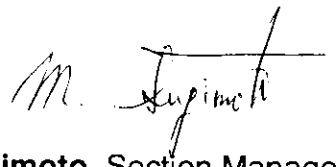
Report No. MO-065

Date : June 4, 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	:	AEZM313
	b. Model No.	:	565.69380890
	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 13, 1998 June 3, 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

Issued : June 4, 1998

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	:	**AEZM313**
MODEL NO(S)	:	565.69380890

(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

SANYO

SANYO Electric Co., Ltd.
Home Appliances Business Headquarters
Microwave Oven Division
1-1, Seta, 1-chome,
Otsu City, Shiga, Japan

TH-98-102-E2
Date : June 4, 1998

Federal Communication Commission
c/o Melon Bank
Three Melon Bank Center,
525 William Penn Way
27th Floor, Room 153-2713
Pittsburgh, Pennsylvania 15251-5315

Attention : Wholesale Lockbox Shift Supervisor

Subject : Application of FCC ID : **AEZM313** for Certification

Dear Sir and Madam,

We apply new FCC ID AEZM313 for FCC Certification under Rules and Regulation Part 18.

Microwave Oven with this new ID will be manufactured by SANYO Industries (Singapore) Pte., Ltd. and will be marketed in quantities excess of five units.

The following materials are attached for your investigation.

1. FCC Form 731
2. Engineering Test Report No. **MO-065**

- Report of Measurements (Attachment #1, #1A, #1B, #1C and #1D)
- A copy of FCC ID Label (Attachment #2)
- A copy of Circuit Diagram (Attachment #3)
- A copy of Use & Care Manual (Attachment #4)
- Photographs (Attachment #5)

Your prompt attention to the above matter would be highly appreciated.
Very truly yours,

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

Copy to : Mr. James Roach, SANYO Sales & Supply (U.S.A.) Corp.

SANYO Sales & Supply Company
A Division of SANYO North America Corporation
900 N. Arlington Heights Rd. - Suite 300
Itasca, IL 60143-2844
Telephone: (630) 775-0404
FAX: (630) 775-0044

June 11, 1998

JMR-98-016

Federal Communications Commission
C/O Mellon Bank
Three Mellon Bank Center
525 William Penn Way
27th Floor, Room 153-2713
Pittsburgh, PA 15251-5313

Subject: Application of Equipment, Authorization of Certification
AEZM313/Model 565.69380890

Dear Application Officer:

We respectfully request approval of the subject Microwave Oven under FCC ID AEZM313.

Enclosed, please find Mr. N. Sugimoto's letter TH-87-102-E2, that is attached to this letter. Your prompt attention to the aforementioned would be greatly appreciated.

If you have any questions or comments, please contact me at (630) 875-3512.

Very truly yours,
SANYO Sales & Supply Company
A Division of SANYO North America Corp.

James M. Roach
Technical Consultant
Home Appliances

JMR/dh

C: Mr. M. Sugimoto, MWO Div., Sanyo Japan
Mr. T. Hotta, MWO Div., Sanyo Japan

Enclosure & Application check

Attachment #1

REPORT OF MEASUREMENTS (MICROWAVE OVEN TEST DATA)

FCC ID : AEZM313 MODEL : 565.69380890 DATE : June 03,1998

NOMINAL FREQUENCY : 2,450 M Hz. TESTED BY : H.HAYASHI

H. Hayashi

DESCRIPTION : (Unit Dimension : cm)

Cabinet Dimension : 55.0 by 44.7 by 31.7 Door Dimension : 43.9 by 27.9

Oven Cavity Dimension : 37.6 by 40.4 by 24.2 Door Viewing area : 33.0 by 16.8

Feed Type and Location : Waveguide, located right side Stirrer : Rotating tray (incl. Rotating tray)

Door seal Type : Choke Seal Magnetron Type : Sanyo, 2M-247H

Others : N/A

TEST EQUIPMENT USED :

1. Antenna (Horn Antenna)

	Frequency Range	Correction Factor
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

Frequency (M Hz)	Cable loss (dB)
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

Frequency Range (G Hz)	Filter loss (dB)
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 measureing sidebands close to the fundamental, band reject filter Model 6N45-2450/60 (SER FK837-1) was employed.

ATTACHMENT #1A

REPORT OF MEASUREMENT (MICROWAVE OVEN TEST DATA SHEET B)

FCC ID : AEZM313 MODEL : 565.69380890 DATE : June 03 ,1998

Nominal Frequency : 2,450 MHz TESTED BY : H.HAYASHI

H. Hayashi

DATA SUMMERRY (FCC MEASUREMENT PROCEDURE MP-5)

SAFETY CHECK (at 5 cm) Load : 275 ml/center 0.02 mW/sq.cm

FUNDAMENTAL Load : 1,000 ml/center 2,450 MHz.

CALCULATION : E<300m> = K*10^((A+B+C+D+E)/20)

LIMIT = 25*√(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	4,920	16.0	37.0	1.6		5	0.0100	9.5	37.1
2nd Harmonic	300	* Right/Front Corner	4,920	14.0	37.0	1.6		5	0.0100	7.6	37.1
2nd Harmonic	700	Center	4,925	22.0	37.0	1.6		5	0.0100	19.1	37.1
2nd Harmonic	700	* Right/Front Corner	4,919	17.0	37.0	1.6		5	0.0100	10.7	37.1
3rd Harmonic	300	Center	7,431	22.0	39.8	2.2		5	0.0100	28.2	37.1
3rd Harmonic	300	* Right/Front Corner	7,416	21.0	39.8	2.2		5	0.0100	25.1	37.1
3rd Harmonic	700	Center	7,428	22.0	39.8	2.2		5	0.0100	28.2	37.1
3rd Harmonic	700	* Right/Front Corner	7,370	23.0	39.8	2.2		5	0.0100	31.6	37.1
4th Harmonic	700	Center	9,873	20.0	39.8	2.7		5	0.0100	23.7	37.1
Spurious Emission	700	Center	2,320	27.0	20.8	1.1	3	5	0.0059	4.1	37.1
Sideband 2,400 MHz	700	Center	2,400	25.0	20.8	1.1	3	5	0.0061	3.4	37.1
Sideband 2,500 MHz	700	Center	2,500	16.0	20.8	1.1	3	5	0.0064	1.3	37.1

Maximum Frequency Variation 1,000 ml load 2,457 to 2,458 M Hz.

Total Power Input to Oven 1,650 Watts

Power Development in dummy load (Thermal Method) 1,100 Watts (IEC705Test 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

Attachment #1B

FCC ID : AEZM313 MODEL : 565.69380890 DATE : June 03,1998

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 culculation 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

Field Strength at 300 m = 0.0100 × $10^{(16.0 + 37 + 1.6 + 5) - 20}$
= 9.5 uV/m

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

Field Strength at 300 m = 0.0061 × $10^{(25.0 + 20.8 + 1.1 + 3 + 5) - 20}$
= 3.4 uV/m

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

KEC

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

Corporate Juridical Person

ENGINEERING TEST REPORT

REPORT NO. A-015-98-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	: AEZM313
Device Name	: Microwave Oven
Trade Name	: SANYO
Model Number	: 565.69380890
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 13, 1998
Test Completed on	:	May 13, 1998

CERTIFIED BY :

Fumitoshi Nagaoka
Associate Director of Ikoma Testing Laboratory

ENGINEERING TEST REPORT

Attachment #1C

TABLE OF CONTENTS

ENGINEERING TEST REPORT

Attachment #1C

1. GENERAL INFORMATION

1.1 Product Description

The model number 565.69380890(refered to as the EUT in this engineering test report) is a Microwave Oven for house hold.

1) Special Feature
- ·Magnetron Frequency : 2.45 GHz±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 ± 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

(x) Certification ( ) Verification

3) Procedure of Application

(x) 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

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

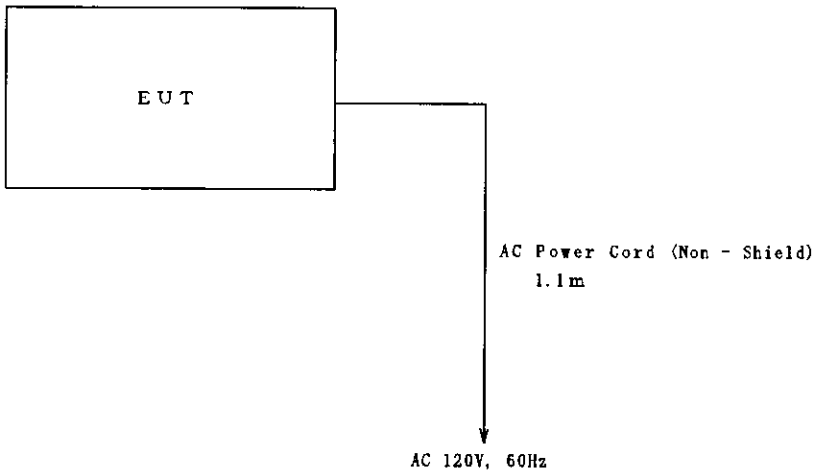
3) Close the door of EUT.

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



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) Configurate the EUT.
[See 3.3 Test arrangement and 3.4 Photographs of EUT System Configration]

[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.

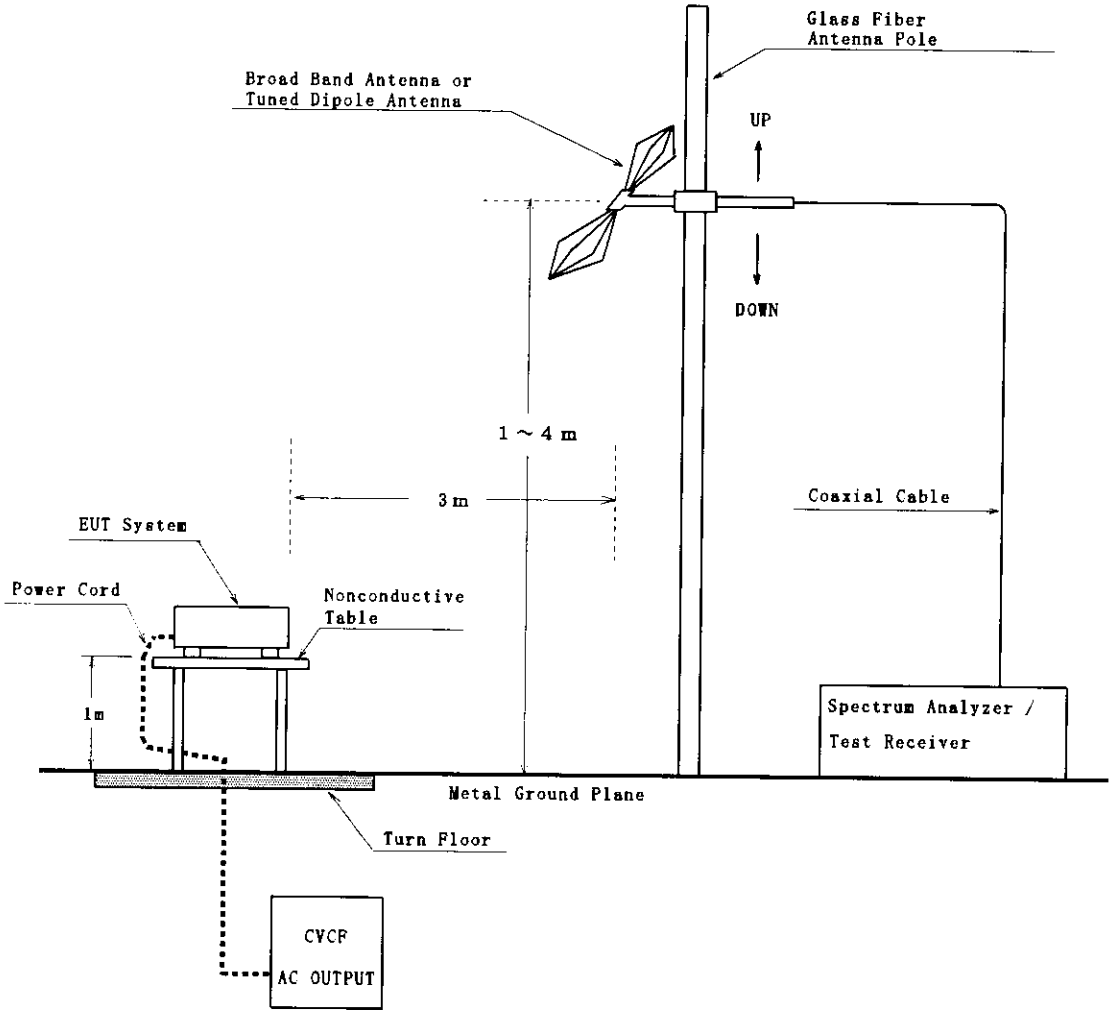
5) The spectrum was scanned from 30 MHz to 1000 MHz and collect the emissions on the spectrum analyzer.

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

[Open Site]



ENGINEERING TEST REPORT

3.5 Test Results

Emission Frequency [MHz]	Antenna Factor [dB]	Meter Reading at 3 m [dBμV] Horiz.	Meter Reading at 3 m [dBμV] Vert.	Maximum Field Strength at 300 m [μV/m]	Limits [μV/m]
39.5	16.5	<-5.0	<-5.0	<0.1	37.1
58.4	10.9	0.5	2.0	<0.1	37.1
68.5	9.5	-3.5	-4.5	<0.1	37.1
105.1	13.1	<-5.0	<-5.0	<0.1	37.1
334.4	18.3	<-5.0	<-5.0	<0.1	37.1
718.0	26.7	-2.0	<-5.0	0.2	37.1
892.5	29.0	-1.0	2.0	0.4	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 : $25\sqrt{P/500} = 25\sqrt{1100/500} = 37.1[\mu V/m]$
P[W] : RF(Microwave) Power

[Environment]

Temperature : 20 ℃ Humidity : 53 %

[Sample Calculation]

Frequency 58.4 MHz, Vertical Polarization
Field Strength (μV/m at 300 m)
$= 10^{(\text{Meter Reading [dB}\mu\text{V]} + \text{Antenna Factor [dB]} + \text{Distance Corr.Factor [dB]})/20}$
$= 10^{(2.0 + 10.9 - 40)/20}$
$= 10^{(-27.1/20)}$
$= < 0.1\ [\mu V/m]$

[Summary of Test Result]

Minimum margin was 39.3 dB at 892.5 MHz (Vertical Polarization).

Tested Date : May 13, 1998 Signature Y. Kawai
Yasunari Kawai

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	☐	1998/5	1999/5
		ESV	Frequency Range 20 MHz - 1000 MHz	FS-53	☒	1998/4	1999/4
Spectrum Analyzer	Advantest	TR4172	Frequency Range 50 Hz - 1.8 GHz	FS-44-2	☒	1997/9	1998/9
Pre-Selecter	Advantest	TR14037	Frequency Range 10 kHz - 1.0 GHz	FS-44-3	☒	1997/9	1998/9
Biconical Antenna	Schwarzbeck	BBA9106	Frequency Range 30 MHz - 300 MHz	AN-80	☒	1998/2	1999/2
Log-Periodic Antenna	Schwarzbeck	UHALP 9107	Frequency Range 300 MHz - 1 GHz	AN-97	☒	1998/2	1999/2
Tuned Dipole Antenna	Kyoritsu	KBA-511S	Frequency Range 25 MHz - 500 MHz	AN-112	☐	1998/3	1999/3
		KBA-611S	Frequency Range 500 MHz - 1 GHz	AN-7-11	☐	1998/3	1999/3

Attachment #1D

REPORT OF MEASUREMENT (MICROWAVE OVEN TEST DATA)

- Measurement of Frequency VS Line Voltage Stability -

FCC ID : AEZM313 Model : 565.69380890 Date : June 03,1998

Nominal Frequency : 2,450 MHz Tested by : R.ISSIKI

R. Issiki

Line Voltage Variation [Volt]	Frequency [GHz]	Deviation for ISM Frequency [MHz]	Limit [MHz]
96 (- 20%)	2.456	6	± 50
120 (± 0%)	2.457	7	± 50
150 (+ 25%)	2.456	6	± 50

[Environment]

Temperature : 24.3 ℃

Humidity : 65.0 %

[Sample Calculation]

Frequency : 2.457 GHz

Deviation for ISM Frequencies Calculated as follows,

2.457 - 2.4500 = 0.0070 [GHz] = 7 [MHz]

[Summary of Test Results]

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