personnel.
M. Uncertainty	Freq.±10kHz

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Test data

Variation in Operating Frequency with Time

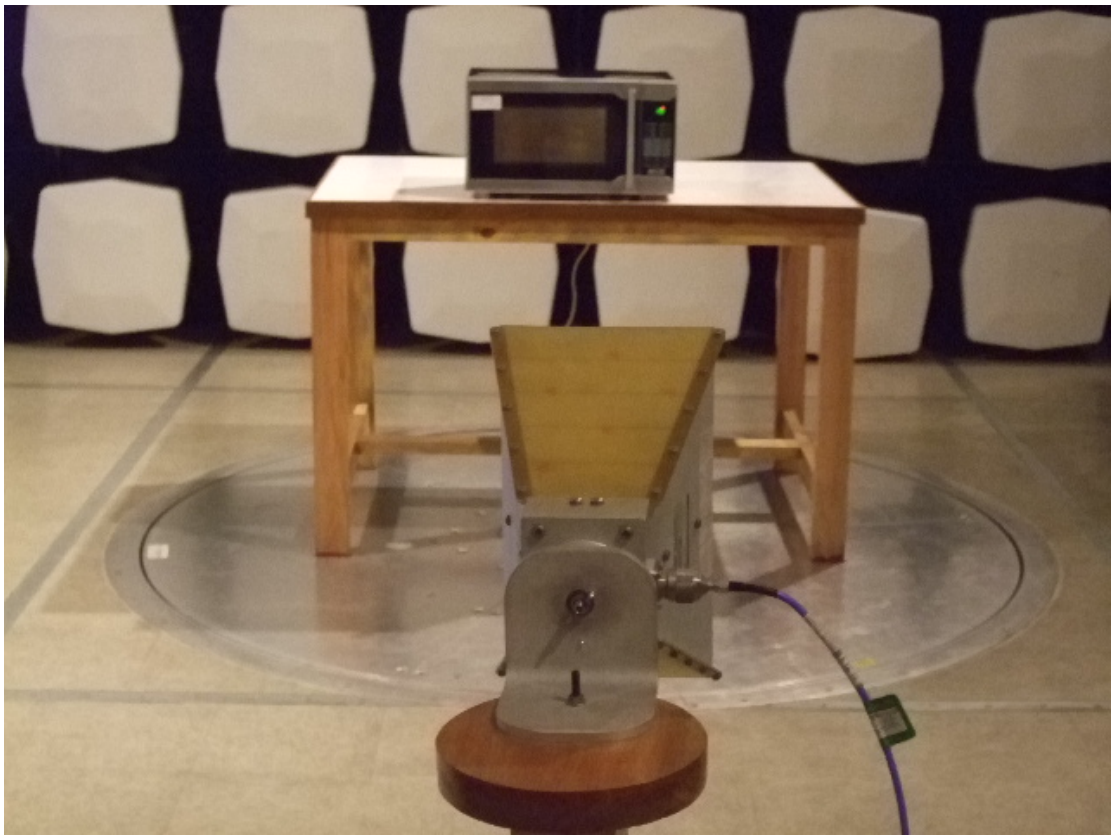
Minimum Frequency(MHz)	Maximum Frequency(MHz)
2413.6	2468.2

Variation in Operating Frequency with Line Voltage

Minimum Frequency(MHz)	Maximum Frequency(MHz)
2411.0	2467.8
Note: Line voltage varied from 96Vac to 150Vac	

Test Equipment List

Test equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Horn Antenna	ETS	3115	6587	2008-08-02	2010-08-02
Spectrum Analyzer	R&S	FSP30	100755	2007-11-30	2008-11-30
3m Anechoic chamber	ETS	N/A	N/A	2007-05-23	2009-05-23
Note: All testing were performed using internationally recognized standard. All test instruments were calibrated and traceable to the National Institute of Standards and Technology.					



Operating Frequency Test Set-up

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ATTACHMENT 5-CONDUCTED EMISSION TEST RESULTS

Client: Guangdong Galanz Enterprises Co Ltd	**Test Standard: FCC Part 18**
Model Numbers: P70B20(X)-(Y)	**Product: Microwave Oven**
Model Tested: P70B20AL-D5	**EUT Designation: Home or Office**
Temperature: 22℃	**Humidity: 40%RH**
ATM Pressure: 100.9kPa	**Grounding: Through AC power cord**
Tested By: Vegia Huang	**Date of Test: Nov 07, 2008**

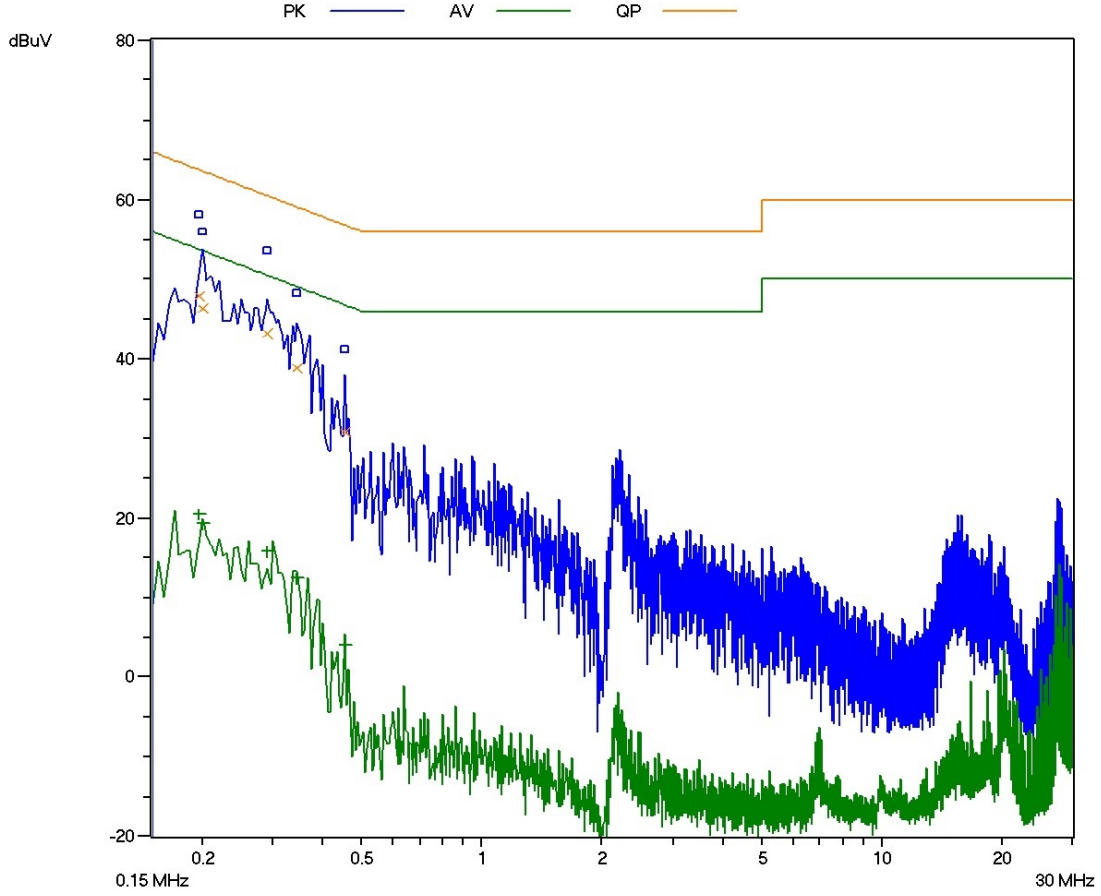
Test Reference	ANSI C63.4: 2003 , FCC/OST MP-5:1986
Test Procedure	The EUT was set up according to the guideline of ANSI C63.4:2003 & FCC MP-5 for conducted emission, The measurement was using a AMN on each line and an EMI receiver peak scan was made at the frequency measurement range , the six highest significant peak were then marked , and these signals were then quasi peaked and averaged. The frequency range investigated was from 150kHz to 30MHz
Tested Range	150kHz to 30MHz
Test Voltage	120VAC/60Hz
Results	The EUT meets the requirements of test reference for conducted Emission on line L by 13.0dBuV of Quasi-peak detector and by 27.3 dBuV of Average detector.
Changes or Modifications	There were no modifications installed by Galanz test personnel.
M. Uncertainty	±2.5dB

CE L 11/7/08 9:28:30 AM

Type	Microwave Oven
Manufacturer	Galanz
Condition	Full Power (Microwave Mode)

Frequency Range(s)		Range 1
Start Frequency		150 kHz
Stop Frequency		30 MHz
Step Frequency		5 kHz
Attenuator		Auto
Detector	(Pre)	AV CISPR
IF Bandwidth	(Pre)	9 kHz
Measure Time	(Pre)	10 ms
Detector	(Final)	QP
IF Bandwidth	(Final)	9 kHz
Measure Time	(Final)	1 s
Sub Ranges	(Final)	20

Transducer	4825-2+3m cable.set
Limit Line	EN55011 CE.lim



Line L Conducted Emission Graph

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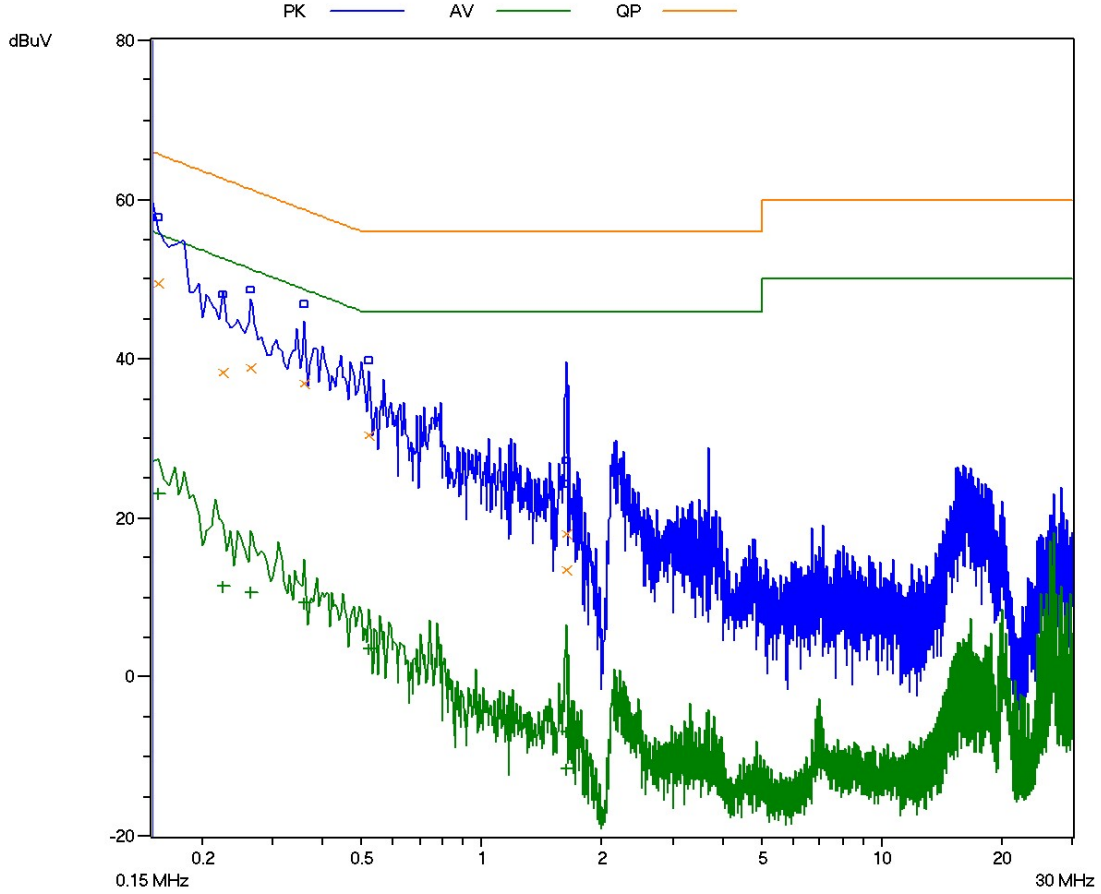
CE N 11/7/08 9:18:41 AM

Type		Microwave Oven
Manufacturer		Galanz
Condition		Full Power (Microwave Mode)

Frequency Range(s)		Range 1
Start Frequency		150 kHz
Stop Frequency		30 MHz
Step Frequency		5 kHz
Attenuator		Auto
Detector	(Pre)	AV CISPR
IF Bandwidth	(Pre)	9 kHz
Measure Time	(Pre)	10 ms
Detector	(Final)	QP
IF Bandwidth	(Final)	9 kHz
Measure Time	(Final)	1 s
Sub Ranges	(Final)	20

Transducer	4825-2+3m cable.set
Limit Line	EN55011 CE.lim



Line N Conducted Emission Graph

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Test Data

Line	Frequency	Corrected Reading(QP)	Corrected Reading(AV)	QP limit dB uV	AV limit dB uV
L	0.1984	48.6	25.5	63.6	53.6
L	0.2884	47.5	19.2	60.5	50.5
L	0.3460	41.4	14.0	59.0	49.0
N	0.1514	51.5	28.5	65.8	55.8
N	0.1794	49.3	21.8	64.4	54.4
N	1.6278	31.4	-5.3	56.0	46.0

Test Equipment List

Test equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
EMI Receiver	SCHAFFNER	SMR4503	44	2008-07-08	2009-07-08
LISN	ETS	4825/2	1161	2008-07-08	2009-07-08
Shielding Room	ETS	N/A	N/A	2008-05-30	2009-05-30
Note: All testing were performed using internationally recognized standard. All test instruments were calibrated and traceable to the National Institute of Standards and Technology.					

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Conducted Emission Test Set-up

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ATTACHMENT 6-RADIATED EMISSION TEST RESULTS

Client: Guangdong Galanz Enterprises Co Ltd	**Test Standard: FCC Part 18**
Model Numbers: P70B20(X)-(Y)	**Product: Microwave Oven**
Model Tested: P70B20AL-D5	**EUT Designation: Home or Office**
Temperature: 22℃	**Humidity: 40%RH**
ATM Pressure: 100.9kPa	**Grounding: Through AC power cord**
Tested By: Vegia Huang	**Date of Test: Nov 05, 2008**

Test Reference	ANSI C63.4: 2003 , FCC/OST MP-5:1986
Test Procedure	The EUT was set up according to the guidelines of ANSI C63.4: 2003 & FCC MP- 5 for radiated emissions. Microwave oven was placed on a 1m*1.5m nonconductive table. The top of the table is 0.8 m above the ground. The table is placed on a flush mounted metal turntable. An EMI receiver peak scan was made at the frequency measurement range (pre- scan) in an Anechoic chamber. Signal discrimination was then performed and the significant peaks marked. All data was recorded in Quasi-peak detection mode from 30 MHz to 1GHz and average detector mode above 1GHz. The following data lists the significant emission frequencies, measured levels, correction factors (including cable and antenna correction factors), and the corrected readings against the limits. Explanation of the Correction Factor are given as follows: FS= RA + AF + CF - AG Where: FS = Field Strength RA = Receiver Amplitude AF = Antenna Factor CF = Cable Attenuation Factor AG = Amplifier Gain
Tested Range	30MHz to 24.5GHz
Test Voltage	120VAC/60Hz
Results	The EUT meets the requirements of test reference for Radiated emission on Horizontal polarization by 22.08dBuV/m of Average detector at 9.8015GHz
Changes or Modifications	There were no modifications installed by Galanz test personnel.
M. Uncertainty	±3.2dB

Test Data

30MHz-1GHz				
Frequency (MHz)	**Antenna Polarization (V/H)**	**Corrected QP reading (dBμV/m)**	**Delta QP (dB)**	**3 Meters Limits (dBμV/m)**
31.20	H	12.2	57.0	69.2
228.00	H	5.2	64.0	69.2
706.20	H	17.2	52.0	69.2
31.00	V	11.9	57.3	69.2
246.10	V	6.3	62.9	69.2
976.00	V	21.7	47.5	69.2
Note: All readings are quasi-peak unless stated otherwise, using a bandwidth of 120kHz, with a 30ms sweep time. A video filter was not used.				
1GHz-25GHz				
Frequency (GHz)	**Antenna Polarization (V/H)**	**Corrected AV reading (dBμV/m)**	**Delta AV (dB)**	**3 Meters Limits (dBμV/m)**
4.8810	H	35.99	33.21	69.2
7.3290	H	40.77	28.43	69.2
9.8015	H	47.12	22.08	69.2
4.8808	V	35.22	33.98	69.2
7.3282	V	38.62	30.58	69.2
9.8028	V	45.46	23.74	69.2
Comment: None				
Note: All reading are average unless stated otherwise, using a bandwidth of 1MHz, with a 30 ms sweep time. A video filter was not used.				

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Test Equipment List

Test equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Broadband Antenna	ETS	3142C	00042672	2008-09-26	2010-09-26
Horn Antenna	ETS	3115	6587	2008-08-02	2010-08-02
Band-pass Filter	Micro-Tronic	BRM50702	S/N-030	2007-11-30	2008-11-30
EMI Receiver	SCHAFFNER	SMR4503	44	2008-07-08	2009-07-08
Spectrum Analyzer	R&S	FSP30	100755	2007-11-30	2008-11-30
3m Anechoic chamber	ETS	N/A	N/A	2007-05-23	2009-05-23
Note: All testing were performed using internationally recognized standard. All test instruments were calibrated and traceable to the National Institute of Standards and Technology.					

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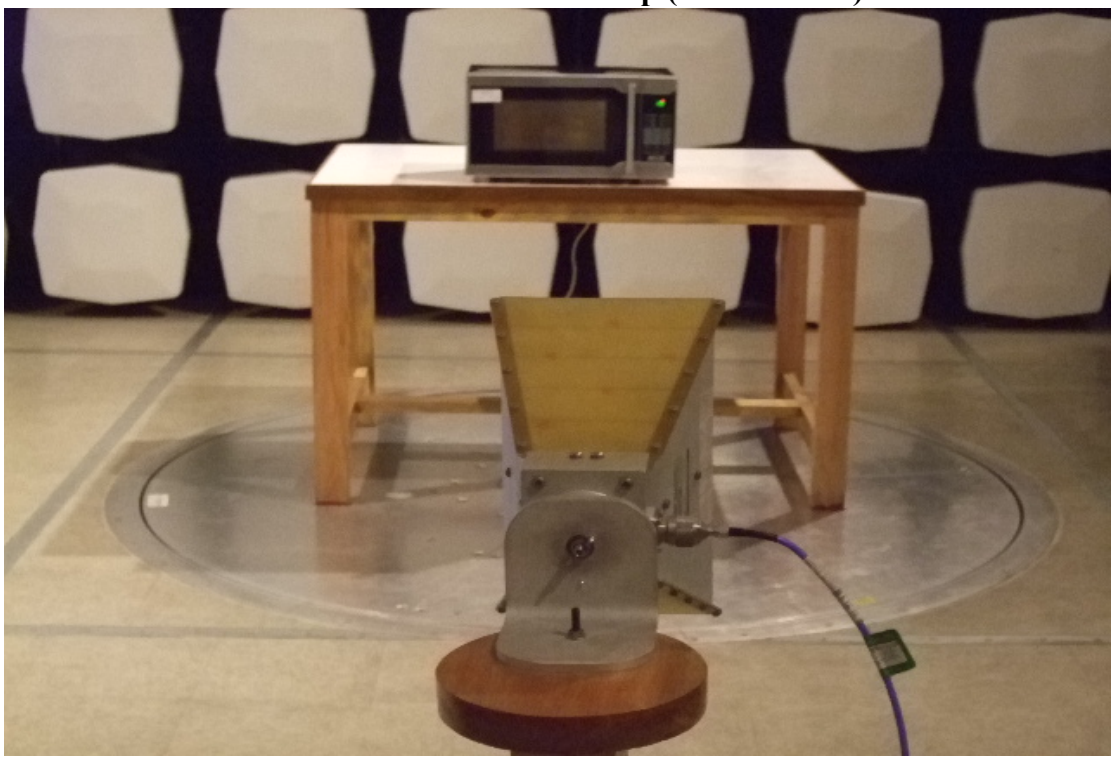
Radiated Emission Test Setup (30-1000MHz)



Radiated Emission Test Setup (1-25GHz)

The End

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