

Designated by Ministry of International Trade and Industry

**KANSAI ELECTRONIC INDUSTRY DEVELOPMENT CENTER**

HEAD OFFICE

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KITA-KU OSAKA 530-0047 JAPAN



Corporate Juridical Person

IKOMA TESTING LABORATORY

12128 TAKAYAMA-CHO

IKOMA-CITY NARA 630-0101 JAPAN

**TEST REPORT**Report No.A-008-02-C

Date: 19 February 2002

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

FCC Rules and Regulations Part 18 Subpart C.

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.  
Laundry & Cooking Appliances Division

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

**2. Identification of Tested Device**

Type of Device : INDUSTRIAL, SCIENTIFIC, AND MEDICAL EQUIPMENT  
Kind of Equipment Authorization : ☐: DoC ☒: Certification ☐: Verification  
FCC ID : AEZM904  
Device Name : Microwave Oven  
Trade Name : SANYO  
Model Number : EM-Z9011N  
Serial Number : Prototype No.1 ☒: Prototype ☐: Pre-production ☐: Production  
Date of Manufacture : January, 2002

**3. Test Items and Procedure**

☐: AC Power Line Conducted Emission Measurement  
☒: Radiated Emission Measurement (30MHz-1000MHz)

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

☒: without deviation, ☐: with deviation (details are found inside of this report)**4. Date of Test**

Receipt of Test Sample : 8 February 2002  
Test Completed on : 14 February 2002

Eizo Hariya  
General Manager of Ikoma Testing Laboratory

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## 1. GENERAL INFORMATION

### 1.1 Product Description

The SANYO Model No. EM-Z9011N(referred to as the EUT in this test report)  
is a Microwave Oven.

#### (1) Technical Specifications

Magnetron Frequency : 2450 MHz  $\pm$  50 MHz  
RF Power : 950 W (Test result by applicant under IEC test procedure )  
Rated Power Supply : AC 120 V, 60 Hz

### 1.2 Description for Equipment Authorization

- |                                                            |   |                                                                                                                                                                                                                                                                                                                                                                     |                                                                                         |
|------------------------------------------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| (1) Category                                               | : | <input type="checkbox"/> Consumer                                                                                                                                                                                                                                                                                                                                   | <input checked="" type="checkbox"/> Non-consumer equipment                              |
| (2) Reference Rule and Specification                       | : | FCC Rule Part 18<br><input checked="" type="checkbox"/> Section 18.305 (a), (b)                                                                                                                                                                                                                                                                                     |                                                                                         |
| (3) Type of device                                         | : | <input type="checkbox"/> Ultrasonic equipment<br><input type="checkbox"/> Induction cooking range<br><input type="checkbox"/> RF lighting device<br><input type="checkbox"/> Industrial heater or RF stabilized arc welder<br><input type="checkbox"/> Medical diathermy<br><input checked="" type="checkbox"/> Any type unless otherwise specified (miscellaneous) |                                                                                         |
| (4) Kind of Equipment Authorization                        | : | <input type="checkbox"/> DoC                                                                                                                                                                                                                                                                                                                                        | <input checked="" type="checkbox"/> Certification <input type="checkbox"/> Verification |
| (5) Procedure of Application                               | : | <input checked="" type="checkbox"/> Original Equipment <input type="checkbox"/> Modification                                                                                                                                                                                                                                                                        |                                                                                         |
| (6) Highest Frequency used in the Device                   | : | 2.45 GHz                                                                                                                                                                                                                                                                                                                                                            |                                                                                         |
| (7) Upper Frequency of Radiated Emission Measurement Range | : | <input type="checkbox"/> 1000 MHz <input type="checkbox"/> 2000 MHz <input type="checkbox"/> 5000 MHz<br><input checked="" type="checkbox"/> The Tenth Harmonic                                                                                                                                                                                                     |                                                                                         |

## 1.3 Test Facility

All tests described in this report were performed by:

Name: KANSAI ELECTRONIC INDUSTRY DEVELOPMENT CENTER  
(KEC)

IKOMA TESTING LABORATORY

Open Area Test Site ☐ No.1 ☐ No.3 ☐ No.4

Anechoic Chamber ☐ No.1 ☒ No.3

Shielded Room ☐ No.1 ☐ No.2 ☐ No.4 ☐ No.5

Address: 12128, 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.  
The KEC has been accredited by the NVLAP (Lab. Code: 200207-0) based on ISO17025.  
Also the laboratory has been authorized by TUV Product Service (GER) and TUV  
Rheinland (GER) based on their criteria for testing laboratory (EN45001).

## 2. TESTED SYSTEM

### 2.1 Test Mode

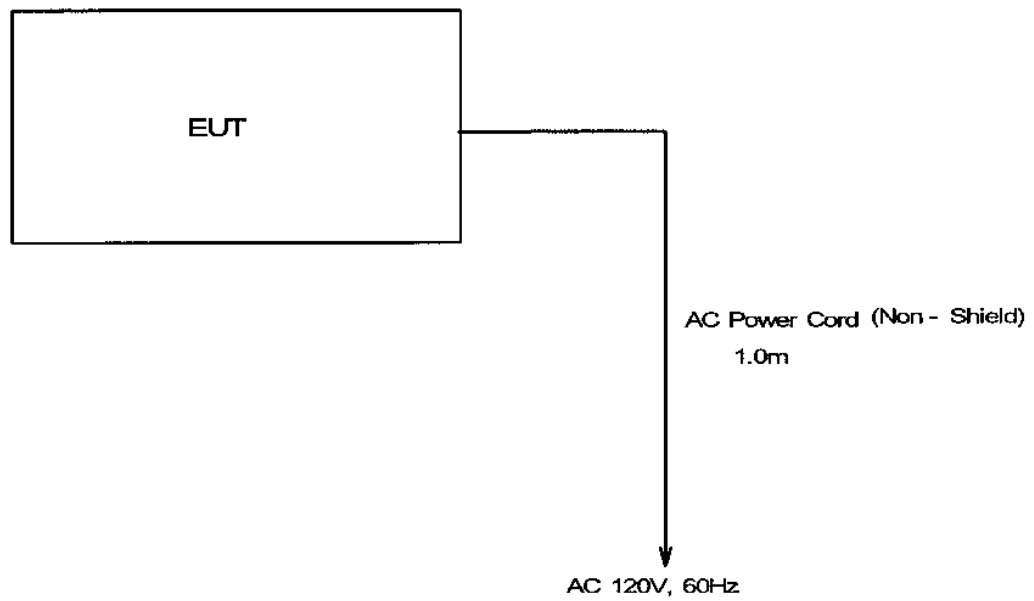
The compliance tests were performed under following operation mode.

#### Maximum Output Power Operation

### 2.2 Operation of EUT System

- (1) Open the door of EUT.
- (2) Set the load in EUT as follows.
  - Receptacle
    - 1000 cc volume Beaker
  - Load for the 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



### 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).

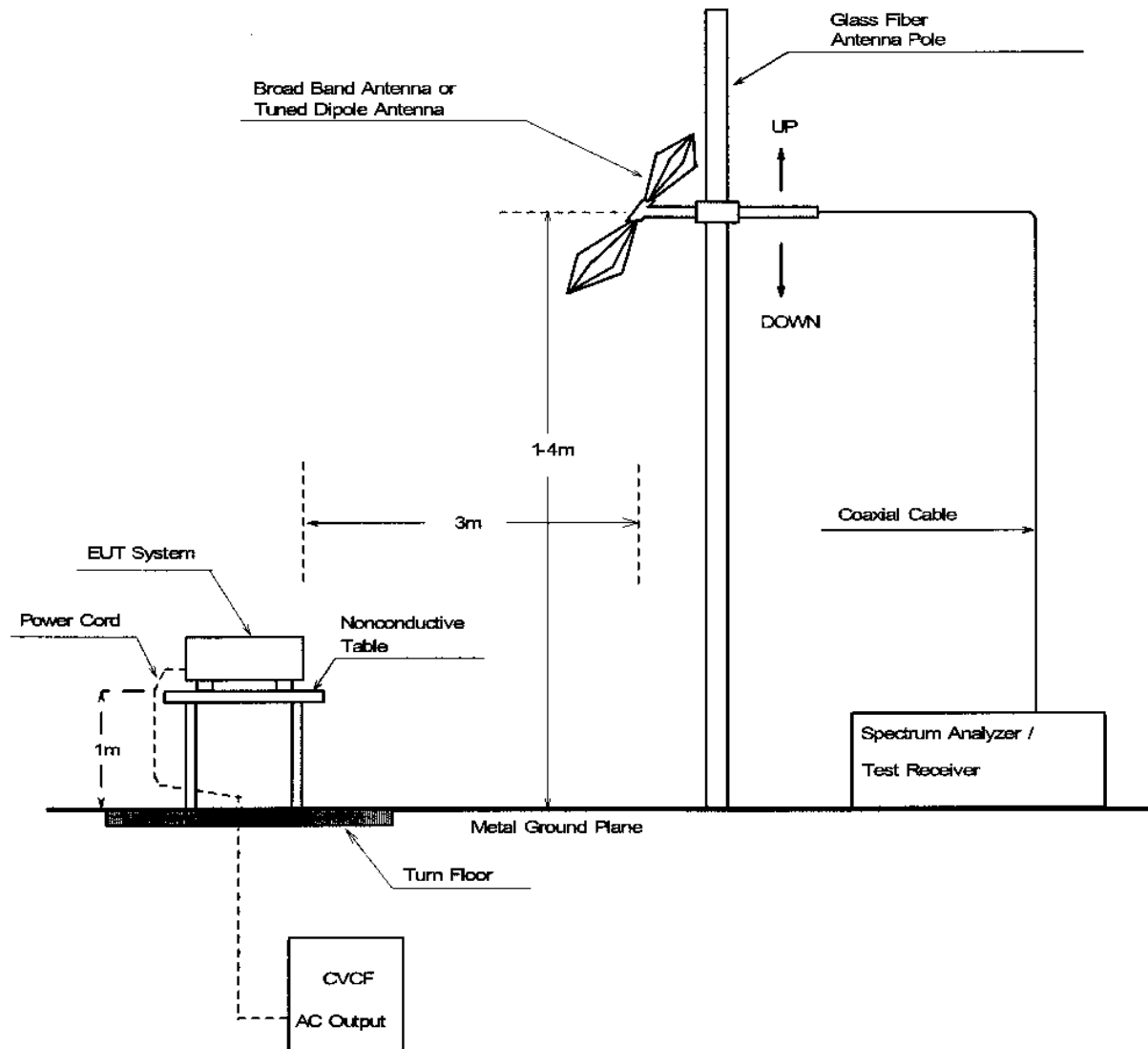
[Note]

\*1) Test Receiver Operation Mode

Detector Function : Average

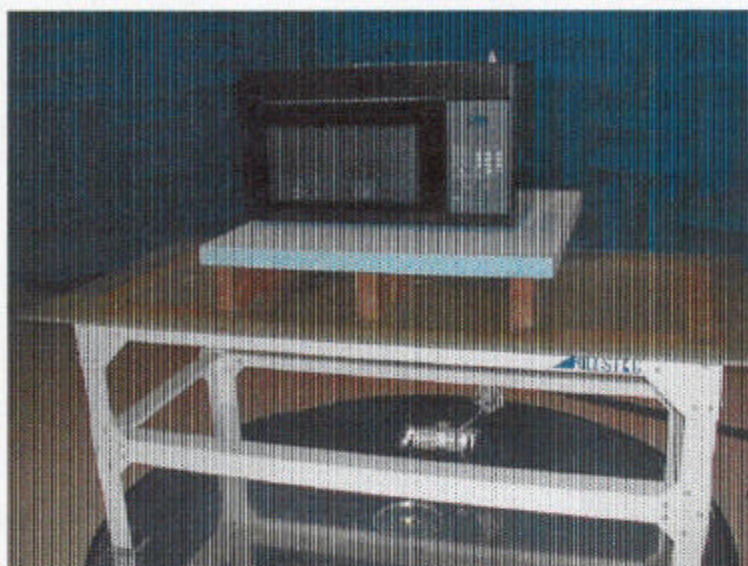
IF Band Width : 120 kHz(frequency range in 30 MHz - 1000 MHz)

## 3.3 Test Arrangement

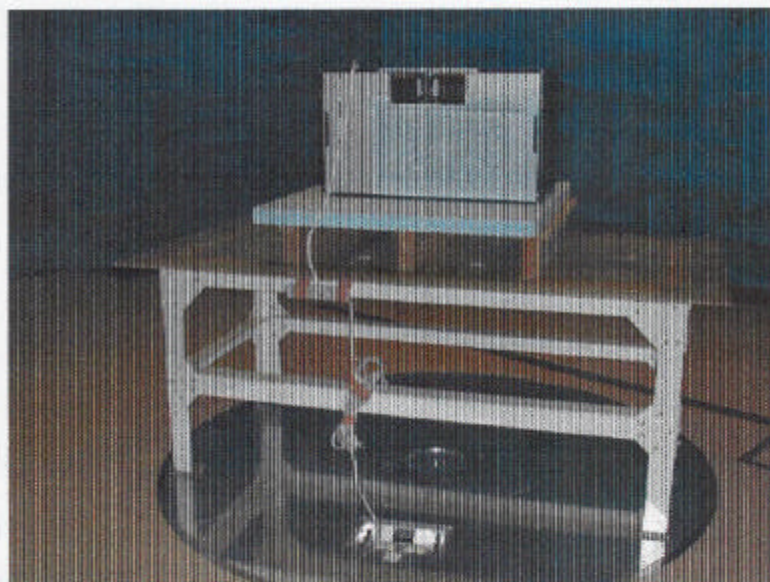


### 3.4 Photographs of EUT System Configuration

front view



rear view



## 3.5 Test Results

Measurement Distance ☒: 3m ☐: 10m

| Measured Frequency<br>( MHz ) | Antenna Factor<br>( dB/m ) | Conversion Factor<br>( dB ) | Meter Reading                       |                                   | Maximum Field Strength<br>( dBuV/m ) | Limit at 300 m<br>( dBuV/m ) | Margin for Limit<br>( dB ) |
|-------------------------------|----------------------------|-----------------------------|-------------------------------------|-----------------------------------|--------------------------------------|------------------------------|----------------------------|
|                               |                            |                             | Horizontal Polarization<br>( dBuV ) | Vertical Polarization<br>( dBuV ) |                                      |                              |                            |
| 36.00                         | 17.2                       | -40.0                       | <-4.0                               | -3.2                              | -26.0                                | 30.7                         | 56.7                       |
| 67.50                         | 7.9                        | -40.0                       | <-8.0                               | -4.4                              | -36.5                                | 30.7                         | 67.2                       |
| 104.00                        | 12.7                       | -40.0                       | <-8.0                               | <-8.0                             | <-35.3                               | 30.7                         | >66.0                      |
| 426.00                        | 19.7                       | -40.0                       | <-7.0                               | <-8.0                             | <-27.3                               | 30.7                         | >58.0                      |
| 683.00                        | 24.0                       | -40.0                       | <-8.0                               | <-8.0                             | <-24.0                               | 30.7                         | >54.7                      |
| 724.00                        | 24.4                       | -40.0                       | <-8.0                               | -6.3                              | -21.9                                | 30.7                         | 52.6                       |

## [Note]

- (1) Antenna Factor includes the cable loss.  
 (2) \* mark in Measured Frequency : Measured with the tuned dipole antenna.  
 No mark in Measured Frequency : Measured with the broadband antenna.  
 (3) Conversion Factor : distance correction factor from 3 m to 300 m.

(4) Limit at 300 m :  $20 \log( 25 \times \sqrt{\frac{P(W)}{500}} )$

$$= 20 \log( 25 \times \sqrt{\frac{950}{500}} ) = 30.7 \text{ (dBuV/m)}$$

## [Calculation method]

Maximum Field Strength (dBuV/m)

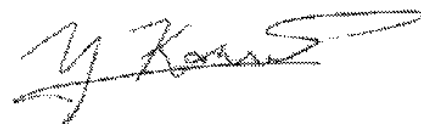
= Meter Reading (at maximum level of Horizontal or Vertical) (dBuV) + Antenna Factor (dB/m)  
 + Conversion Factor (dB)

## [ Environment ]

Temperature : 20°C Humidity : 55 %

Tested Date : 14 February 2002

Tester Signature



Yasunari Kawai

## 4. USED TEST EQUIPMENTS AND CALIBRATION STATUS

| Equipment            | Manufacturer    | Model No.  | Specifications                 | KEC Control No. | Test Item (*) | Last Cal. | Next Cal. |
|----------------------|-----------------|------------|--------------------------------|-----------------|---------------|-----------|-----------|
| Test Receiver        | Rohde & Schwarz | ESHS10     | Frequency Range 9kHz-30MHz     | FS-88           | N/A           | 2001/11   | 2002/11   |
|                      |                 | ESVS10     | Frequency Range 20MHz-1000MHz  | FS-81           | 2             | 2001/12   | 2002/12   |
| Spectrum Analyzer    | Anritsu         | MS8608A    | Frequency Range 9kHz-7.8GHz    | SA-46           | 2             | 2001/9    | 2002/9    |
|                      | Advantest       | TR4172     | Frequency Range 50 Hz – 1.8GHz | FA-44-2         | N/A           | 2001/4    | 2002/4    |
|                      |                 | R3261B     | Frequency Range 9kHz – 3.6GHz  | SA-32           | N/A           | 2001/5    | 2002/5    |
| Biconical Antenna    | Schwarzbeck     | BBA9106    | Frequency Range 30MHz-300MHz   | AN-180          | 2             | 2001/2    | 2002/2    |
| Log-Periodic Antenna | Schwarzbeck     | UHALP9108A | Frequency Range 300MHz-1GHz    | AN-215          | 2             | 2001/2    | 2002/2    |
| Tuned Dipole Antenna | Kyoritsu        | KBA-511AS  | Frequency Range 25MHz-500MHz   | AN-132          | N/A           | 2001/3    | 2002/3    |
|                      |                 | KBA-611S   | Frequency Range 500MHz-1GHz    | AN-115          | N/A           | 2001/3    | 2002/3    |
| Horn Antenna         | Raven           | 91888-2    | Frequency Range 1GHz – 2GHz    | AN-167          | N/A           | 2001/4    | 2002/4    |
| Pre-Amplifier        | Hewlett Packard | 8447D      | Frequency Range 100kHz – 1GHz  | AM-44           | N/A           | 2001/6    | 2002/6    |
|                      |                 | 8449B      | Frequency Range 1GHz – 26.5GHz | AM-52           | N/A           | 2002/2    | 2003/2    |
| LISN for EUT         | Kyoritsu        | KNW-407    | Frequency Range 150kHz-30MHz   | FL-76           | N/A           | 2001/4    | 2002/4    |
| LISN for Peripherals | Kyoritsu        | KNW-407    | Frequency Range 150 kHz-30MH   | FL-77           | N/A           | 2001/4    | 2002/4    |

## [Note]

Test Item (\*): 1: Conducted Emission Measurement  
 2: Radiated Emission Measurement (30 MHz – 1 GHz)  
 3: Radiated Emission Measurement (1 GHz < )  
 N/A: Not Applicable

The overall program of calibration and verification of equipment is designed and operated so as to ensure that measurements made by KEC are traceable to national standards of measurement or equivalent abroad.