

ACLAP4A41

APPLICATION FOR CERTIFICATION

<u>MODEL NO.</u>	<u>FCC ID</u>
NN-L829BA	ACLAP4A41
NN-L829WA	ACLAP4A41

LIST OF EXHIBITS

- EXHIBIT 1: TECHNICAL REPORT
- EXHIBIT 2: PHOTOGRAPHS OF MAGNETRON AND COMPONENTS
- EXHIBIT 3: SAMPLES AND LOCATION OF FCC ID LABEL
- EXHIBIT 4: SCHEMATIC DIAGRAM
- EXHIBIT 5: REPORT OF MEASUREMENTS
- EXHIBIT 6: LIST OF MEASURING EQUIPMENT AND CALIBRATION
- EXHIBIT 7: OPERATING INSTRUCTIONS
- EXHIBIT 8: INSTALLATION INSTRUCTIONS

TECHNICAL REPORT

1. DESCRIPTION OF MEASUREMENT FACILITY:

The description of the measurement facility is already on file with the FCC laboratory. Please refer to the commission's reference 31010/EQU 4-3-0A.

2. INSTALLATION INSTRUCTIONS:

See EXHIBIT 7.

3. OPERATING INSTRUCTIONS:

See EXHIBIT 8.

4. APPLICANT:

MATSUSHITA MICROWAVE OVEN COMPANY  
9333 W. Grand Avenue  
Franklin Park, Illinois 60131

5. MANUFACTURER:

MATSUSHITA HOME APPLIANCE CORPORATION OF AMERICA  
1355 Lebanon  
Danville, Kentucky 40423

6. MEASUREMENT SITE:

PANASONIC MAGNETRON LAB.  
PANASONIC INDUSTRIAL COMPANY  
1707 N. Randle Road  
Elgin, Il 60123-7847

7. EQUIPMENT IDENTIFICATION:

Model No. : NN-L829BA, NN-L829WA,  
Brand Name : Panasonic  
FCC ID : ACLAP4A41

7. EQUIPMENT SPECIFICATIONS:

Electrical Power Requirement: 120V, 60Hz, 14.0A  
Nominal Operating Frequency: 2450 MHz  
Maximum RF Energy Generated: 1100 W (IEC 705)  
Magnetron Type: 2M210-M1  
Feed Type and Location: Through the wave guide  
on the right sidewall of the oven.  
Stirrer: Turntable Type  
Cabinet Dimensions: (W) 594 x (H) 333 x (D) 427 (mm)  
Oven Cavity Dimensions: (W) 435 x (H) 280 x (D) 400 (mm)  
Door Viewing Area Dimensions: (W) 356 x (H) 181 (mm)  
Door Seal Type: Slit Choke seal and capacitive seal method

8. DESCRIPTION OF DIFFERENCES

Model No.	Basic Models NN-L829BA/WA
Input Power	120 Vac, 14.0A
Output Power	1100W (IEC705)
Magnetron	2M210-M1
Brand	Panasonic

ACLAP4A41  
EXHIBIT 2

PHOTOGRAPHS OF EQUIPMENT

EXHIBIT 2-A: FRONT VIEW OF MODEL NN-L829BA

EXHIBIT 2-B: REAR VIEW OF MODEL NN-L829BA

EXHIBIT 2-C: FRONT VIEW OF MODEL NN-L829BA WITH THE DOOR OPENED

EXHIBIT 2-D: TOP VIEW OF MODEL NN-L829BA WITH ENCLOSURE REMOVED

EXHIBIT 2-E: RIGHT SIDE VIEW OF MODEL NN-L829BA WITH ENCLOSURE REMOVED

EXHIBIT 2-F: BOTTOM VIEW OF MODEL NN-L829BA

EXHIBIT 2-G: LEFT SIDE VIEW OF MODEL NN-L829BA WITH ENCLOSURE REMOVED

EXHIBIT 2-H: VIEW OF DOOR CHOKE CONSTRUCTION ILLUSTRATING INTEGRAL CHOKE TYPE.

EXHIBIT 2-I: VIEW OF MAGNETRON TYPE 2M210-M1

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ENGINEERING TEST REPORT

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FEB 3, 1999

Report No. CALR-FCC-O96

This is to certify that the MICROWAVE OVEN from which the following data has been derived properly complies with the requirements of " FCC Rules and Regulations Part 18 Subpart C " as of the date the measurements were made.

1. Manufacturer of Device : Matsushita Home Appliance  
Corporation of America

1355 Lebanon Road.  
Danville, Kentucky 40423

2. Description of Device

a. FCC ID. : ACLAP4A41  
b. Model No. : NN-L829BA  
c. Serial No. : PP00015  
d. Operating Frequency : 2450 MHz  
e. Output RF Power : 1100 W ( BY IEC 705 )  
f. Power Consumption : 120 V. 60 Hz  
g. Magnetron Type : Matsushita 2M210  
h. Employed Mode : Turn Table  
i. Door Seal Type : Choke

3. Measurement Procedure Used : FCC/OST MP-5

4. Measurement Site

Name : Panasonic Magnetron Lab.  
Panasonic Industrial Company

Address : 1707 N. Randall Road  
Elgin, Illinois 60123-7847

Description of this test facility has been filed with the FCC. ( Feb. 26, 1987,  
File # 31010/EQU 4-3-0A )

5. Date of Measurement : FEB 3, 1999

6. Measurement Data : See Attached " Data Summary "

7. Test Equipment Used : See Exhibit 1

Tested By



M. Okazaki  
Applications Manager of Magnetron  
Panasonic Industrial Company

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 DATA SUMMARY
 

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1. Safety Check : < 0.5 mW/cm<sup>2</sup> @ 5cm

2. Radiated Field Strength uV/m @ 300m

	Frequency ( MHz )	Field Strength ( uV/m )	Permissible ( uV/m )
Fundamental	2474	1128	.....
2nd Harmonic	4919	11.61	32.75
3rd Harmonic	7391	2.75	32.75
4th Harmonic	9890	2.16	32.75
Spurious	2521	1.29	32.75
Emission Side Band	2400	1.05	32.75
Emission Side Band	2500	0.36	32.75

3. Maximum frequency variation : 2469 MHz - 2471 MHz  
( 96V ~ 150V / 1500cc Load )

2452 MHz - 2473 MHz  
( 1500cc ~ 300cc / Load )

4. Total power input to oven : 1670 W

5. Power developed in dummy load : 858 W

6. Supply voltage : 120V , 15.4 A

REPORT OF MEASUREMENTS

1. MODEL NO.: NN-L829BA  
SERIAL NO. PP-000015  
MAGNETRON TYPE NO.: 2M210-M1
2. MEASUREMENT DATE: 2/3/99
3. LIST OF MEASURING EQUIPMENT AND CALIBRATION DATA:  
REFER TO ATTACHED EXHIBIT 6
4. INVESTIGATED FREQUENCY RANGE: 100Mhz to 4th Harmonic

5. DATA SUMMARY:

Safety Check : <0.5 MW/cm2

Radiated Field Strength:	( uV/m @ 300m )	Limit
Fundamental:	<u>2474 MHz</u> <u>1128uv/m</u>	N/A
2nd. Harmonic:	<u>4919 MHz</u> <u>11.61uv/m</u>	32.75
3rd. Harmonic:	<u>7391 MHz</u> <u>2.75uv/m</u>	"
4th. Harmonic:	<u>9890 MHz</u> <u>2.16uv/m</u>	"
Spurious:	<u>2521 Mhz</u> <u>1.29uv/m</u>	"
Emmission Sideband:	<u>2400 MHz</u> <u>1.05uv/m</u>	"
Emmission Sideband:	<u>2500 MHz</u> <u>0.36uv/m</u>	"
Greater than 4th. Harmonic	not measurable	

Maximum Frequency Variation: 2469 to 2471 MHz  
(1000 ml water load)

Maximum Frequency Variation: 2452 to 2473 MHz  
(1000 ml - 200ml water load)

Total Power Input to Oven: 1670 watts

Power Developed in Dummy Load: 858 watts

Supply Voltage: 120 Volts, 60Hz, 15.4A



**Description of Instrumentation and calculation****(1) Measurement equipment**

a. Field Strength Meter : Electro-Metrics Model EMC-50

Bandwidth Setting : 1 MHz

Detector Function : Linear Average Detection

b. Receiving Antenna : Electro-Metrics Model RGA-180

Frequency Range : 1 - 18 GHz

c. Microwave Survey Meter : Narda Model 8110B

**(2) Test Condition**

a. Antenna Height Variation : 1.0 - 1.5 m

b. Distance of Antenna to Test unit : 3.0 m

c. Test Unit Height : 1.0 m

**(3) Calculation Formula**

Field Strength at 3 m (dBuV/m)

$$= \text{Receiver Reading (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)}$$

Field Strength at 300m (uV/m)

$$= K * 10^{\frac{\text{Field Strength at 3 m (dBuV/m)}}{20}}$$

K : Conversion Factor for 3 m to 300 m

Frequency (MHz)	Antenna Factor (dB/m)	Cable Loss (dB)	Conv. Factor K
2400	29	0.7	0.0061
<b>Fundamental</b>	<b>29.3</b>	<b>0.7</b>	<b>0.0062</b>
2500	29.5	0.7	0.0063
4900	33.4	0.9	0.01
7350	36.5	1.2	0.01
9800	38.2	1.4	0.01

**Example : 2nd Harmonics**

Receiver Reading = 20 dB @ 3 m

$$\text{FIS} = 0.01 * 10^{\frac{20 + 33.4 + 0.9}{20}} = 5.19 \text{ (uV/m)} \\ \text{@300 m}$$

**Exhibit 1      Test Equipment List**

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Name / Model No.	S / No.	Manufacturer	Last Calibrated
Field Strength Meter Model EMC - 50	175	Electro Metrics	12 / 10 / 98
Microwave Survey Meter 8110B	20915	Narda	03 / 19 / 98
Ridged Guide Antenna RGA - 180	2455	Electro Metrics	08 / 20 / 88
Network Analyzer 8410B	1647A00704	Hewlett Packard	06 / 17 / 88
Reflection Unit 8743A	1330A01358	Hewlett Packard	06 / 17 / 88
Sweep Oscillator 8620C	1645A00827	Hewlett Packard	06 / 17 / 88
Frequency Meter 536A	1441A00695	Hewlett Packard	09 / 17 / 88
Power Meter 436A	1629A1172	Hewlett Packard	08 / 05 / 89
Spectrum Analyzer 8555A	1642A06830	Hewlett Packard	08 / 21 / 88

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Fig. 1 Physical Description of Test Site

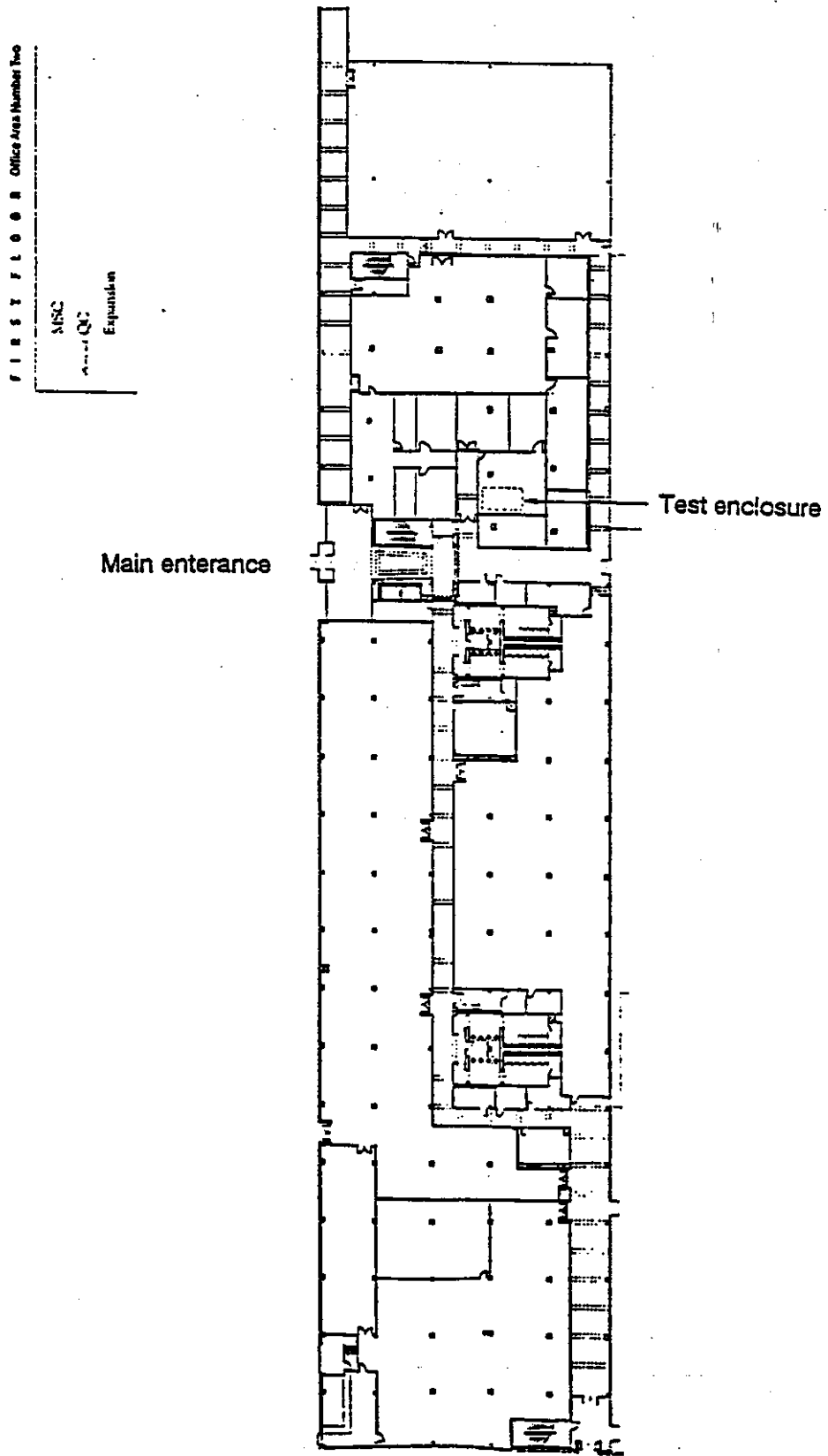


Fig. 2 Physical Dimensions of Test Site ( Unit mm )

