

Panasonic

Panasonic Industrial Company
Division of Matsushita Electric
Corporation of America

1707 N. Randall Road
E-Zip: 1F-2
Elgin, IL 60123-7847

Diversified Technologies Group
Magnetron Tube Department
TEL : (847) 468-5744
Fax: (847) 468-5773

FEB 25 , 1999

ELECTROMAGNETIC RADIATION TEST OF MICROWAVE OVEN

Report No. CALR-FCC-097

Page. 1

This is to certify that the MICROWAVE OVEN from which the following data have been derived through the required measurements in Panasonic's test facility that have been filed with FCC file No. 31010/EQU 4-3-0A.

Oven Model : OTR7
Magnetron Model : 2M167

1. Power Density Safety Check

Condition	Load - Water 275cc center
Equipment	Narda 8110B
Power density	0.20 (mW/cm ²)

2. Input Power

Line Volt (V)	Input I (A)	Input Power (W)	Load Condition
120	15.55	1660	1000cc / 20 degC

3. Output Power

Condition	Water load : 1000cc×1 / 20 deg C, Tim : 120sec		
Temp 1 (deg C)	Temp 2 (deg C)	T2 - T1 (deg C)	Output Power(W)
19.50	44.10	24.60	861.0

4. Harmonics

Harmonics	Frequency (MHz)	Load Condition	FIS(uV/m) @300m
2nd	4917	700cc center	3.27
3rd	7014	700cc center	1.32
4th	9798	700cc center	1.91

Note : 2nd and 3rd Harmonics are measured with load 300cc and 700cc in the center or right front position.

5. Permissible

Formula	$SQR(861/500) \times 25 \mu V/m$ @300m
Permissible	32.81

Report No. CALR-FCC-097

Page. 2

6. Side Band

Frequency (MHz)	FIS(uV/m) @300	Load Condition
-----------------	----------------	----------------

2400	9.34	700cc center
2500	0.51	700cc center

7. Frequency Run

(1) Frequency VS Line Voltage Variation Test

Test Results (Room Temperature : 20 deg C

Line Voltage Variation (V)	Frequency (MHz)	Deviation for ISM Frequency (MHz)
150 (125%)	2463	13
135 (112.5%)	2462	12
120 (Nominal)	2469	19
108 (90%)	2465	15
96 (80%)	2462	12

Load : 1000 cc water in 1000 cc glass beaker

(2) Frequency VS Load Variation Test

Test Results (Room Temperature : 20 deg C

Volume of water (cc)	Frequency (MHz)	Deviation for ISM Frequency (MHz)
1000	2469	19
800	2461	11
600	2474	24
400	2469	19
200	2449	-1

Load : 1000 cc water in 1000 cc glass beaker

8. Fundamental Level

Frequency (MHz)	FIS(dBuV/m) @3m	Load condition
2456	94.25	700cc center

9. Spurious any emission < 2400MHz & > 2500MHz excluding Harmonics

Frequency (MHz)	FIS(dBuV/m) @3m	Load condition
2397	65.7	1000cc center

Tested By

M. Okazaki
Applications Manager of Magnetron
Panasonic Industrial Company
25-Feb-99

Report No. CALR-FCC-097

Page. 3

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)

$$= \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Loss}$$

(dBuV) (dB/m) (dB)

Field Strength at 300 m (dBμV/m)

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

K : Conversion Factor for 3 m to 300 m

<i>Frequency</i> <i>(MHz)</i>	<i>Antenna Factor</i> <i>(dB/m)</i>	<i>Cable Loss</i> <i>(dB)</i>	<i>Conv. Factor</i> <i>K</i>
2400	29.0	0.7	0.0061
<i>Fundamental</i>	29.3	0.7	0.0062
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

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

@300 m

Fig. 1 Physical Description of Test Site

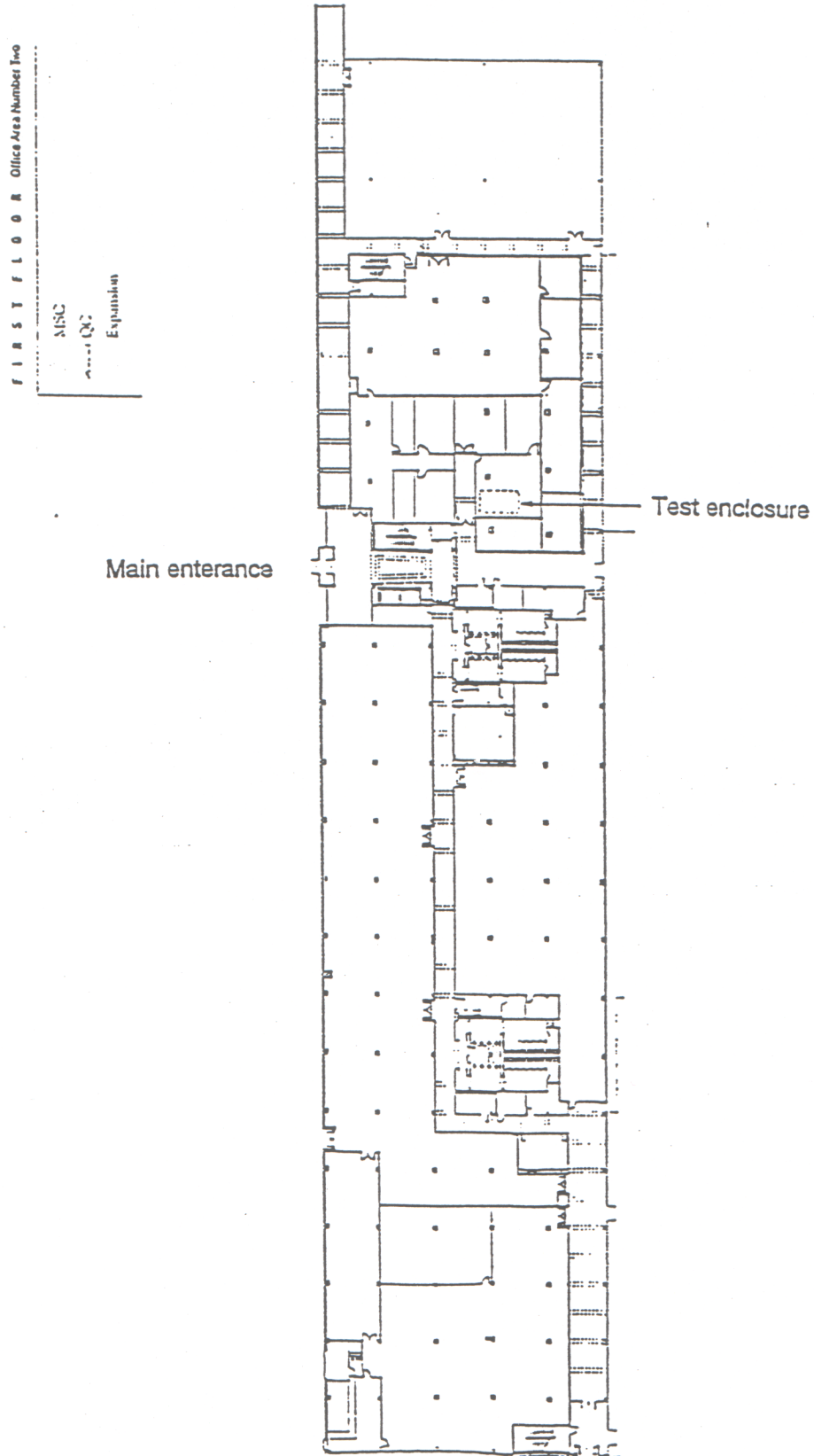


Fig. 2 Physical Dimensions of Test Site (Unit mm)

