FCC CFR47 PART 18 SUBPART C

ISM EQUIPMENT

TEST REPORT

FOR

MICROWAVE OVEN

Galanz Model: P90N23AP-D2,

GE Model: WES0930

Magnetron Model: Galanz, M24FB-210A

Brand Name: Galanz

Test Report No: 08A1953-02

FCC ID: UHW9023005

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: Xiaoming Xu

Reviewed By: Yanhan Lu

QC Manager: Valley.Wang

Test Report Released By _____ **04/25/2008**

Name **Date**

List Attached Files

Exhibit Type	File Description	File Name
Test report	Test report	UHW9023005 -Test report .pdf
Operation Description	Operation Description	UHW9023005 -operationdescription .pdf
External Photos	External Photos	UHW9023005 -external photos
Internal Photos	Internal Photos	UHW9023005 -Internal photos
Block Diagram	Block Diagram	UHW9023005 -block diagram.pdf
Schematics	Schematics	UHW9023005 -schematics.pdf
ID Label/ Location	ID Label/ Location	UHW9023005 -label & location.pdf
User Manual	User Manual	UHW9023005 -user manual .pdf
Test setup Photos	Test setup Photos	UHW9023005 -test setup photos

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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	**P90N23AP-D2**
Model Tested	**P90N23AP-D2**
Brand Name	**Galanz**
Date Tested	**April 23, 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 P90N23AP-D2 (refered to the EUT in this report) is a Microwave Oven .

Specifications:

Power consumption	**120Vac 60Hz, 1350W**
Output	**900W**
Operation frequency	**2450Hz**
Magnetron brand	**Galanz**
Magnetron number	**M24FB-210A**
Outside dimensions(HxWxD)	**11.5*14.9*19.9 in.**
Cavity dimensions(HxWxD)	**8.3*12.2*13.0 in.**
Capacity	**0.85 cu.ft**
Cooking uniformity	**Turntable System (Φ11.2")**
Net weight	**Approx.32.0lb.**

Type of Deriver

P90N23AP-D2 model designations:

P: Model only with Microwave functions
90: denote the output power is different, 900W
23: denote capacity in 23 liters
A denotes the electrical control model.
P after A is push-down type door
D2 denote the appearance change.

Type: WES0930 Brand: GE is same as P90N23AP-D2
Type: WES0930 can follow letter and digital denote the appearance difference

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Test Summary

The Electromagnetic Compatibility Requirements on model tested _P90N23AP-D2 for 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

Load for Microwave Ovens

For all measurements the energy developed by the oven was absorbed by a dummy load consisting of a quantity of tag 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

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Door open view

Rear View of EUT

Uncovered View from right side

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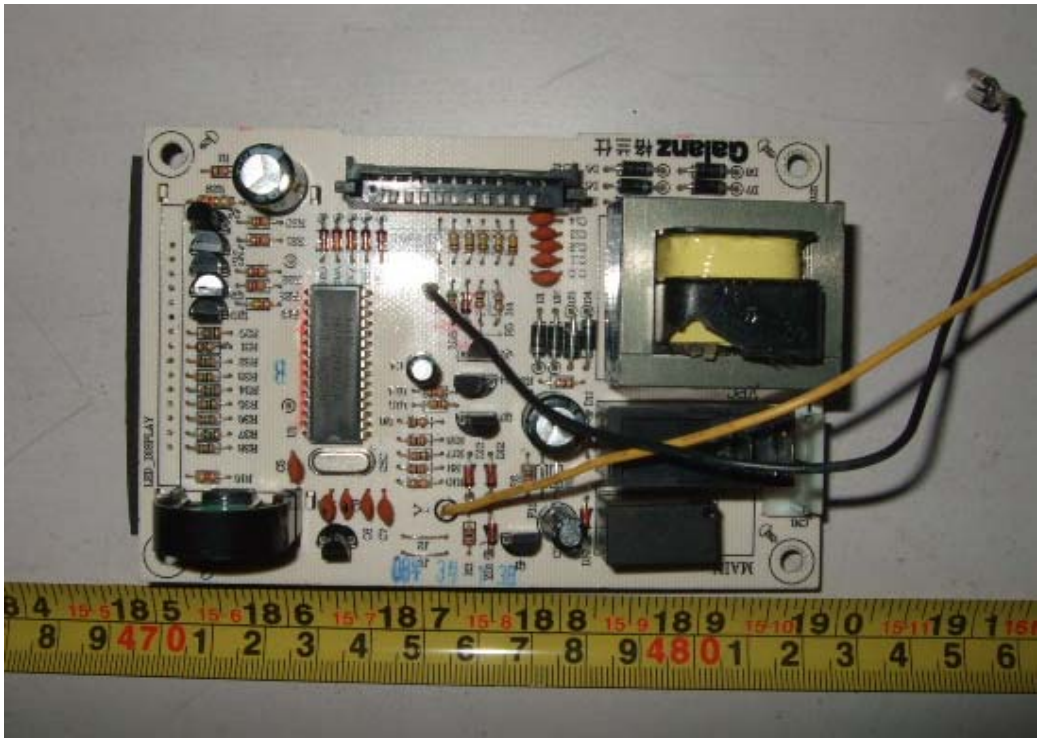
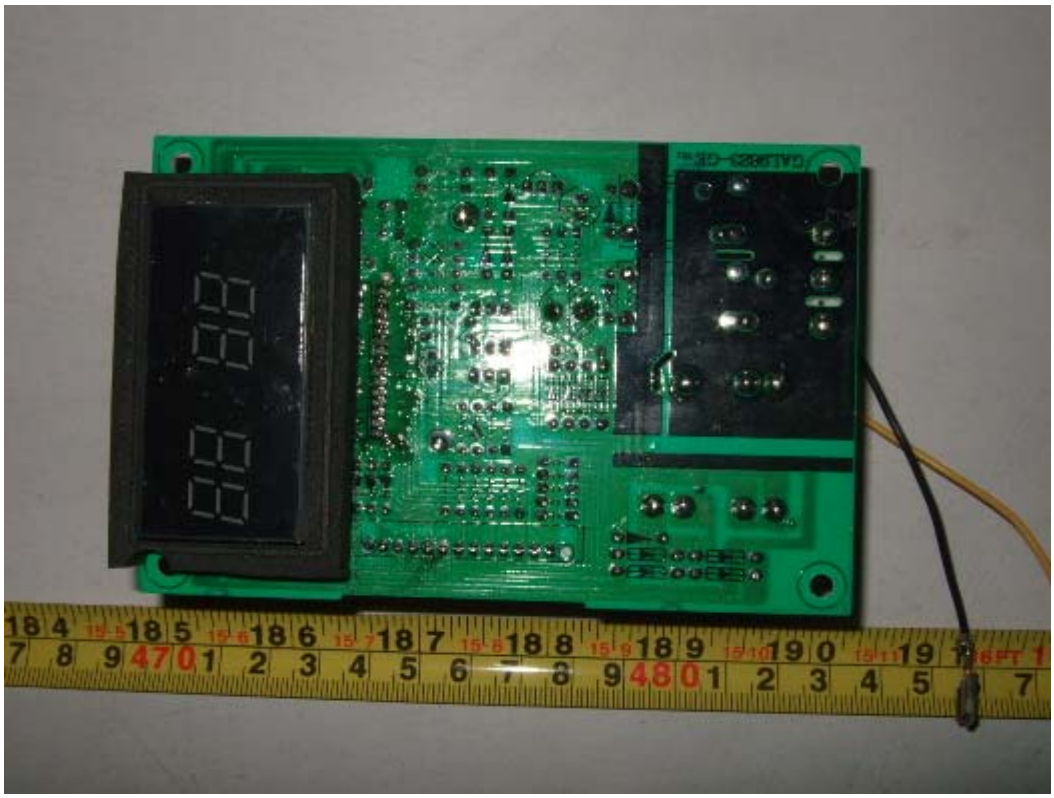


Front view of Mainboard



Back view of Mainboard

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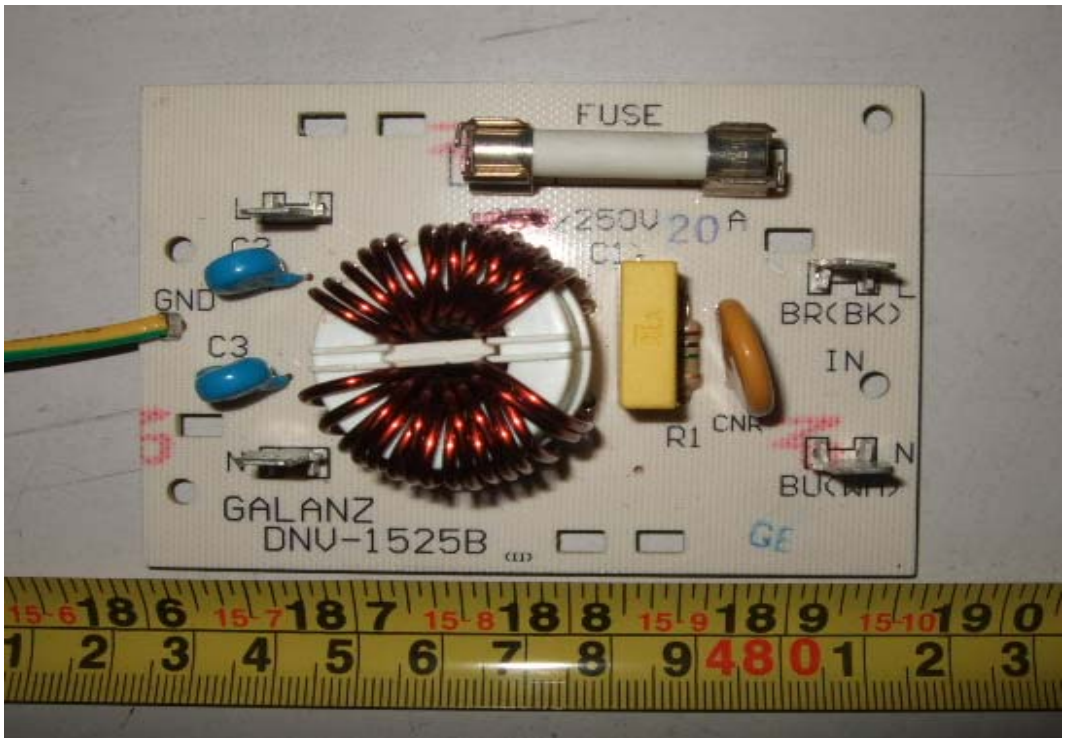
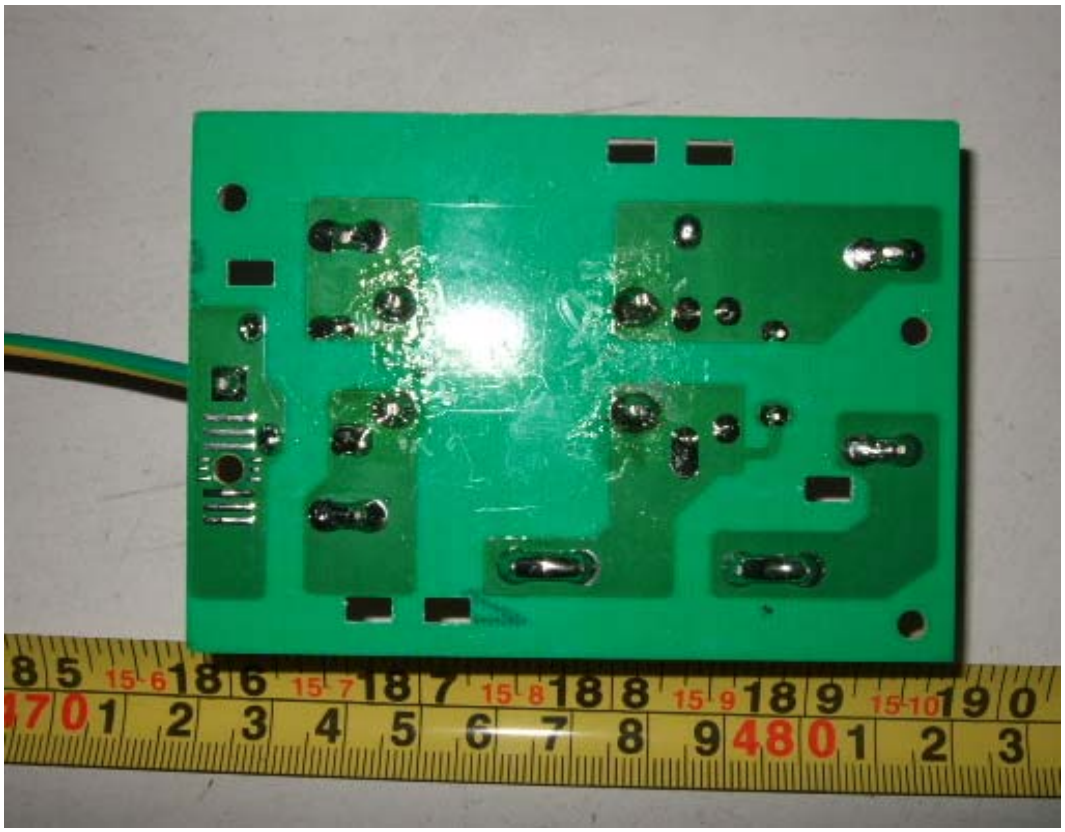


Front View of AC power filter board



Back of View AC power filter board

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Test System Details

EUT					
Model Numbers	**P90N23AP-D2**				
Model tested	**P90N23AP-D2**				
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**	**1.20**	**N**	**N**

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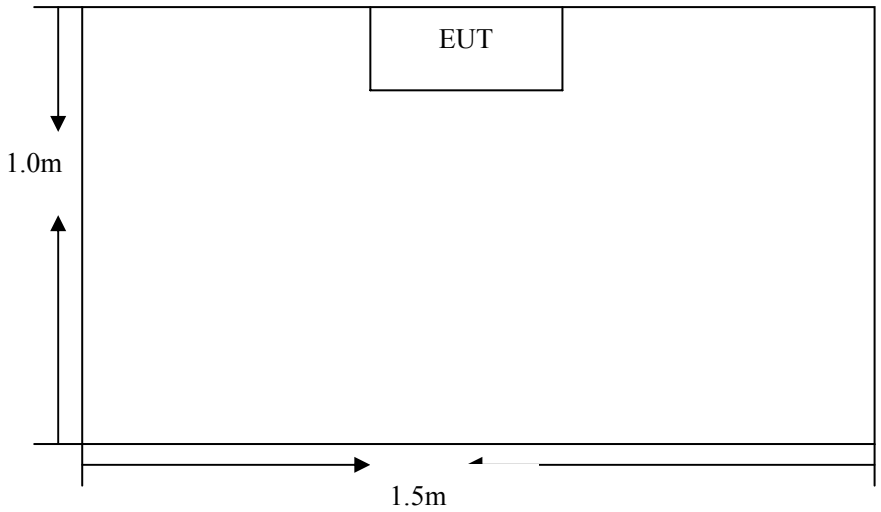
Configuration of Tested System



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ATTACHMENT 1-RADIATION HAZARD TEST

Client: Guangdong Galanz Enterprises Co Ltd	**Test Standard: FCC Part 18**
Model Numbers: P90N23AP-D2	**Product: Microwave Oven**
Model Tested: P90N23AP-D2	**EUT Designation: Home or Office**
Temperature: 21℃	**Humidity: 53%RH**
ATM Pressure: 103kPa	**Grounding: Through AC power cord**
Tested By: Xiaoming Xu	**Date of Test: 2008, April 23rd**

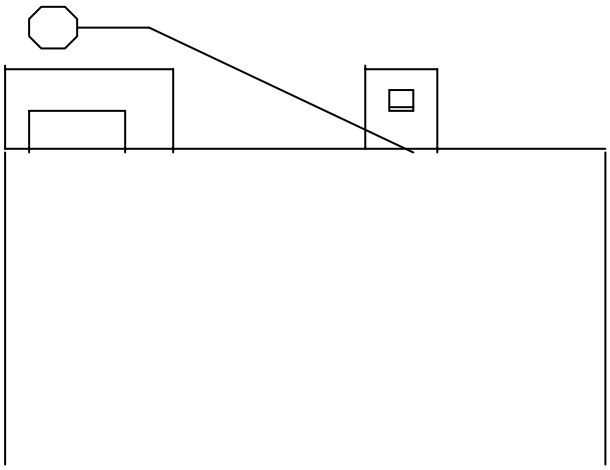
Test Reference	ANSI C63.4: 2003, FCC/OST MP-5:1986
Test Procedure	The EUT was set up according to the FCC MP-5 and FCC Part 18 for Radiation Hazard Measurement. The measurement was using a microwave leakage meter to measure the Radiation leakage in the as-received condition with the oven door closed. 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 0.53 mW/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 EMC Compliance Management Group (China) test personnel.
M. Uncertainty	0.0001 mW/cm^2

Test Equipment List

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Field Monitor	ETS	AR FM5004	A0304252	24/06/07	24/06/08
Electric Field prober	ETS	AR FP6001	A0304302	24/06/07	24/06/08
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: P90N23AP-D2	**Product: Microwave Oven**
Model Tested: P90N23AP-D2	**EUT Designation: Home or Office**
Temperature: *21*℃	**Humidity: 53%RH**
ATM Pressure: 103kPa	**Grounding: Through AC power cord**
Tested By: Xiaoming Xu	**Date of Test; 2008, April 23rd**

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 amperemeter 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	11. 91	1429	1450

Test Equipment List

Test equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Power frequency test system	Ainuo	AN8716PX	058704273	07/12/07	07/12/08
Note: All testing were performed using internationally recognized standard. All test instrument 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: P90N23AP-D2	**Product: Microwave Oven**
Model Tested: P90N23AP-D2	**EUT Designation: Home or Office**
Temperature: *21*℃	**Humidity: 53%RH**
ATM Pressure: 103kPa	**Grounding: Through AC power cord**
Tested By: Xiaoming Xu	**Date of Test; 2008, April 23rd**

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 =770W 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	10	32	120	770

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.					

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RF Output Power Test Set-up

ATTACHMENT 4-OPERATING FREQUENCY MEASUREMENT

Client: Guangdong Galanz Enterprises Co Ltd	**Test Standard: FCC Part 18**
Model Numbers: P90N23AP-D2	**Product: Microwave Oven**
Model Tested: P90N23AP-D2	**EUT Designation: Home or Office**
Temperature: *23*℃	**Humidity: 51%RH**
ATM Pressure: 103kPa	**Grounding: Through AC power cord**
Tested By: Xiaoming Xu	**Date of Test; 2008, April 23rd**

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

Variation in Operating Frequency with Time

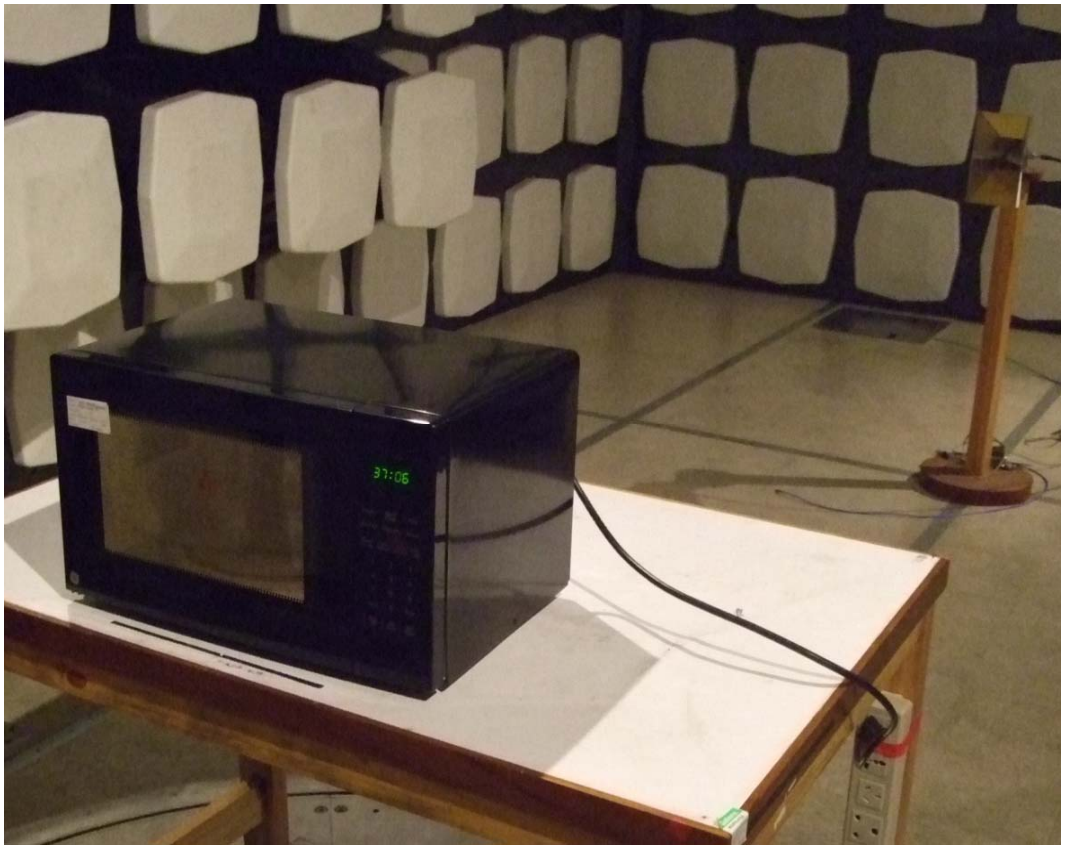
Minimum Frequency(MHz	Maximum Frequency(MHz)
2457.0	2475.4

Variation in Operating Frequency with Line Voltage

Minimum Frequency(MHz	Maximum Frequency(MHz)
2451.2	2476.8
Note: Line voltage varied from 96Vac to 150Vac	

Test Equipment List

Test equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Vltra Broadband Antenna	ETS	3142C	00042672	2007-07-31	2008-07-31
Horn Antenna	ETS	3115	6587	2007-08-03	2008-08-03
Spectrum Analyzer	R&S	FSP30	100755	2007-11-30	2008-11-30
3M Anechoic chamber	ETS	N/A	N/A	2007-05-23	2008-05-23
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: P90N23AP-D2	**Product: Microwave Oven**
Model Tested: P90N23AP-D2	**EUT Designation: Home or Office**
Temperature: *23*℃	**Humidity: 51%RH**
ATM Pressure: 103kPa	**Grounding: Through AC power cord**
Tested By: Xiaoming Xu	**Date of Test; 2008, April 23rd**

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 signal s 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 10.4dB of Quasi-peak detector and by 27.1 dB of Average detector.
Changes or Modifications	There were no modifications installed by Galanz test personnel.
M. Uncertainty	±2.5dB

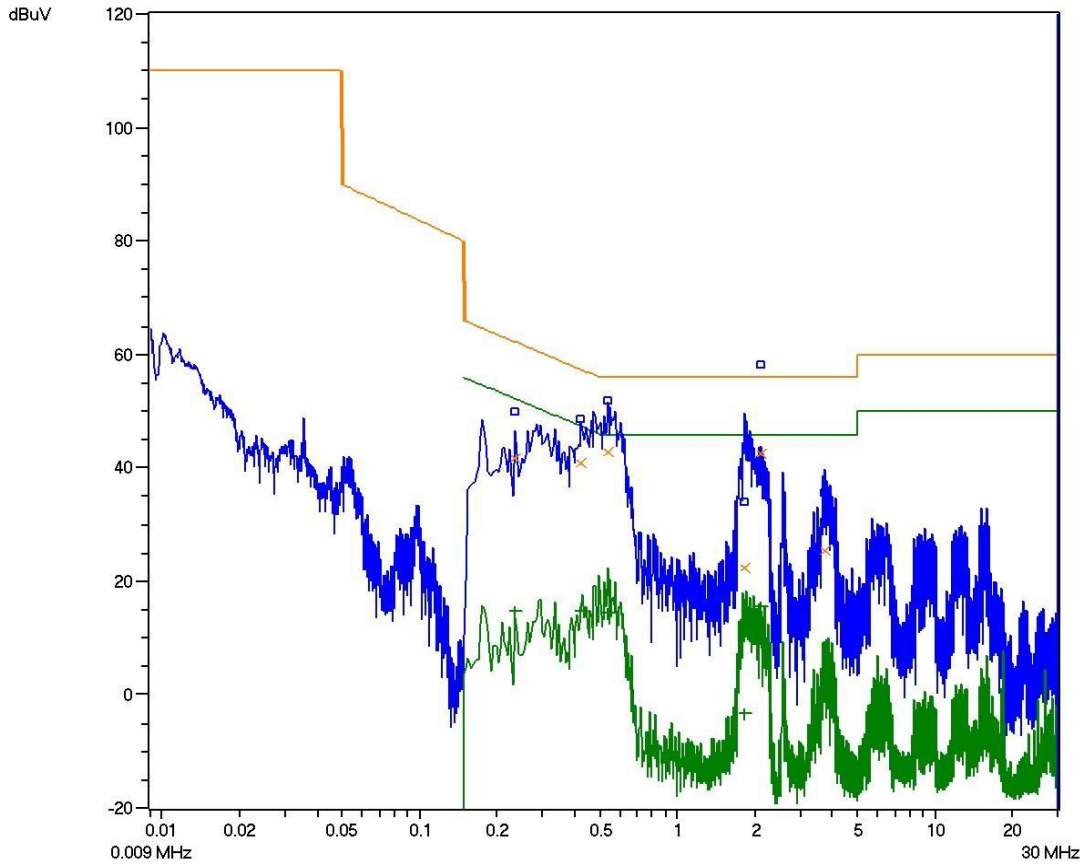
conduction emissionn L 4/23/08 3:57:54 PM

Type	microwave oven
EUT / Ser.No.	P90N23AP-D2
Manufacturer	GALANZ
Condition	FULL POWER
Operator	
Specification	120V/60Hz

Frequency Range(s)		Range 1	Range 2	Range 3
Start Frequency		9 kHz	50 kHz	148.5 kHz
Stop Frequency		50 kHz	148.5 kHz	30 MHz
Step Frequency		100 Hz	100 Hz	5 kHz
Attenuator		Auto	Auto	Auto
Detector	(Pre)	P CISPR	P CISPR	AV CISPR
IF Bandwidth	(Pre)	200 Hz	200 Hz	9 kHz
Measure Time	(Pre)	100 ms	20 ms	10 ms
Detector	(Final)	QP	QP	QP
IF Bandwidth	(Final)	200 Hz	200 Hz	9 kHz
Measure Time	(Final)	2 s	1 s	1 s
Sub Ranges	(Final)	2	3	10

Transducer	4825-2+3m cable.set
Limit Line	Fcc Part 18

PK AV QP



Line L Conducted Emission Graph

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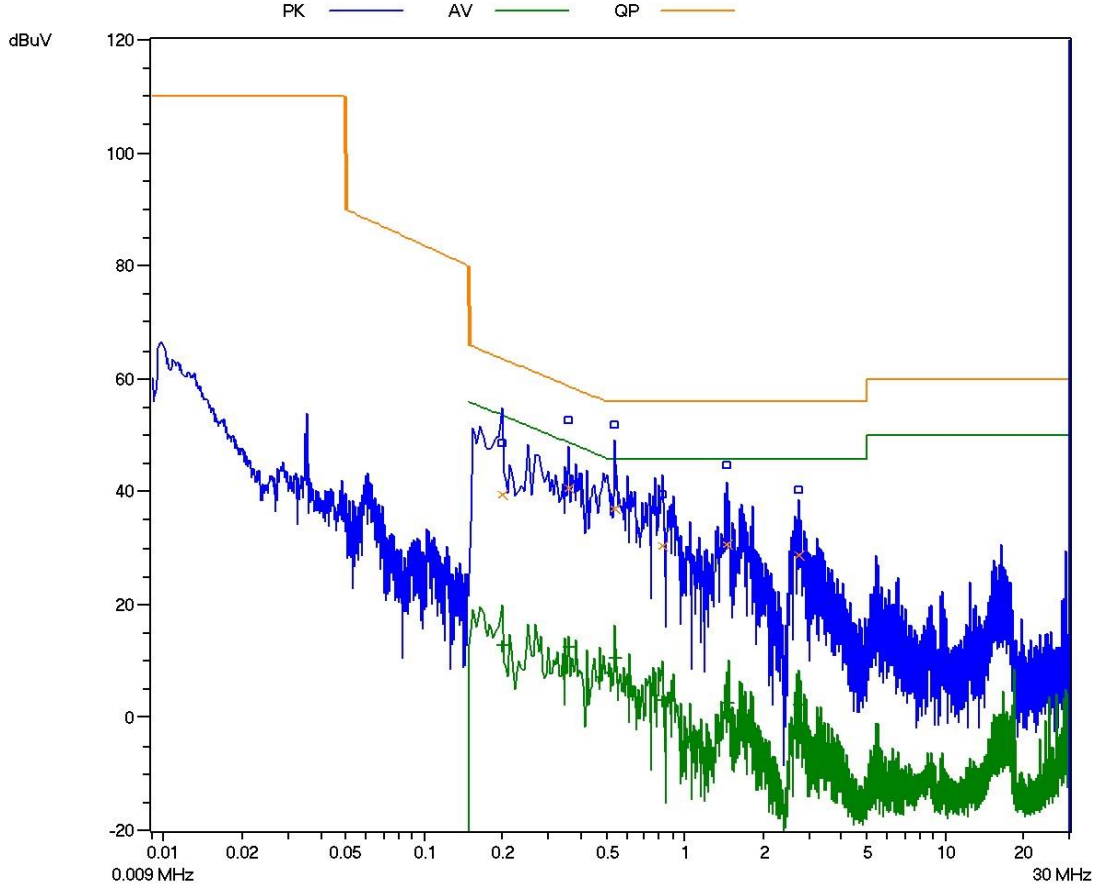
conduction emissionn N 4/23/08 3:50:14 PM

Type	microwave oven
EUT / Ser.No.	P90N23AP-D2
Manufacturer	GALANZ
Condition	FULL POWER
Operator	
Specification	120V/60Hz

Frequency Range(s)		Range 1	Range 2	Range 3
Start Frequency		9 kHz	50 kHz	148.5 kHz
Stop Frequency		50 kHz	148.5 kHz	30 MHz
Step Frequency		100 Hz	100 Hz	5 kHz
Attenuator		Auto	Auto	Auto
Detector	(Pre)	P CISPR	P CISPR	AV CISPR
IF Bandwidth	(Pre)	200 Hz	200 Hz	9 kHz
Measure Time	(Pre)	100 ms	20 ms	10 ms
Detector	(Final)	QP	QP	QP
IF Bandwidth	(Final)	200 Hz	200 Hz	9 kHz
Measure Time	(Final)	2 s	1 s	1 s
Sub Ranges	(Final)	2	3	10

Transducer	4825-2+3m cable.set
Limit Line	Fcc Part 18



Line N Conducted Emission Graph

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Test Data

Line	Frequency	Corrected Reading(QP)	Corrected Reading(AV)	QP limit dB uV/m	AV limit dB uV/m
L	0.2874	44.2	21.1	62.1	52.1
L	0.5354	45.6	18.9	56.0	46.0
L	2.1030	41.9	17.0	56.0	46.0
N	0.3582	47.5	18.4	60.1	50.1
N	0.5466	45.5	17.6	56.0	46.0
N	1.4590	43.2	13.1	56.0	46.0

Test Equipment List

Test equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
EMI Receiver	SCHAFFNER	SMR4503	44	2007-07-09	2008-07-09
LISN	EST	4825/2	1161	2007-07-09	2008-07-09
Note: All testing were performed using internationally recognized standard. All test instruments were calibrated and traceable to the National Institute of Standards and Technology.					

Conducted Emission Test Set-up

GUANGDONG ATC-LAB CO., LTD. 528305
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ATTACHMENT 6-RADIATED EMISSION TEST RESULTS

Client: Guangdong Galanz Enterprises Co Ltd	**Test Standard: FCC Part 18**
Model Numbers: P90N23AP-D2	**Product: Microwave Oven**
Model Tested: P90N23AP-D2	**EUT Designation: Home or Office**
Temperature: *23*℃	**Humidity: 51%RH**
ATM Pressure: 103kPa	**Grounding: Through AC power cord**
Tested By: Xiaoming Xu	**Date of Test; 2008, April 23rd**

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 1.0 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 Vertical polarization by 23.45dB of Average detector at 9.8735 GHz
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 reading (dBμV/m)**	**Delta, QP (dB)**	**3 Meters Limits (dBμV/m)**
100.60	V	26.0	43.8	69.8
129.40	V	26.2	43.6	69.8
139.60	V	22.0	47.8	69.8
243.40	H	25.4	44.4	69.8
256.00	H	33.2	36.6	69.8
724.00	H	21.4	48.4	69.8
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 reading (dBμV/m)**	**Delta, AV (dB)**	**3 Meters Limits (dBμV/m)**
4.9090	V	40.54	29.26	69.8
7.3929	V	40.80	29.00	69.8
9.8735	V	46.35	23.45	69.8
4.9143	H	35.43	34.37	69.8
7.3951	H	41.04	28.76	69.8
9.8450	H	44.67	25.13	69.8
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
Vltra Broadband Antenna	ETS	3142C	00042672	2007-07-31	2008-07-31
Horn Antenna	ETS	3115	6587	2007-08-03	2008-08-03
Band-pass Filter	R&S	FSP30	100755	2007-11-30	2008-11-30
EMI Receiver	ETS	N/A	N/A	2007-05-23	2008-05-23
3M Anechoic chamber	ETS	3142C	00042672	2007-07-31	2008-07-31
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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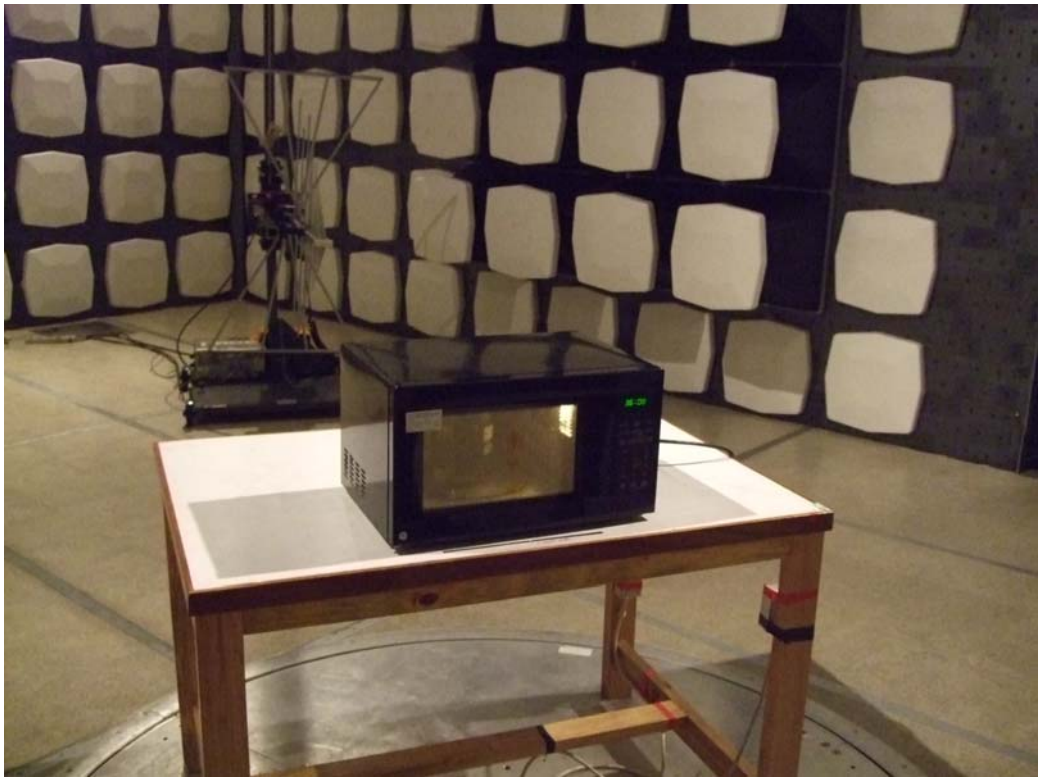
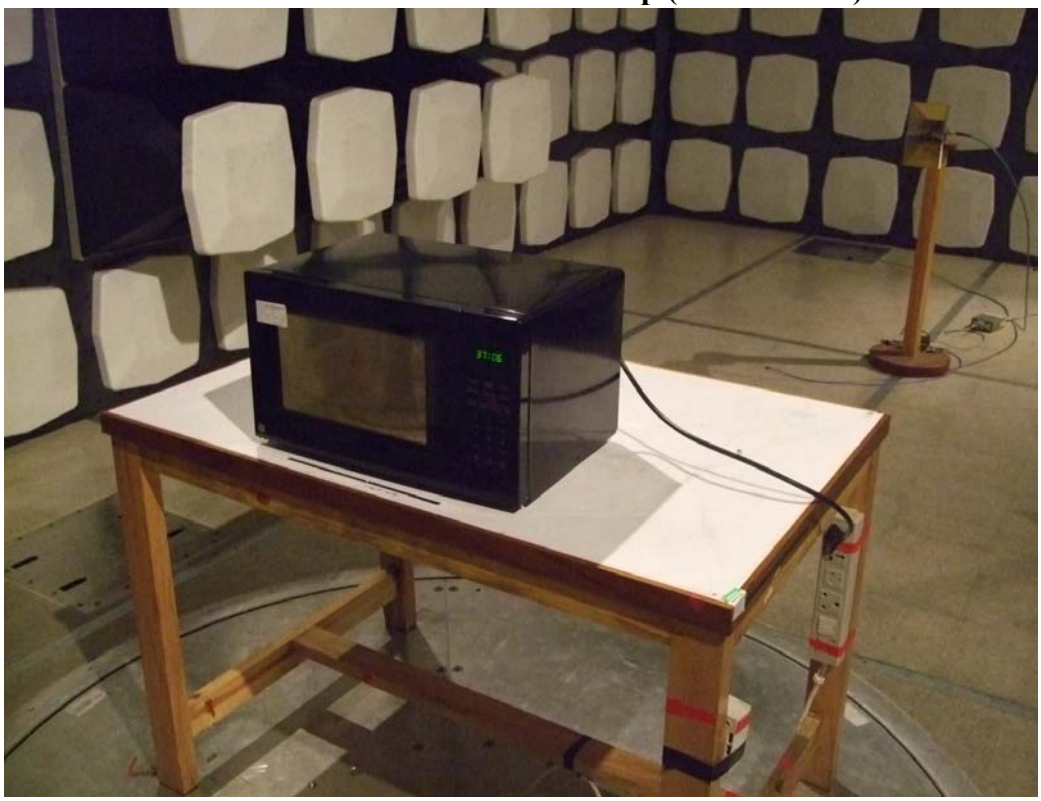


Radiated Emission Test Setup (30-1000MHz)



Radiated Emission Test Setup (1-25GHz)

The End