

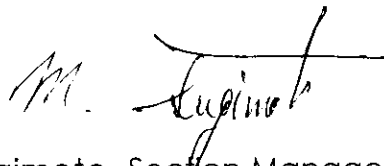
Report No. MO-064

Date : June 1, 1998

ENGINEERING TEST REPORT

1. Name of Manufacturer : SANYO Industries (Singapore) Pte., Ltd.
117/119, Neythal Road,
Singapore 628604
2. Description of Equipment : Microwave Oven
 - a. FCC ID : AEZM411
 - b. Model No. : 565.69480890
 - c. Rated Power Supply : AC Single Phase 120V, 60Hz
 - d. Rated Power Consumption : 1,650 Watts
 - e. Operating Frequency : 2,450 MHz
 - f. RF (Microwave) Power : 1,100 Watts
 - g. Magnetron : 2M-247H
3. Intended Use : Household Cooking Appliance
4. Measurement Procedure Used : FCC Rules Part 18,
Subpart B and C
5. Date of Measurement : May 12, 1998
May 27, 1998

I hereby certify that the tests reported herein were conducted in accordance with the method of measurement described in FCC Rules Part 18, Subpart B and C.



Muneaki Sugimoto, Section Manager
SANYO Electric Co., Ltd.
Microwave Oven Div. Engineering Dept.
Phone +81-77-543-5669 Fax +81-77-545-3583

18.207 TECHNICAL REPORT

(a) DESCRIPTION OF THE MEASUREMENT FACILITIES

- (1) SANYO Electric Co., Ltd. Shiga Measurement Station
..... Refer to Report No. FO-86-1 (February 1, 1986)
- (2) Kansai Electric Industry Development Center (KEC),
Ikoma Testing Laboratory, Open Test Site No. 2
..... Refer to Attachment #1C in this Test Report.

(a) A COPY OF THE INSTALLATION AND OPERATING INSTRUCTIONS

See Attachment #4.

(b) THE FULL NAME AND MAILING ADDRESS OF THE MANUFACTURER FOR THE EQUIPMENT AUTHORIZATION

Mr. James Roach
SANYO Sales & Supply (U.S.A.) Corp.
Suite 300, N. Arlington Heights Road,
Itasca, Illinois 60143, U.S.A.

(c) THE FCC IDENTIFIER, MODEL NUMBER(S)

FCC ID : AEZM411
MODEL NO(S) : 565.69480890

(d) STATEMENT OF THE RATED TECHNICAL PARAMETERS

- (1) Circuit Diagram : See Attachment #3
- (2) Nominal Operating Frequency : 2,450 MHz
- (3) Maximum RF Energy Generated : 1,100 Watts
- (4) Electrical Power Requirements of Equipment : 1,650 Watts
- (5) Any Other Pertinent Operating Characteristics : None.

(e) REPORT OF MEASUREMENTS

See Attachment #1, #1A, #1B, #1C and #1D

REPORT OF MEASUREMENTS (MICROWAVE OVEN TEST DATA)

FCC ID : AEZM411 MODEL : 565.69480890 DATE : May 27, 1998NOMINAL FREQUENCY : 2,450 M Hz. TESTED BY : H.HAYASHI*H. Hayashi*

DESCRIPTION : (Unit Dimension : cm)

Cabinet Dimension : 59.5 by 44.8 by 36.2 Door Dimension : 47.4 by 32.5Oven Cavity Dimension : 41.5 by 40.4 by 29.7 Door Viewing area : 36.4 by 21.3Feed Type and Location : Waveguide, located right side Stirrer : Rotating tray

(incl. Rotating tray)

Door seal Type : Choke Seal Magnetron Type : Sanyo, 2M-247HOthers : N/A

TEST EQUIPMENT USED :

1. Antenna (Horn Antenna)

	<u>Frequency Range</u>	<u>Correction Factor</u>
AILTECH 91888-2	1.0 - 2.0 G Hz	21.5 - 22 dB
AILTECH 91889-2	2.0 - 3.6 G Hz	20.5 - 21 dB
AILTECH 94613-1	3.6 - 7.6 G Hz	37 dB
AILTECH 91891-2	7.3 - 10.0 G Hz	39.8 dB

Other Correction Factor

(a) Cable loss

<u>Frequency (M Hz)</u>	<u>Cable loss (dB)</u>
2,400	1.1
2,500	1.1
4,900	1.6
7,350	2.2
9,800	2.7

(b) Loss of Band Rejection Filter

<u>Frequency Range (G Hz)</u>	<u>Filter loss (dB)</u>
2.0 - 3.6	3.0

2. Field Strength Meter

AILTECH NM-67 (SER 0241-03088)

Last calibrated date : July 7, 1997

Setting : Bandwidth ----- 1 MHz

Function ----- Field Intensity (average value detector)

3. When measuring sidebands close to the fundamental, band reject filter Model 6N45-2450/60 (SER FK837-1) was employed.

REPORT OF MEASUREMENT (MICROWAVE OVEN TEST DATA SHEET B)

ATTACHMENT #1A

FCC ID : AEZM411
 Nominal Frequency : 2,450 MHz

MODEL : 565 69480890

DATE : May 27, 1998
 TESTED BY : HHAYASHI

DATA SUMMERRY (FCC MEASUREMENT PROCEDURE MP-5)

SAFETY CHECK (at 5 cm) Load : 275 ml/center
 FUNDAMENTAL Load : 1,000 ml/center

0.04 mW/sq.cm
2.450 MHz

CALCULATION : $E_{(300m)} = K * 10^{((A+B+C+D+E)/20)}$

LIMIT = $25 * \sqrt{\text{power}/500}$: 37.1 uV/m

* Note : Location of load for the oven provided with the rotating tray is :
 Contiguous with the shelf circumference.

RADIATION FIELD STRENGTH (uV/m at 300 m)

	Load (ml)	Location of Load	Emission Frequency (MHz)	Meter Reading (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Filter Loss (dB)	Calcu. Factor (dB)	The Value of K ($E_{(300m)} = K * E_{(3m)}$)	Max. Field Strength (uV/m at 300m)	Limit (uV/m at 300m)
2nd Harmonic	300	Center	4,110	15.0	37.0	1.6		5	0.0095	8.1	37.1
2nd Harmonic	300	* Right/Front Corner	4,113	18.0	37.0	1.6		5	0.0095	11.4	37.1
2nd Harmonic	700	Center	4,105	17.0	37.0	1.6		5	0.0095	10.2	37.1
2nd Harmonic	700	* Right/Front Corner	4,114	15.0	37.0	1.6		5	0.0095	8.1	37.1
3rd Harmonic	300	Center	7,957	13.0	39.8	2.2		5	0.0100	10.0	37.1
3rd Harmonic	300	* Right/Front Corner	7,940	13.0	39.8	2.2		5	0.0100	10.0	37.1
3rd Harmonic	700	Center	7,395	23.0	39.8	2.2		5	0.0100	31.6	37.1
3rd Harmonic	700	* Right/Front Corner	8,195	14.0	39.8	2.2		5	0.0100	11.2	37.1
4th Harmonic	700	Center	9,902	14.0	39.8	2.7		5	0.0100	11.9	37.1
Spurious	700	Center	2,525	25.0	20.8	1.1		5	0.0064	3.6	37.1
Emission Sideband 2,400 MHz	700	Center	2,400	11.0	20.8	1.1		5	0.0061	0.7	37.1
Emission Sideband 2,500 MHz	700	Center	2,500	8.0	20.8	1.1		5	0.0064	0.5	37.1

Maximum Frequency Variation 1,000 ml load 2,448 to 2,450 MHz
 Total Power Input to Oven 1,650 Watts
 Power Development in dummy load (Thermal Method) 1,100 Watts (IEC705T test Procedure)
 Supply Voltage AC 120 V 60 Hz

1830 MHz - 2745 MHz 2.6230 * 10⁽⁻³⁾ * frequency : GHz) -0.0002
 2745 MHz - 3660 MHz 2.1858 * 10⁽⁻³⁾ * frequency : GHz) +0.0010
 3660 MHz - 4575 MHz 1.0929 * 10⁽⁻³⁾ * frequency : GHz) +0.0050
 4575 MHz and above 0.0100

FCC ID : AEZM411 MODEL : 565.69480890 DATE : May 27,1998
TESTED BY : H.HAYASHI
H. Hayashi

Note : In order to convert the measured field strength at 3meters to the field at 300 meters, comply with FCC/OST MP-5 Appendix C "4.6.1 Computations to determine compliance". A calculation factor of 5 dB, this figure is fixed by SANYO, is introduced bfor adjusting a tolerance in measurement.
A calculation factor of 5 dB should be added to "METER READING" as shown in SAMPLE CALCULATION below.

SAMPLE CALUCULATION

(1) 2nd Harmonic with 300 ml/Center load

$$\begin{aligned} \text{Field Strength at 300 m} &= 0.0095 \times 10^{(\underline{15.0} + 37 + 1.6 + 5) - 20} \\ &= 8.1 \quad \text{uV/m} \end{aligned}$$

(2) Emission sideband 2,400 M Hz., 700 ml/Center load

$$\begin{aligned} \text{Field Strength at 300 m} &= 0.0061 \times 10^{(\underline{11.0} + 20.8 + 1.1 + 3 + 5) - 20} \\ &= 0.7 \quad \text{uV/m} \end{aligned}$$

Designated by Ministry of International Trade and Industry

Attachment #1C

KANSAI ELECTRONIC INDUSTRY DEVELOPMENT CENTER

HEAD OFFICE
6-8-7, NISHITEMMA
KITA-KU, OSAKA, 530 JAPAN



IKOMA
TESTING LABORATORY
10630, TAKAYAMA-CHO
IKOMA-CITY, NARA, 630-01 JAPAN

*Corporate Juridical Person***ENGINEERING TEST REPORT****REPORT NO. A-016-98-C**

Issued Date : May 21, 1998

This test report is to certify that the tested device properly complies with the requirements of:

FCC Rules and Regulations Part 18 Subpart C.

Partly the tests necessary to show compliance to the requirements were performed and these results met the specifications of requirement. The results of this report should not be construed to imply compliance of equipment other than that which was tested. Unless the laboratory permission, this report should not be copied in part.

1. Applicant

Company Name : SANYO Electric Co., Ltd. Home Appliances Business Headquarters
Microwave Oven Division

Mailing Address : 1-1, Seta, 1-chome, Otsu City, Shiga, 520-2198 Japan

2. Identification of Tested Device

FCC ID : AEZM411
Device Name : Microwave Oven
Trade Name : SANYO
Model Number : 565.69480890
Serial Number : No.2
Date of Manufacture : May, 1998

3. Test Items and Procedure

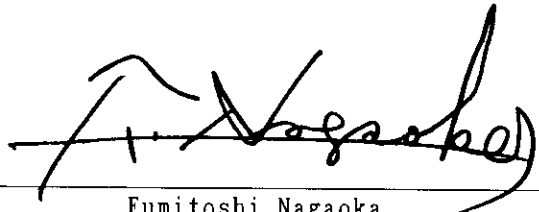
1) Radiated Emission Measurement (30 MHz to 1000 MHz)

Above all tests were performed under : FCC/OET MP-5 (1985)

4. Date of Test

Receipt of Test Sample : May 12, 1998
Test Completed on : May 12, 1998

CERTIFIED BY :


Fumitoshi Nagaoka
Associate Director of Ikoma Testing Laboratory

ENGINEERING TEST REPORT

Attachment #1C

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ENGINEERING TEST REPORT

Attachment #1C

1. GENERAL INFORMATION

1.1 Product Description

The model number 565.69480890(referred to as the EUT in this engineering test report) is a Microwave Oven for house hold.

1) Special Feature

- Magnetron Frequency : 2.45 GHz \pm 50 MHz
- RF(Microwave) Power : 1100 W(Microwave)

2) Rated Power Supply

- AC 120 V, 60 Hz,1650 W
- Protection Class 1(with ground connector)

3) Contained Oscillator

- 4 \pm 0.4 MHz

1.2 Description for Equipment Authorization

1) Rules Part(s) under which equipment operated

FCC Rule Part 18, Subpart C
ISM Equipment

2) Kind of Equipment Authorization

Certification Verification

3) Procedure of Application

Original Equipment Modification

1.3 Test Facility

N a m e : KANSAI ELECTRONIC INDUSTRY DEVELOPMENT CENTER(KEC)
IKOMA TESTING LABORATORY
Open Test Site No.2

Address : 10630, Takayama-cho Ikoma-city, Nara, 630-0101 Japan

These test facilities have been filed with the FCC under the criteria of
ANSI C63.4-1992

ENGINEERING TEST REPORT

Attachment #1C

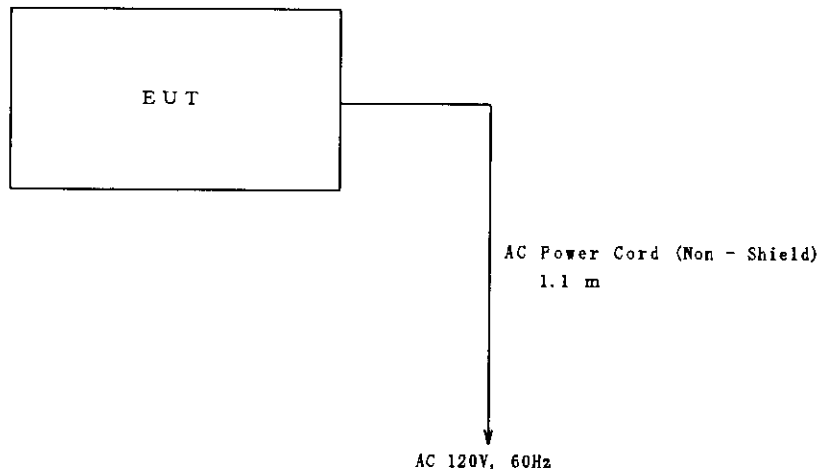
2. TESTED SYSTEM**2.1 Test Mode**

The compliance tests were performed under following operation mode.

Maximum Output Power Operation

2.2 Operaton of EUT System

- 1) Open the door of EUT.
- 2) Set the load as follows in EUT.
 - Receptacle
1000 cc volume Beaker
 - Load for the other test
700 cc water with beaker
- 3) Close the door of EUT.
- 4) Set the output power to maximum.
- 5) Set the cooking time.
- 6) Push the start pad.
Then start the cooking.

2.3 Block Diagram of EUT System

ENGINEERING TEST REPORT

Attachment #1C

3. MEASUREMENT OF ELECTRIC FIELD STRENGTH (30 MHz TO 1000 MHz)

3.1 Reference Rule and Specification

FCC Rule Part 18 Subpart C
FCC/OET MP-5(1985)

3.2 Test Procedure

1) Configure the EUT.

[See 3.3 Test arrangement and 3.4 Photographs of EUT System Configuration]

[Note]

The power cords for the EUT are connected through the receptacle with the turn floor to the CVCF placed under the ground plane.

2) Operate the EUT.

3) To determine the emissions of the EUT, preliminary radiated measurement was performed at a closer distance than that specified for final radiated measurement using the broad band antenna and the spectrum analyzer.

4) To search the frequency of maximum emission level on the spectrum analyzer, change the EUT System configuration, move the signal cables and the power cords, change the EUT conditions.

5) The spectrum was scanned from 30 MHz to 1000 MHz and collect the emissions on the spectrum analyzer.

6) The collected emissions for final test were measured at the specified distance using the tuned dipole antenna or broad band antenna and the test receiver *1).

[Note]

*1) Test Receiver Operation Mode

Detector Function : Average

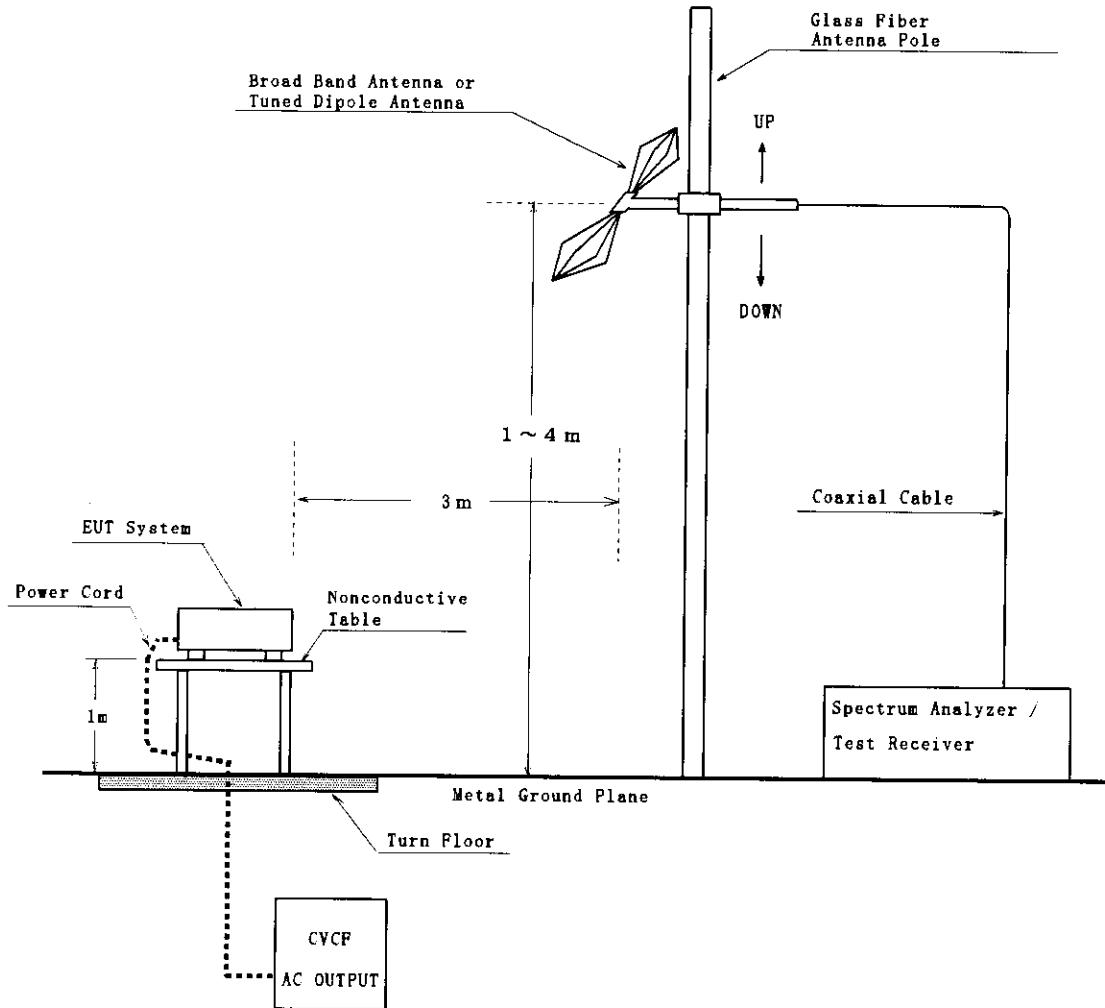
IF Band Width : 120 kHz(frequency range in 30 MHz - 1000 MHz)

ENGINEERING TEST REPORT

Attachment #1C

3.3 Test Arrangement

[Open Site]



ENGINEERING TEST REPORT

Attachment #1C

3.5 Test Results

Emission Frequency [MHz]	Antenna Factor [dB]	Meter Reading at 3 m [dB μ V]		Maximum Field Strength at 300 m [μ V/m]	Limits [μ V/m]
		Horiz.	Vert.		
45.0	14.1	<-5.0	<-5.0	<0.1	37.1
59.2	10.9	-2.0	-4.0	<0.1	37.1
67.7	9.7	<-5.0	<-5.0	<0.1	37.1
86.7	9.4	<-5.0	-3.5	<0.1	37.1
109.3	13.7	<-5.0	2.5	<0.1	37.1
720.0	26.8	-1.5	-3.5	0.2	37.1
737.5	27.1	-3.5	-4.0	0.2	37.1

[Note]

Distance Corr. Factor : -40 dB(from 3 m to 300 m)
 Antenna Factor : Antenna Factor and Cable Loss includes the cable loss
 Test Condition : 700 ml water load, at the center of tray.
 Limits : $25\sqrt{P/500} = 25\sqrt{1100/500} = 37.1[\mu\text{V/m}]$
 P[W] : RF(Microwave) Power

[Environment]

Temperature : 21 °C Humidity : 62 %

[Sample Calculation]

Frequency 59.2 MHz, Horizontal Polarization
 Field Strength (μ V/m at 300 m)
 $= 10^{(\text{Meter Reading [dB}\mu\text{V}] + \text{Antenna Factor [dB]} + \text{Distance Corr.Factor [dB]}) / 20}$
 $= 10^{(-2.0 + 10.9 - 40) / 20}$
 $= 10^{(-31.1 / 20)}$
 $= < 0.1 [\mu\text{V/m}]$

[Summary of Test Result]

Minimum margin was 45.4 dB at 720.0 MHz (Horizontal Polarization).

Tested Date : May 12, 1998

Signature Y. Kawai
 Yasunari Kawai

ENGINEERING TEST REPORT

Attachment #1C

3.6 List of Test Instruments

Instrument	Manufacturer	Model No	Specifications	KEC Control No.	if used, checked by 'X'.	Last Cal.	Next Cal.
Test Receiver	Rohde & Schwarz	ESVP	Frequency Range 20 MHz - 1000 MHz	FS-48-3	<input type="checkbox"/>	1998/5	1999/5
		ESV	Frequency Range 20 MHz - 1000 MHz	FS-53	<input checked="" type="checkbox"/>	1998/4	1999/4
Spectrum Analyzer	Advantest	TR4172	Frequency Range 50 Hz - 1.8 GHz	FS-44-2	<input checked="" type="checkbox"/>	1997/9	1998/9
Pre-Selector	Advantest	TR14037	Frequency Range 10 kHz - 1.0 GHz	FS-44-3	<input checked="" type="checkbox"/>	1997/9	1998/9
Biconical Antenna	Schwarzbeck	BBA9106	Frequency Range 30 MHz - 300 MHz	AN-80	<input checked="" type="checkbox"/>	1998/2	1999/2
Log-Periodic Antenna	Schwarzbeck	UHALP 9107	Frequency Range 300 MHz - 1 GHz	AN-97	<input checked="" type="checkbox"/>	1998/2	1999/2
Tuned Dipole Antenna	Kyoritsu	KBA-511S	Frequency Range 25 MHz - 500 MHz	AN-112	<input type="checkbox"/>	1998/3	1999/3
		KBA-611S	Frequency Range 500 MHz - 1 GHz	AN-7-11	<input type="checkbox"/>	1998/3	1999/3

REPORT OF MEASUREMENT (MICROWAVE OVEN TEST DATA)

- Measurement of Frequency VS Line Voltage Stability -

FCC ID : AEZM411 Model : 565.69480890 Date : May 27, 1998

Nominal Frequency : 2,450 MHz Tested by : H.HAYASHI

H. Hayashi

Line Voltage Variation [Volt]	Frequency [GHz]	Deviation for ISM Frequency [MHz]	Limit [MHz]
96 (- 20%)	2.450	0	± 50
120 (± 0%)	2.450	0	± 50
150 (+ 25%)	2.448	-2	± 50

[Environment]

Temperature : 24.5 °CHumidity : 75.0 %

[Sample Calculation]

Frequency : 2.448 GHz

Deviation for ISM Frequencies Calculated as follows,

$$\underline{2.448} - 2.4500 = \underline{-0.002} \text{ [GHz]} = \underline{-2} \text{ [MHz]}$$

[Summary of Test Results]

Above data shows that the test device do / do not complies with the requirements.