47 CFR Part 18

TEST REPORT

For

Microwave Oven

MODEL NUMBER: ES9P03##,ES9P03*(#,*,express 0~9,A~Z)**

FCC ID: VG8ES9P03YYY

REPORT NUMBER: 4791055637-1

ISSUE DATE: May 22, 2024

Prepared for

Guangdong Midea Kitchen Appliances Manufacturing Co.,Ltd
No.6, Yong An Road, Beijiao, Shunde, Foshan ,Guangdong,China

Prepared by

UL Verification Services (Guangzhou) Co., Ltd, Song Shan Lake Branch

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	May 22, 2024	Initial Issue	

Summary of Test Results				
Standard	**Test Item**	**Test Method**	**Limit**	**Result**
47 CFR Part 18	Conducted Emission (150 kHz to 30 MHz)	FCC / OST MP-5:1986	Part 18.307(b)	PASS
	Radiated Emission (9 kHz to 30 MHz)	FCC / OST MP-5:1986	Part 18.305(b)	N/A(2)
	Radiated Emission (30 MHz to 1 GHz)	FCC / OST MP-5:1986	Part 18.305(b)	PASS
	Radiated Emission (1 GHz to 25 GHz)	FCC / OST MP-5:1986	Part 18.305(b)	PASS
	Radiation Hazard	FCC / OST MP-5:1986	MP-5 Clause 3.1	PASS
	Operating Frequency	FCC / OST MP-5:1986	MP-5 Clause 4.5	PASS
	Input Power Measurement	FCC / OST MP-5:1986	MP-5 Clause 4.3	PASS
	Output Power Measurement	FCC / OST MP-5:1986	MP-5 Clause 4.3	PASS

Note:
EUT: In this whole report EUT means Equipment Under Test.
(1) Only microwave function tested in this report.
(2) Operation frequency > 1000MHz. According to the requirements of §18.309, for frequencies greater than 1000 MHz, measure the tenth harmonic or the highest level that can detect emissions
(3) For ultrasonic equipment, compliance with the conducted limits shall preclude the need to show compliance with the field strength limits below 30 MHz unless requested by the Commission.
(4) The measurement techniques used to determine compliance with the technical requirements of this part are set out in FCC / OST MP-5, “FCC Methods of Measurements of Radio Noise Emissions from Industrial, Scientific, and Medical equipment,”
(5) The measurement result for the sample received is <Pass> according to < 47 CFR Part18> when <Accuracy Method> decision rule is applied.
(6) This test report is only published to and used by the applicant, and it is not for evidence purpose in China.

CONTENTS

1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name:	Guangdong Midea Kitchen Appliances Manufacturing Co.,Ltd
Address:	No.6, Yong An Road, Beijiao, Shunde, Foshan ,Guangdong,China

Manufacturer Information

Company Name :	Guangdong Midea Kitchen Appliances Manufacturing Co.,Ltd
Address:	No.6, Yong An Road, Beijiao, Shunde, Foshan ,Guangdong,China

EUT Information

EUT Name:	Microwave Oven
Model:	ES9P032NA
Series Model:	ES9P03##,ES9P03***(#,*,express 0~9,A~Z)
Brand:	Midea
Sample Received Date:	May 7, 2024
Sample Status:	Normal
Sample ID:	7156509
Date of Tested:	May 7, 2024 ~ May 22, 2024

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
47 CFR Part 18	**PASS**

Prepared By:

Wite Chen
Engineer Project Associate

Checked By:

Denny Huang
Senior Project Engineer

Approved By:

Stephen Guo
Operations Manager

2. TEST METHODOLOGY

All tests were performed in accordance with the standard 47 CFR Part 18

Methods of measurement: FCC / OST MP-5(FCC Methods of Measurements of Radio Noise Emissions from Industrial, Scientific, and medical equipment)

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	**A2LA (Certificate No.: 4102.01)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA. **FCC (FCC Designation No.: CN1187)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules. **ISED (Company No.: 21320)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046. **VCCI (Registration No.: G-20192, C-20153, T-20155 and R-20202)** UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20192 and R-20202 Shielding Room B, the VCCI registration No. is C-20153 and T-20155
Test Location	UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch.
Address	Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Measurement Frequency Range	K	U(dB)
Conducted emissions from the AC mains power ports	0.009 MHz ~ 0.15 MHz	2	4.00
	0.15 MHz ~ 30 MHz	2	3.63
Radiated emissions	9 kHz ~ 30 MHz	2	4.12
Radiated emissions	30 MHz ~ 1 GHz	2	4.13
Radiated emissions	1GHz ~ 18GHz	2	5.71
Radiated emissions	18GHz ~ 40GHz	2	5.37
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.			

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name:	Microwave Oven
Model:	ES9P032NA
Series Model:	ES9P03##,ES9P03***(#,*,express 0~9,A~Z)
Model Difference:	All types of electronic circuit of the same, the difference are model name and appearance (color).
Operating Frequency:	2450MHz
Rated Input Power (Microwave):	1450W
Rated Output Power (Microwave):	900W
Rated Voltage:	120V~, 60Hz, Single Phase

5.2. TEST MODE

Test Mode	Description
M01	The EUT was tested at 100% microwave mode with full power

5.3. LOAD FOR MICROWAVE OVENS

For all measurements the energy developed by the oven is absorbed by a dummy load consisting of a quantity of tap water in a beaker. A polypropylene beaker or any other low-loss material shall be used as the container. If the oven is provided with a shelf or other utensil support, test shall be made with this support in its initial normal position. For ovens rated at 1000 watts or less power output, the beaker shall contain quantities of water as listed in the following subparagraphs. For ovens rated at more than 1000 watts output, each quantity shall be increased by 50% for each 500 watts or fraction thereof in excess of 1000 watts. Additional beakers are used if necessary.

- Load for power output measurement: 1000 milliliters of water in the beaker located in the center of the oven.
- Load for frequency measurement: 1000 milliliters of water in the beaker located in the center of the oven.
- Load for measurement of radiation on second and third harmonic: Two loads, one of 700 and the other of 300 milliliters, of water are used. Each load is tested both with the beaker located in the center of the oven and with it in the right front corner.
- Load for all other measurements: 700 milliliters of water, with the beaker located in the center of the oven

5.4. EUT ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	AC Cable	N/A	N/A	1.0m, Unshielded without ferrite

5.5. SUPPORT UNITS FOR SYSTEM TEST

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Specification	Note
1	Glass Beaker	N/A	N/A	1000ML	UL Support
2	Glass Beaker	N/A	N/A	500ML	UL Support

5.6. MEASURING EQUIPMENT AND SOFTWARE USED

Conducted Emissions					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
EMI Test Receiver	R&S	ESR3	101961	Oct. 13, 2023	Oct. 12, 2024
Artificial Mains Networks	Schwarzbeck	NSLK 8126	8126465	Oct. 12, 2023	Oct. 11, 2024
Test Software	Farad	EZ-EMC	Ver. UL-3A1	N/A	N/A

Radiated Emissions 30-1000MHz					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
Receiver	KEYSIGHT	N9038A	2944A09099	Oct. 12, 2023	Oct. 11, 2024
Hybrid Log Periodic Antenna	TDK	HLP-3003C	130960	Aug. 2, 2021	Aug. 1, 2024
Preamplifier	HP	8447F	2944A03683	Oct. 12, 2023	Oct. 11, 2024
Test Software	Farad	EZ-EMC	1.1.4.2	N/A	N/A

Radiated Emissions 1000-25000MHz					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
Receiver	ROHDE & SCHWARZ	ESR26	101377	Oct. 12, 2023	Oct. 11, 2024
Preamplifier	TDK	PA-02-0118	TRS-305-00067	Oct. 12, 2023	Oct. 11, 2024
Preamplifier	TDK	PA-02-2	TRS-307-00003	Oct. 12, 2023	Oct. 11, 2024
Horn Antenna	TDK	HRN-0118	130940	Jul. 20, 2021	Jul. 19, 2024
Horn Antenna	Schwarzbeck	BBHA9170	#697	July 20, 2021	July 19, 2024
High Pass Filter	Wi	WHKX10-5850-6500-18000-40SS	4	Oct. 12, 2023	Oct. 11, 2024
Test Software	Farad	EZ-EMC	Ver. UL-3A1	N/A	N/A

Radiation Hazard					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
Electric Field	LTLUTRON	EMF-819/EP-05H	I.508502	Oct. 23, 2023	Oct. 22, 2024

Operating Frequency					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
Receiver	ROHDE & SCHWARZ	ESR26	101377	Oct. 12, 2023	Oct. 11, 2024
Preamplifier	TDK	PA-02-0118	TRS-305-00067	Oct. 12, 2023	Oct. 11, 2024
Horn Antenna	TDK	HRN-0118	130940	Jul. 20, 2021	Jul. 19, 2024

Input Power Measurement					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
POWER SOURCE	California Instruments	500liX-400-413	1606A00050	Oct. 19, 2023	Oct. 18, 2024

Output Power Measurement					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
Probe Thermometer	Control Company	4242	150709653	Oct. 12, 2023	Oct. 11, 2024

6. EMISSION TEST

6.1. CONDUCTED EMISSION MEASUREMENT

LIMITS

(a) All Induction cooking ranges and ultrasonic equipment:

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.009-0.05	110	—
0.05-0.15	90-80*	—
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

(b) All other part 18 consumer devices:

Frequency of emission (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

(c) RF lighting devices:

Frequency (MHz)	Maximum RF L1 voltage measured with a 50 uH/50 ohm LISN (uV)	
Non-consumer equipment:	uV	dBuV
0.45 to 1.6	1,000	60
1.6 to 30	3,000	69.5
Consumer equipment:	uV	dBuV
0.45 to 2.51	250	48
2.51 to 3.0	3,000	69.5
3.0 to 30	250	48

EMI Receiver Detector Setting:

Frequency Range	Detector (Resolution Bandwidth)
9 kHz to 150 kHz	200Hz
150 kHz to 30 MHz	9KHz

TEST PROCEDURE

1. The testing follows the guideL1s in FCC / OST MP-5.

2. The EUT was placed on a 0.8m insulating material from the horizontal ground plane with EUT being connected to the power mains through a L1 impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

3. Excess I/O cables shall be bundled in the center. If bundling is not possible, bundling shall not exceed 30 to 40 cm in length.

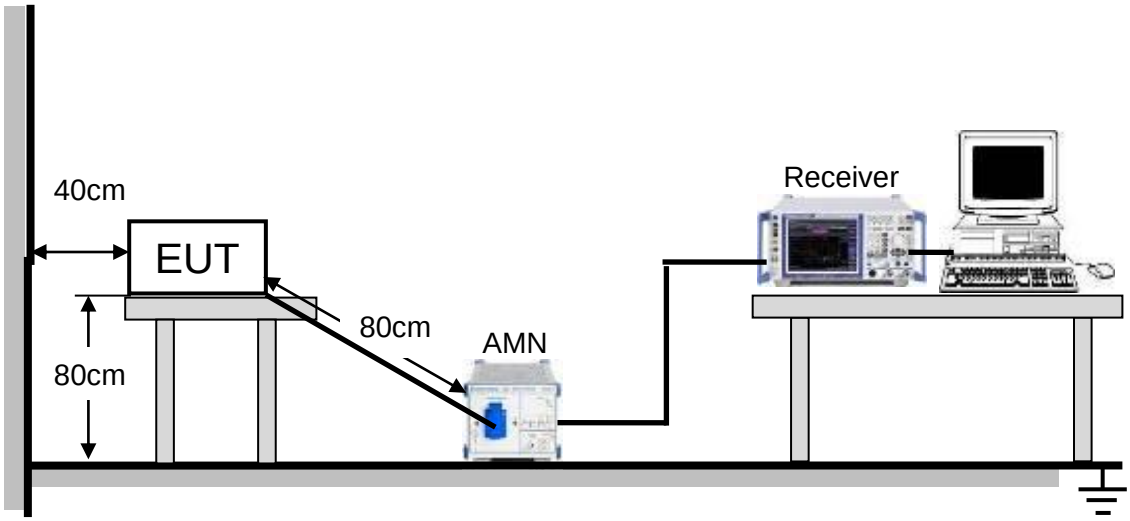
4. Excess power cords shall be bundled in the center or shortened to appropriate length.

5. LISN at least 80 cm from nearest part of EUT.

6. A 700ml water load was placed in the center of the oven.

7. Conducted emissions from the EUT measured in the frequency range between 0.009 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

TEST SETUP



For the actual test configuration, please refer to Appendix I: Photographs of Test Configuration.

TEST ENVIRONMENT

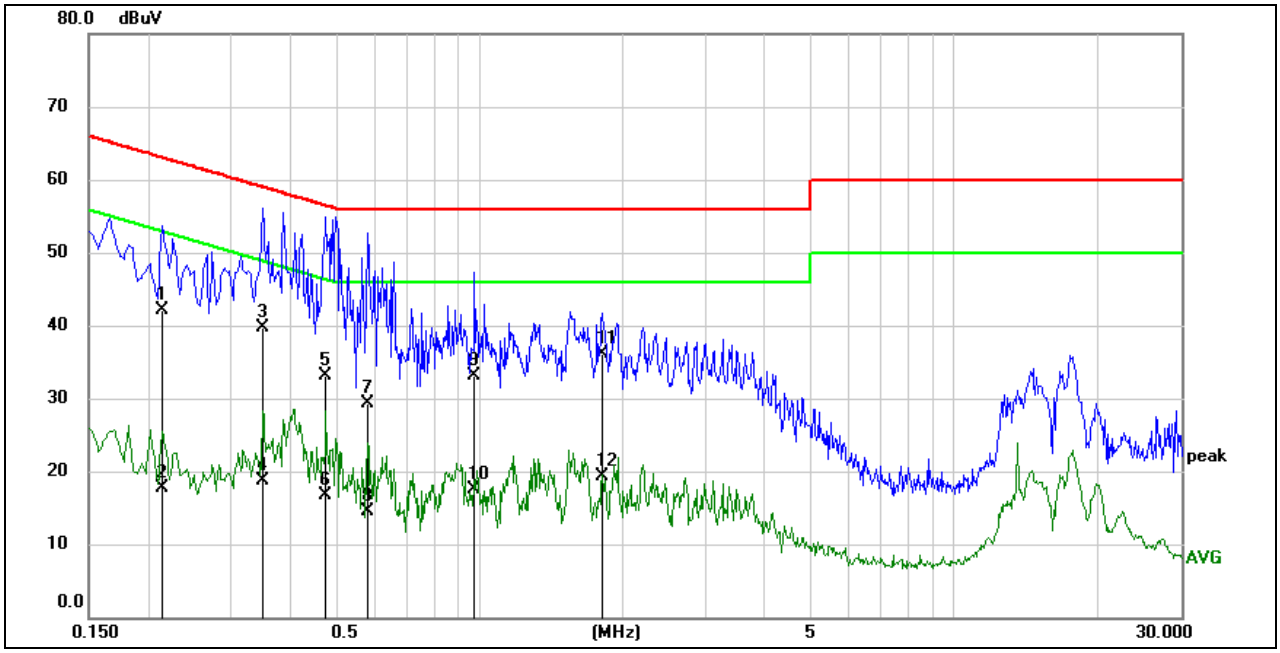
Temperature	21.5 °C	Relative Humidity	55.6%
Atmosphere Pressure	101 kPa		

TEST DATE / ENGINEER

Test Date	May 8, 2024	Test By	Wite Chen

TEST RESULTS

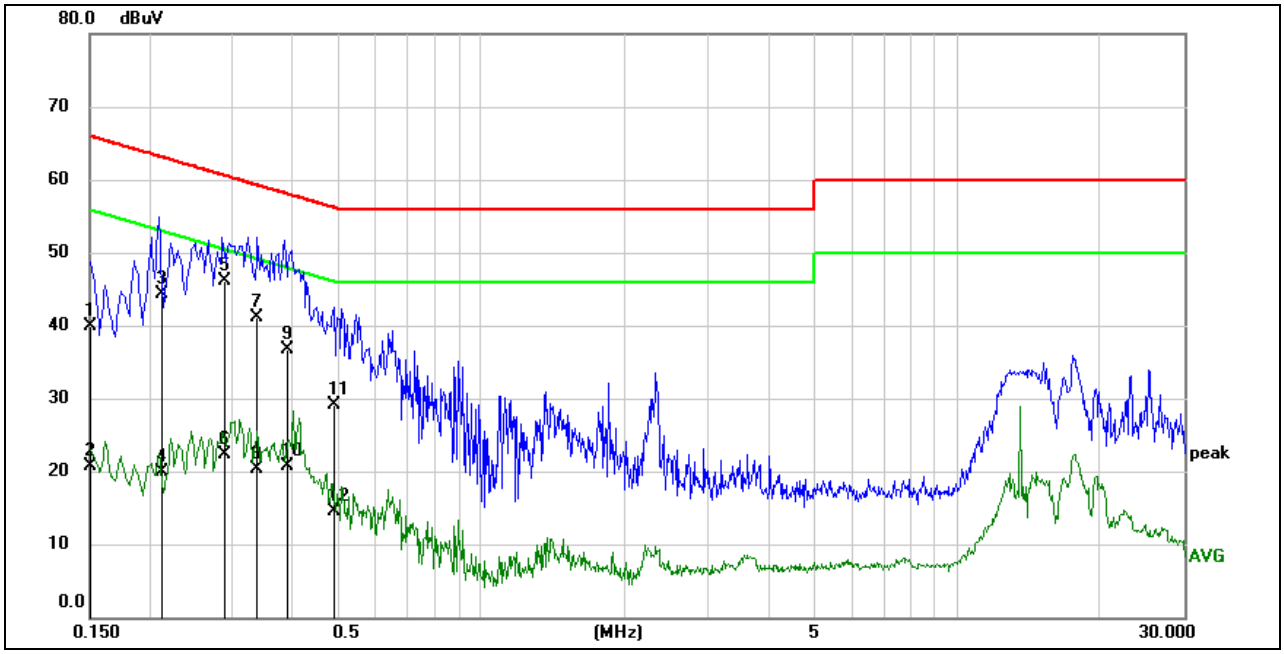
Test Mode:	M01	Line:	Line
Test Voltage:	AC 120V_60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.2134	31.84	10.24	42.08	63.07	-20.99	QP
2	0.2134	7.44	10.24	17.68	53.07	-35.39	AVG
3	0.3493	29.52	10.24	39.76	58.98	-19.22	QP
4	0.3493	8.41	10.24	18.65	48.98	-30.33	AVG
5	0.4726	22.89	10.24	33.13	56.47	-23.34	QP
6	0.4726	6.39	10.24	16.63	46.47	-29.84	AVG
7	0.5800	18.98	10.24	29.22	56.00	-26.78	QP
8	0.5800	4.27	10.24	14.51	46.00	-31.49	AVG
9	0.9733	22.96	10.05	33.01	56.00	-22.99	QP
10	0.9733	7.41	10.05	17.46	46.00	-28.54	AVG
11	1.8190	26.05	9.96	36.01	56.00	-19.99	QP
12	1.8190	9.41	9.96	19.37	46.00	-26.63	AVG

Remark: Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
Margin = Result - Limit

Test Mode:	M01	Line:	Netural
Test Voltage:	AC 120V_60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1505	29.65	10.34	39.99	65.97	-25.98	QP
2	0.1505	10.44	10.34	20.78	55.97	-35.19	AVG
3	0.2139	33.99	10.24	44.23	63.05	-18.82	QP
4	0.2139	9.65	10.24	19.89	53.05	-33.16	AVG
5	0.2881	35.85	10.24	46.09	60.58	-14.49	QP
6	0.2881	12.10	10.24	22.34	50.58	-28.24	AVG
7	0.3341	30.94	10.24	41.18	59.35	-18.17	QP
8	0.3341	10.03	10.24	20.27	49.35	-29.08	AVG
9	0.3905	26.52	10.24	36.76	58.05	-21.29	QP
10	0.3905	10.42	10.24	20.66	48.05	-27.39	AVG
11	0.4883	18.96	10.24	29.20	56.20	-27.00	QP
12	0.4883	4.17	10.24	14.41	46.20	-31.79	AVG

Remark: Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
Margin = Result - Limit

6.2. RADIATED EMISSIONS MEASUREMENT

LIMITS

Field strength limits
(a) ISM equipment operating on a frequency specified in §18.301 is permitted unlimited radiated energy in the band specified for that frequency.
(b) The field strength levels of emissions which lie outside the bands specified in §18.301, unless otherwise indicated, shall not exceed the following:

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (uV/m)	Distance (meters)
Any type unless otherwise specified (miscellaneous)	Any ISM frequency	Below 500	25	300
		500 or more	25 × SQRT(power/500)	[1]300*
	Any non-ISM frequency	Below 500	15	300
		500 or more	15 × SQRT(power/500)	[1]300
Industrial heaters and RF stabilized arc welders	On or below 5,725 MHz Above 5,725 MHz	Any Any	10 ([2])	1,600 ([2])
Medical diathermy	Any ISM frequency Any non-ISM frequency	Any Any	25 15	300 300
Ultrasonic	Below 490 kHz	Below 500	2,400/F(kHz)	300
		500 or more	2,400/F(kHz) × SQRT(power/500)	[3]300
	490 to 1,600 kHz Above 1,600 kHz	Any Any	24,000/F(kHz) 15	30 30
Induction cooking ranges	Below 90 kHz On or above 90 kHz	Any Any	1,500 300	[4]30 [4]30

[1]Field strength may not exceed 10 µV/m at 1600 meters. Consumer equipment operating below 1000 MHz is not permitted the increase in field strength otherwise permitted here for power over 500 watts.
[2]Reduced to the greatest extent possible.
[3]Field strength may not exceed 10 µV/m at 1600 meters. Consumer equipment is not permitted the increase in field strength otherwise permitted here for over 500 watts.
[4]Induction cooking ranges manufactured prior to February 1, 1980, shall be subject to the field strength limits for miscellaneous ISM equipment.

(c) Frequency range for field strength measurements:

Frequency band in which device operates (MHz)	Range of frequency measurements	
	Lowest frequency	Highest frequency
Below 1.705	Lowest frequency generated in the device, but not lower than 9 kHz	30 MHz.
1.705 to 30	Lowest frequency generated in the device, but not lower than 9 kHz	400 MHz.
30 to 500	Lowest frequency generated in the device or 25 MHz, whichever is lower	Tenth harmonic or 1,000 MHz, whichever is higher.
500 to 1,000	Lowest frequency generated in the device or 100 MHz, whichever is lower	Tenth harmonic.
Above 1,000	.....do	Tenth harmonic or highest detectable emission.

(d) The field strength limits for RF lighting devices shall be the following:

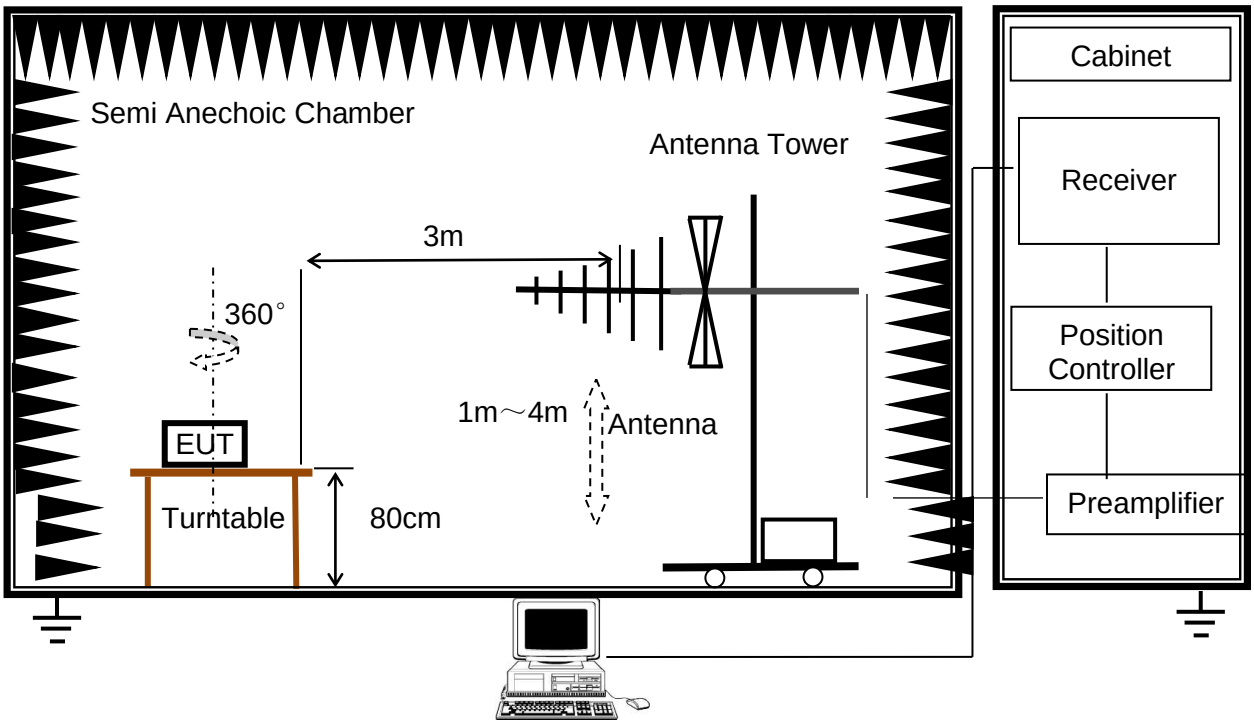
Frequency (MHz)	Field strength limit at 30 meters (μV/m)	Field strength limit at 3 meters (dBμV/m)
Non-consumer equipment:		
30-88	30	49.5
88-216	50	54
216-1000	70	56.9
Consumer equipment		
30-88	10	40
88-216	15	43.5
216-1000	20	46

NOTE:

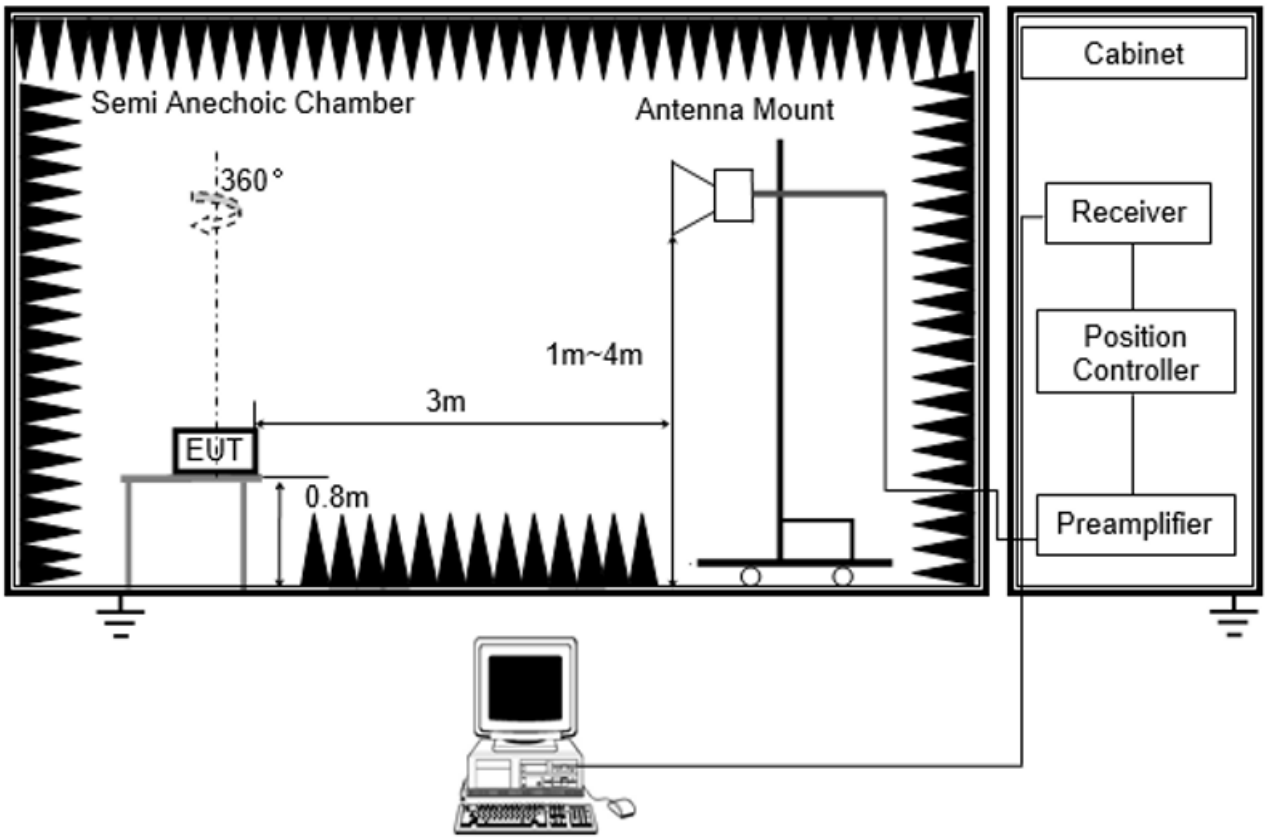
(1) The tighter limit applies at the band edges;
(2) Emission level (dBuV/m) = 20log Emission level (uV/m)
(3) 10 m Emission level = 1500 Emission level + 20log(30 m/10 m)
(4) Note:
*Power =612.5W according to §6.6
*Limit=20lg(25*SQRT(power/500))+20lg(300/3) @ 3m distance.

TEST SETUP AND PROCEDURE

(a) Radiated Disturbance Test Set-Up Frequency 30MHz - 1GHz



(b) Radiated Disturbance Test Set-Up Frequency Above 1GHz



The setting of the spectrum analyser:

RBW	100 kHz (for 30-1000MHz); 1MHz (for Above 1000MHz)
VBW	300 kHz (for 30-1000MHz); 3MHz (for Above 1000MHz)
Sweep	Auto
Detector	Peak/Average

1. The testing follows the guideL1s in FCC / OST MP-5.

2. The EUT was arranged to its worst case and then turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both Horizontal, Face-on and Face-off polarizations of the antenna are set to make the measurement.

3. The EUT was placed on a turntable with 80cm meter above ground.

4. The EUT was set 3 meters from the interference receiving antenna, test antenna mast is remotely controlled and can be varied in height form 1m to 4m.

5. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

6. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

7. Load for measurement of radiation on second and third harmonic; Two loads, one of 700ml and the other of 300ml, of water are used. Each load is tested both with the beaker located in the center of the oven and with it in the right front corner.

8. All other emissions were measured while a 700ml water load was placed in the center of the oven.

9. Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30m open field site. Therefore, the sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

TEST ENVIRONMENT

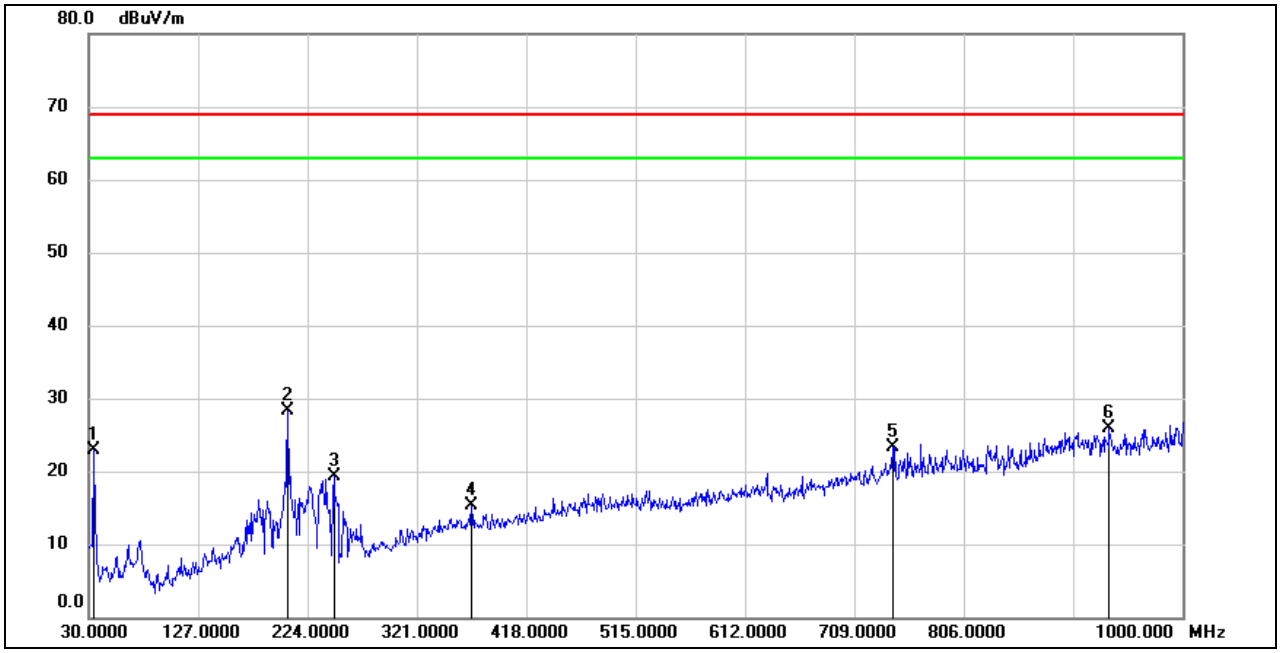
Radiated Emissions – 30MHz to 1000MHz		Radiated Emissions – 1000MHz to 25GHz	
Temperature:	23.6 °C	Temperature:	24.5 °C
Humidity:	58.7%	Humidity:	59%
Atmosphere Pressure	101 kPa	Atmosphere Pressure	101 kPa

TEST DATE / ENGINEER

Radiated Emissions – 30MHz to 1000MHz		Radiated Emissions – 1000MHz to 25GHz	
Test Date	May 17, 2024	Test Date	May 17, 2024
Test By	Deacon Tan	Test By	Mason Wang

TEST RESULTS

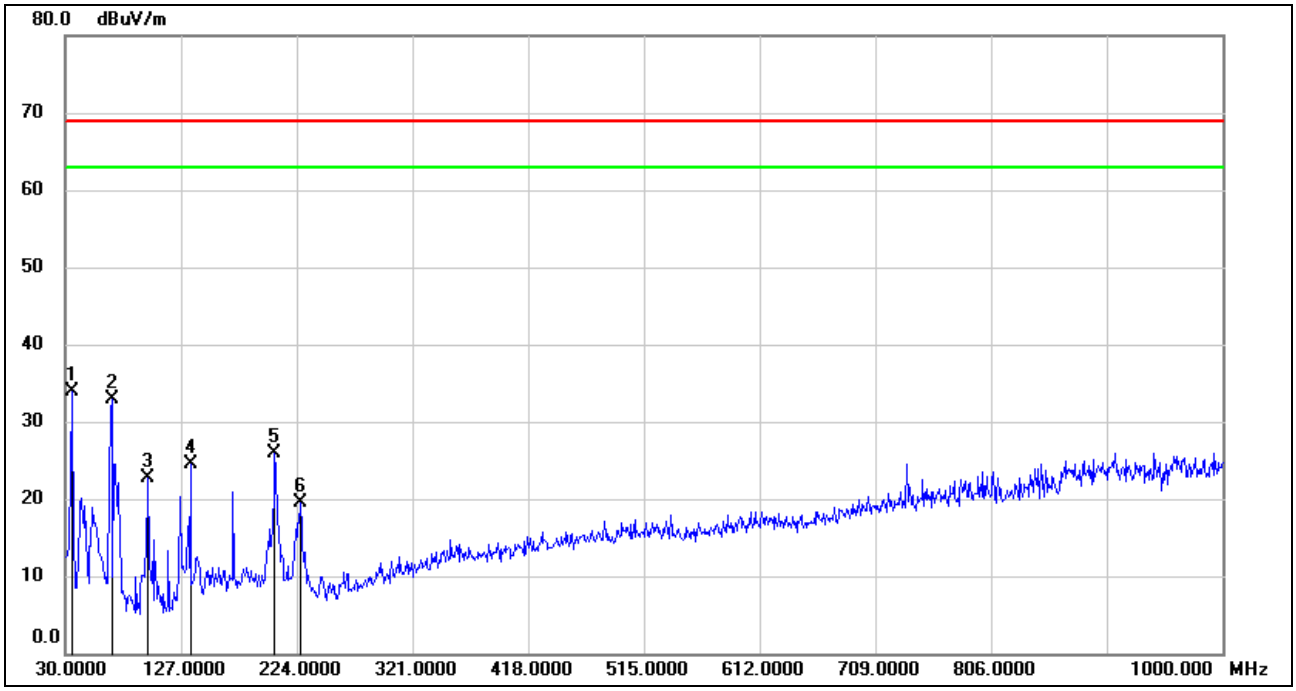
Radiated Emissions –30MHz to 1000MHz			
Test Mode:	M01	Polar:	Horizontal
Test Voltage:	AC 120V_60 Hz	Volume of Water:	700mL



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	33.8800	36.98	-13.99	22.99	68.84	-45.85	AVG
2	206.5399	40.81	-12.41	28.40	68.84	-40.44	AVG
3	247.2800	33.85	-14.61	19.24	68.84	-49.60	AVG
4	369.5000	24.94	-9.66	15.28	68.84	-53.56	AVG
5	742.9500	26.95	-3.65	23.30	68.84	-45.54	AVG
6	935.0100	27.65	-1.67	25.98	68.84	-42.86	AVG

Remark: Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
Margin = Result – Limit
AVG: RMS detector.

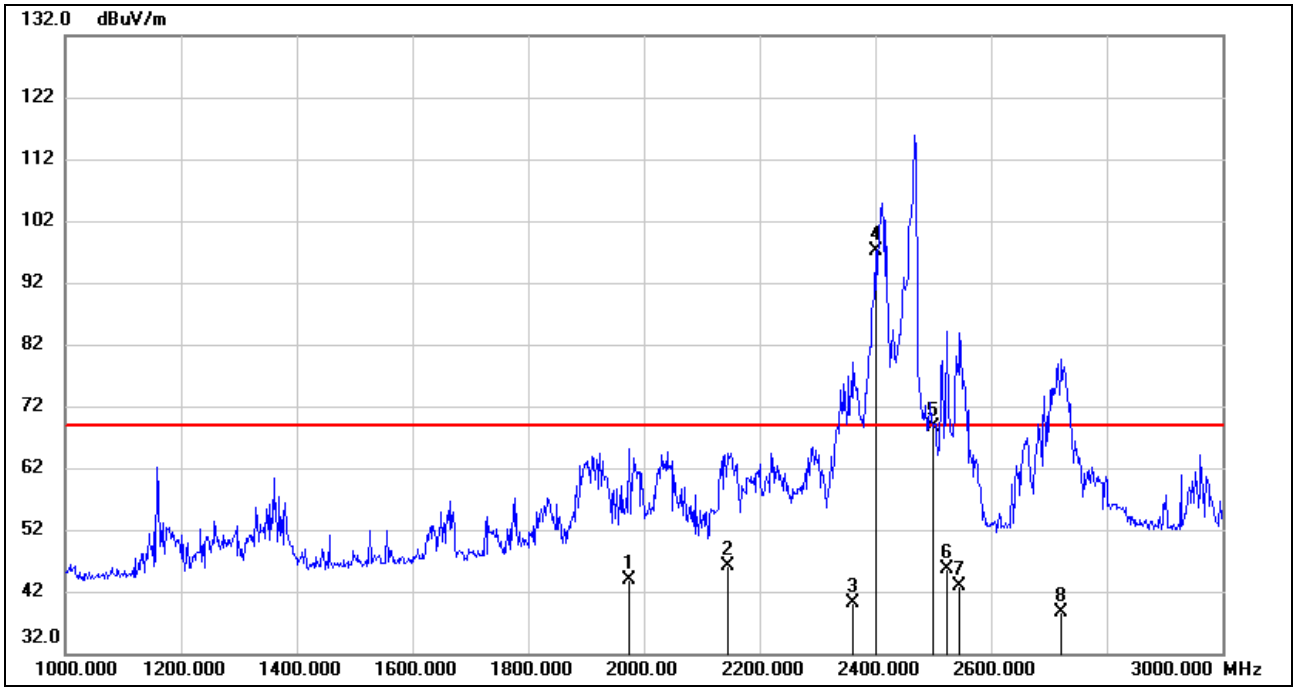
Radiated Emissions –30MHz to 1000MHz			
Test Mode:	M01	Polar:	Vertical
Test Voltage:	AC 120V_60 Hz	Volume of Water:	700mL



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	35.8200	48.12	-14.30	33.82	68.84	-35.02	AVG
2	68.8000	48.54	-15.56	32.98	68.84	-35.86	AVG
3	98.8700	39.34	-16.62	22.72	68.84	-46.12	AVG
4	134.7600	38.78	-14.32	24.46	68.84	-44.38	AVG
5	205.5700	38.16	-12.35	25.81	68.84	-43.03	AVG
6	226.9100	32.88	-13.38	19.50	68.84	-49.34	AVG

Remark: Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
Margin = Result - Limit
AVG: RMS detector.

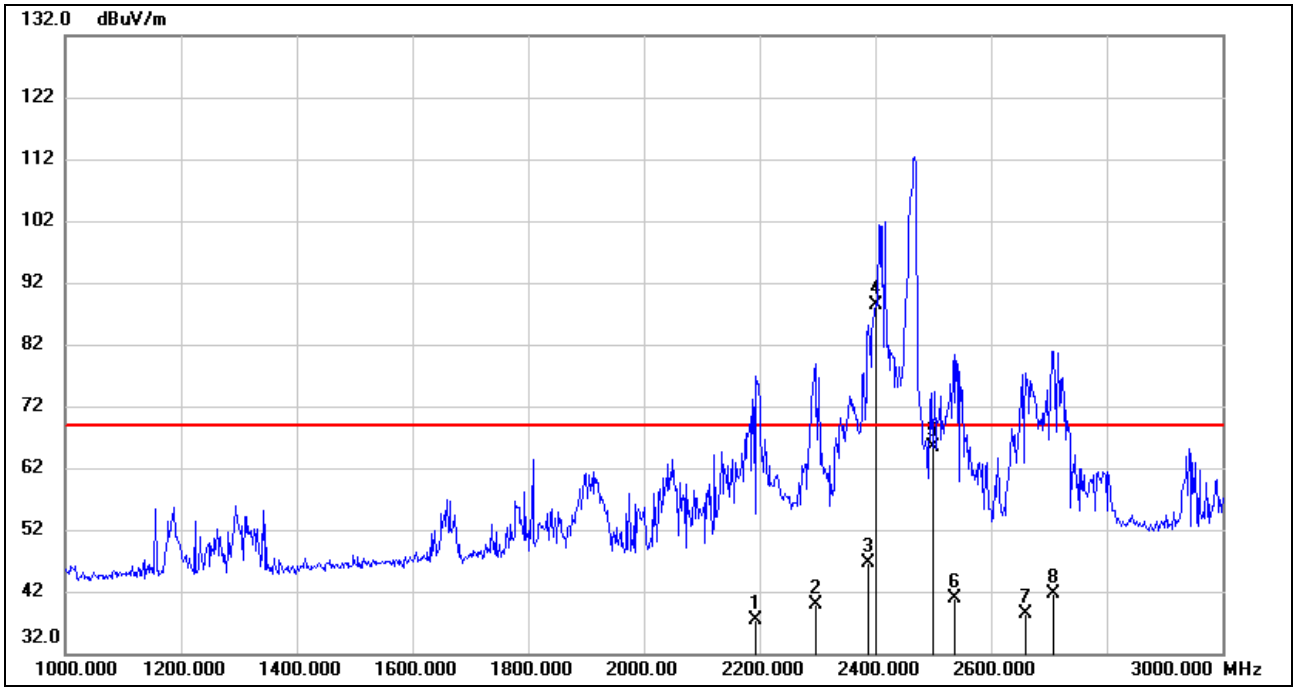
Radiated Emissions –1000MHz to 3000MHz			
Test Mode:	M01	Polar:	Horizontal
Test Voltage:	AC 120V_60 Hz	Volume of Water:	700mL



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1974.000	13.01	30.79	43.80	68.84	-25.04	AVG
2	2144.000	14.64	31.56	46.20	68.84	-22.64	AVG
3	2362.000	7.46	32.77	40.23	68.84	-28.61	AVG
4	2400.000	64.09	32.98	97.07	/	/	fundamental
5	2500.000	35.64	32.93	68.57	/	/	fundamental
6	2524.000	12.79	32.90	45.69	68.84	-23.15	AVG
7	2546.000	9.91	32.87	42.78	68.84	-26.06	AVG
8	2722.000	5.38	33.23	38.61	68.84	-30.23	AVG

1. Remark: Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
2. Margin = Result – Limit
3. All the frequencies between mark 4 and mark 5 are the fundamental frequency which were transmitted by ISM frequency. Emissions at the fundamental ISM frequency band are not subject to the limits of 18.305.
4. AVG: RMS detector.

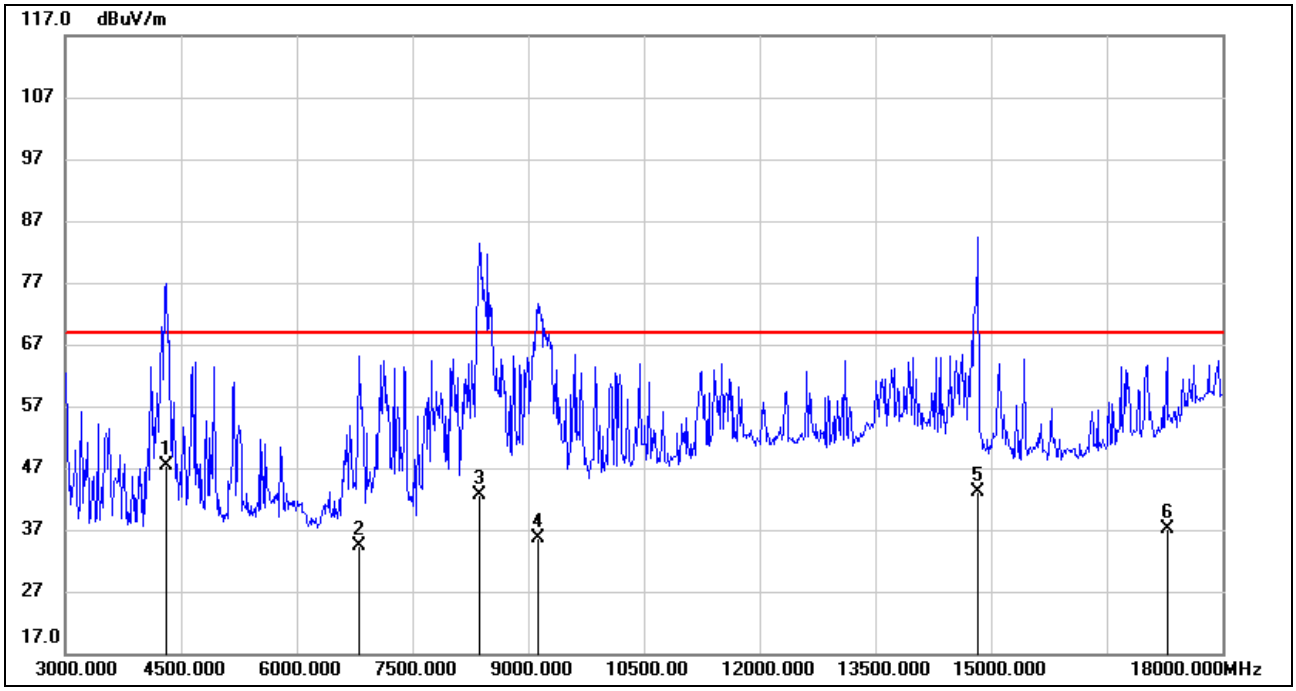
Radiated Emissions –1000MHz to 3000MHz			
Test Mode:	M01	Polar:	Vertical
Test Voltage:	AC 120V_60 Hz	Volume of Water:	700mL



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	2194.000	5.42	31.84	37.26	68.84	-31.58	AVG
2	2296.000	7.37	32.41	39.78	68.84	-29.06	AVG
3	2388.000	13.77	32.92	46.69	68.84	-22.15	AVG
4	2400.000	55.38	32.98	88.36	/	/	fundamental
5	2500.000	32.38	32.93	65.31	/	/	fundamental
6	2536.000	8.08	32.88	40.96	68.84	-27.88	AVG
7	2660.000	5.36	33.01	38.37	68.84	-30.47	AVG
8	2708.000	8.39	33.17	41.56	68.84	-27.28	AVG

1. Remark: Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
2. Margin = Result – Limit
3. All the frequencies between mark 4 and mark 5 are the fundamental frequency which were transmitted by ISM frequency. Emissions at the fundamental ISM frequency band are not subject to the limits of 18.305.
4. AVG: RMS detector.

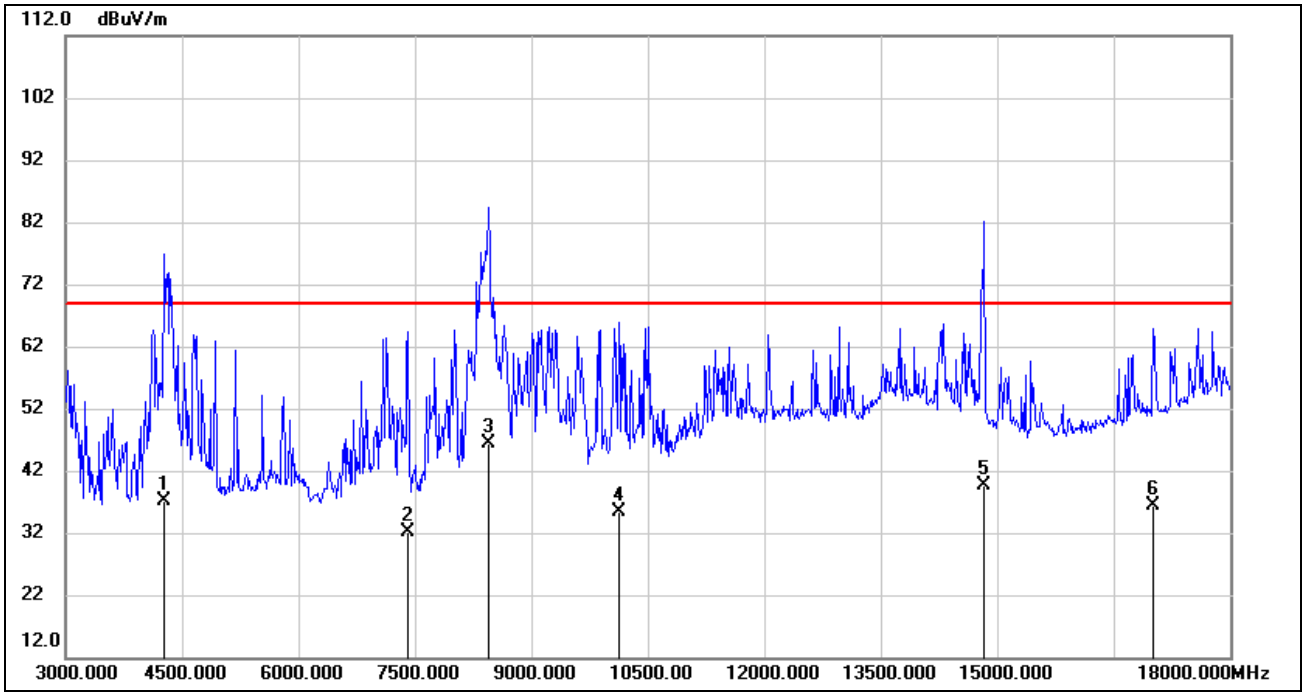
Radiated Emissions –3000MHz to 18000MHz			
Test Mode:	M01	Polar:	Horizontal
Test Voltage:	AC 120V_60 Hz	Volume of Water:	700mL



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4305.000	48.60	-1.27	47.33	68.84	-21.51	AVG
2	6810.000	29.21	5.09	34.30	68.84	-34.54	AVG
3	8370.000	34.77	7.98	42.75	68.84	-26.09	AVG
4	9120.000	25.13	10.47	35.60	68.84	-33.24	AVG
5	14835.000	24.05	19.16	43.21	68.84	-25.63	AVG
6	17280.000	14.04	23.16	37.20	68.84	-31.64	AVG

1. Remark: Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
2. Margin = Result – Limit
3. AVG: RMS detector.
4. Both 700ML and 300ML were measured, and only the worst data of the test mode was retained in the report.

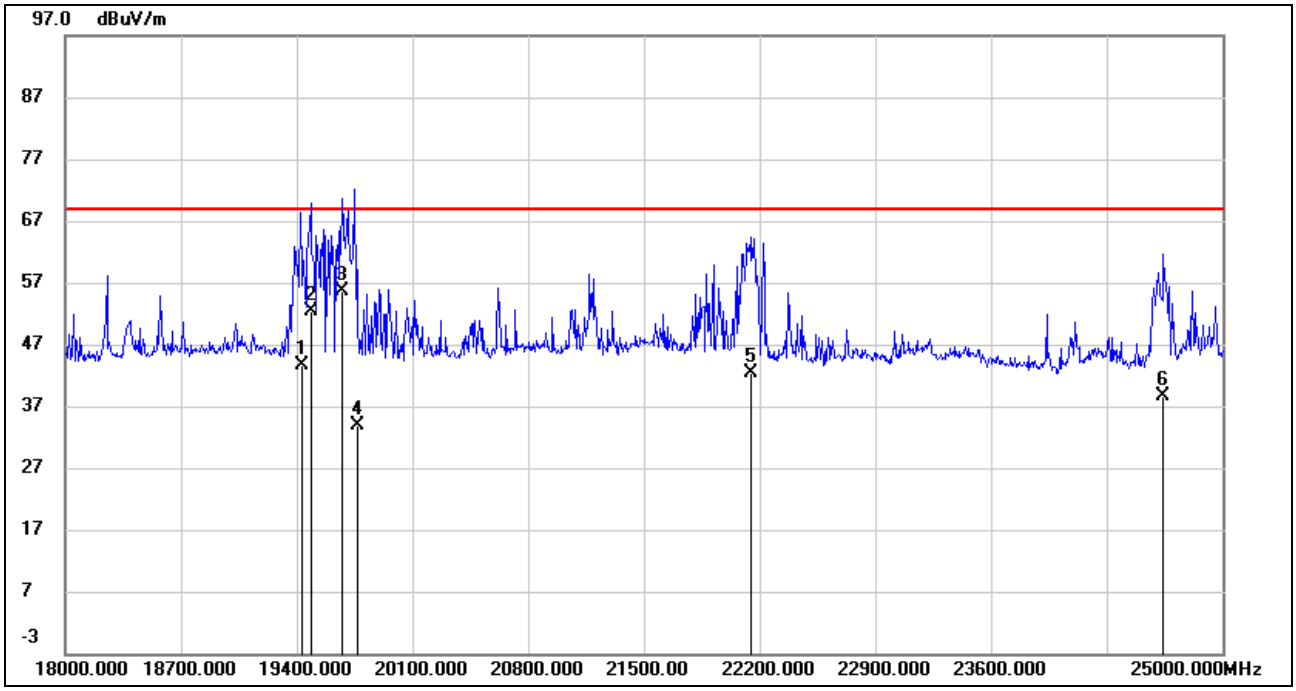
Radiated Emissions –3000MHz to 18000MHz			
Test Mode:	M01	Polar:	Vertical
Test Voltage:	AC 120V_60 Hz	Volume of Water:	700mL



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4275.000	38.47	-1.35	37.12	68.84	-31.72	AVG
2	7410.000	24.67	7.43	32.10	68.84	-36.74	AVG
3	8445.000	38.50	8.00	46.50	68.84	-22.34	AVG
4	10125.000	22.83	12.47	35.30	68.84	-33.54	AVG
5	14835.000	20.44	19.16	39.60	68.84	-29.24	AVG
6	17010.000	14.75	21.65	36.40	68.84	-32.44	AVG

1. Remark: Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
2. Margin = Result – Limit
3. AVG: RMS detector.
4. Both 700ML and 300ML were measured, and only the worst data of the test mode was retained in the report.

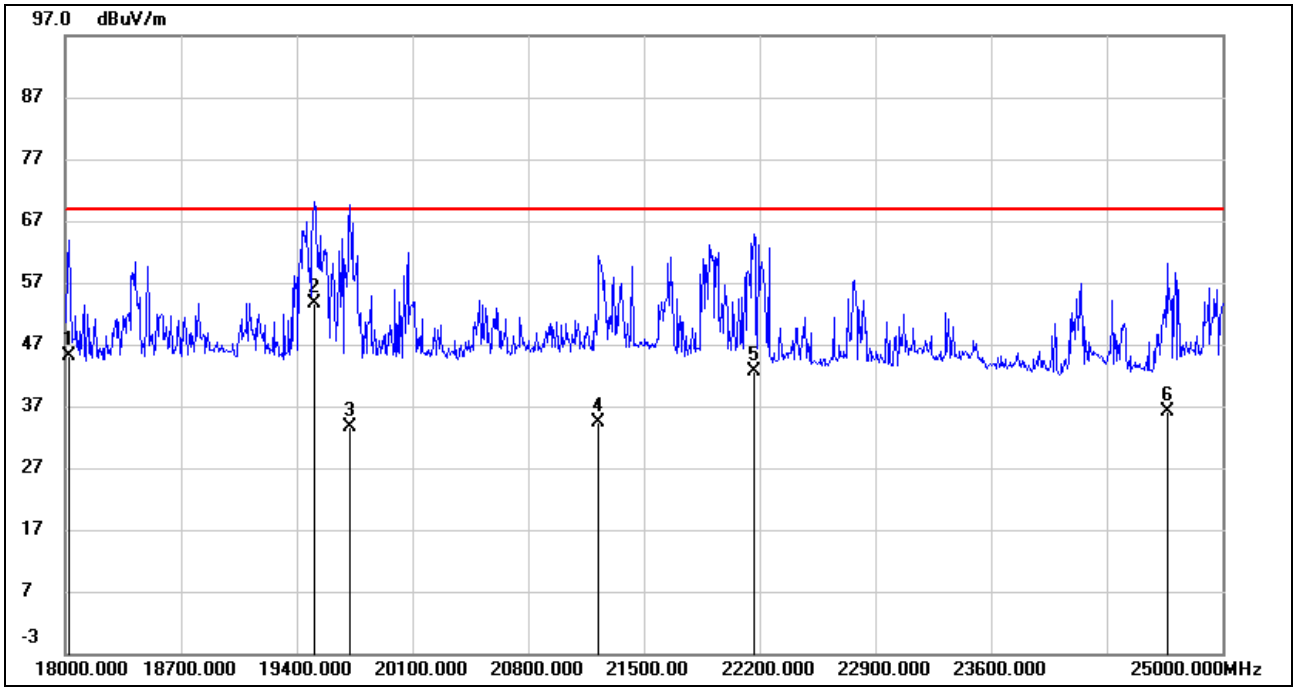
Radiated Emissions –18000MHz to 25000MHz			
Test Mode:	M01	Polar:	Horizontal
Test Voltage:	AC 120V_60 Hz	Volume of Water:	700mL



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	19428.792	46.80	-3.16	43.64	68.84	-25.20	AVG
2	19478.466	55.78	-3.33	52.45	68.84	-16.39	AVG
3	19674.099	59.17	-3.49	55.68	68.84	-13.16	AVG
4	19757.133	37.29	-3.53	33.76	68.84	-35.08	AVG
5	22144.000	44.05	-1.75	42.30	68.84	-26.54	AVG
6	24643.000	38.43	0.17	38.60	68.84	-30.24	AVG

1. Remark: Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
2. Margin = Result – Limit
3. AVG: RMS detector.

Radiated Emissions –18000MHz to 25000MHz			
Test Mode:	M01	Polar:	Vertical
Test Voltage:	AC 120V_60 Hz	Volume of Water:	700mL



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	18021.000	47.27	-2.07	45.20	68.84	-23.64	AVG
2	19509.755	57.13	-3.41	53.72	68.84	-15.12	AVG
3	19715.467	37.15	-3.50	33.65	68.84	-35.19	AVG
4	21227.000	36.89	-2.59	34.30	68.84	-34.54	AVG
5	22165.000	44.39	-1.79	42.60	68.84	-26.24	AVG
6	24664.000	35.84	0.26	36.10	68.84	-32.74	AVG

1. Remark: Result = Reading +Correct (Insertion Loss + Cable Loss + Attenuator Factor)
2. Margin = Result – Limit
3. AVG: RMS detector.

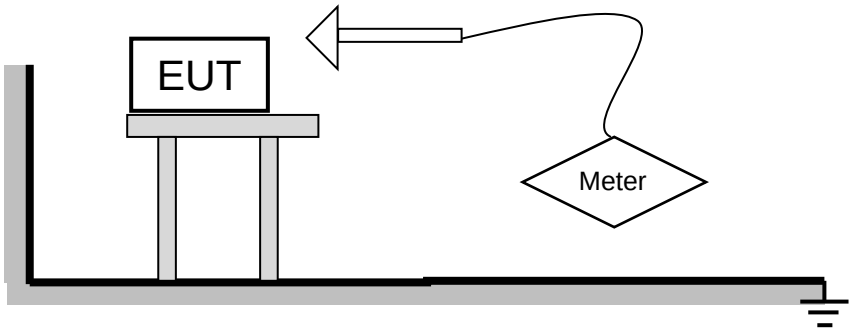
6.3. RADIATION HAZARD

LIMITS

Maximum Emission (mW/cm$^{2)}$
1.00

TEST SETUP and PROCEDURE

The EUT was set-up according to the FCC MP-5 and Part 18 for Radiation Hazard Measurement. The measurement was using a microwave leakage meter to measure the Radiation leakage in the as-received condition with the oven door closed. A 700ml water load in a beaker was located in the center of the oven and the Household Microwave Combi Oven was set to maximum power. While the oven operating, the microwave survey meter probe was moved slowly around the door seams the check for maximum leakage.



For the actual test configuration, please refer to Appendix I: Photographs of the Test Configuration.

TEST ENVIRONMENT

Temperature	22.7 °C	Relative Humidity	53.8%
Atmosphere Pressure	101 kPa		

TEST DATE / ENGINEER

Test Date	May 10, 2024	Test By	Wite Chen

TEST RESULTS

Probe Locatione	Limit (mW/cm$^{2)}$	Maximum Emission (mW/cm$^{2)}$
A	1.00	0.81
B	1.00	0.24
C	1.00	0.32
D	1.00	0.13
E	1.00	0.12
F	1.00	0.23

6.4. OPERATING FREQUENCY

LIMITS

ISM equipment may be operated on any frequency above 9 kHz. And the frequency band 2400-2500MHz is allocated for use by ISM equipment. (§18.301)

ISM frequency	Tolerance
6.78 MHz	±15.0 kHz
13.56 MHz	±7.0 kHz
27.12 MHz	±163.0 kHz
40.68 MHz	±20.0 kHz
915 MHz	±13.0 MHz
2,450 MHz	±50.0 MHz
5,800 MHz	±75.0 MHz
24,125 MHz	±125.0 MHz
61.25 GHz	±250.0 MHz
122.50 GHz	±500.0 MHz
245.00 GHz	±1.0 GHz

TEST PROCEDURE

The EUT was setup inside the EMC chamber, and a double ridge horn antenna and spectrum analyzer were used to measure the fundamental frequency of the EUT.

a. FREQUENCY FOR NORMAL VOLTAGE
The operating frequency was measured using a spectrum analyzer. Starting with the EUT at room temperature, a 1000mL water load was placed in the center of the oven and the oven was operated at maximum output power. The fundamental operating frequency was monitored until the water load was reduced to 20 percent of the original load.

b. FREQUENCY FOR LINE VOLTAGE
The EUT was operated / warmed by at least 10 minutes of use with a 1000 mL water load at room temperature at the beginning of the test. Then the operating frequency was monitored as the input voltage was varied between 80% and 125% of the nominal rating.

TEST ENVIRONMENT

Temperature	24.5 °C	Relative Humidity	59%
Atmosphere Pressure	101 kPa		

TEST DATE / ENGINEER

Test Date	May 13, 2024	Test By	Mason Wang

TEST RESULTS

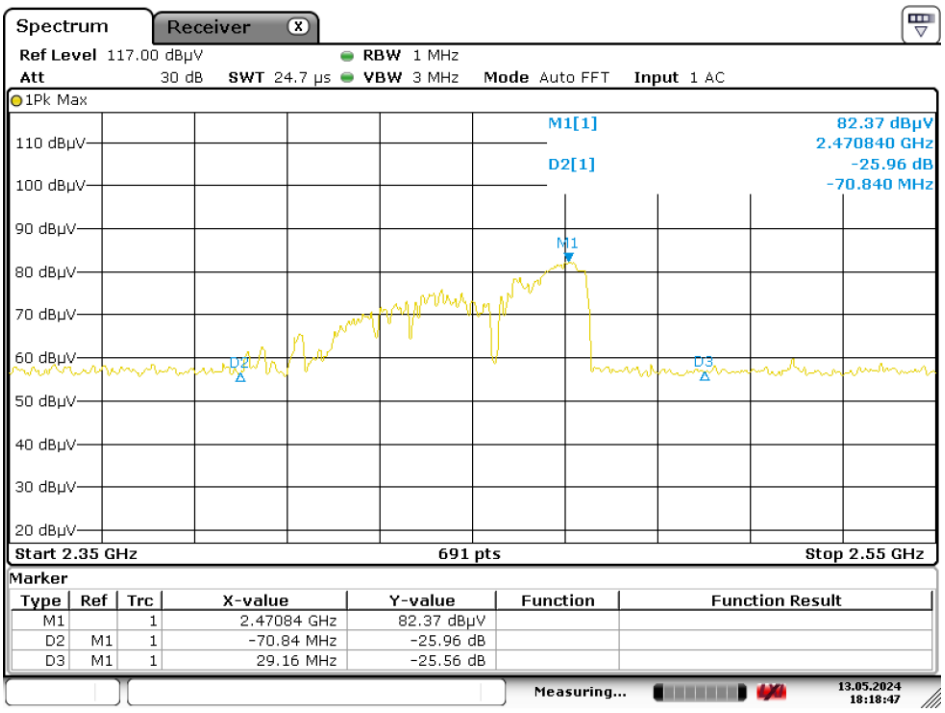
(a) Frequency for Normal Voltage:

Volume of Water (ml)	Polar	Frequency (MHz)	Limit (MHz)	Detector
200	Horizontal	2467.37	Lower: 2400MHz Upper: 2500MHz	Pass
	Vertical	2469.39		Pass
400	Horizontal	2467.37		Pass
	Vertical	2469.97		Pass
600	Horizontal	2470.84		Pass
	Vertical	2466.50		Pass
800	Horizontal	2467.08		Pass
	Vertical	2467.08		Pass
1000(Start of Test)	Horizontal	2467.76		Pass
	Vertical	2465.92		Pass

(b) Frequency for Line Voltage:

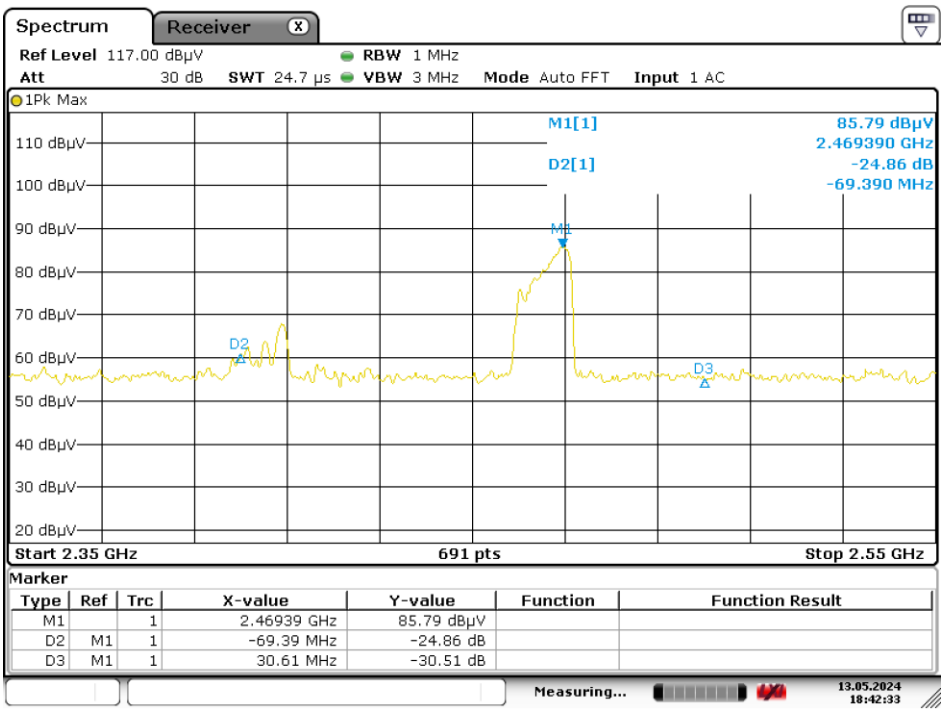
Line Voltage (Vac)	Polar	Frequency (MHz)	Limit (MHz)	Detector
96(80%)	Horizontal	2469.39	Lower: 2400MHz Upper: 2500MHz	Pass
	Vertical	2469.10		Pass
108(90%)	Horizontal	2468.81		Pass
	Vertical	2468.81		Pass
120(100%)	Horizontal	2468.23		Pass
	Vertical	2467.95		Pass
132(110%)	Horizontal	2466.21		Pass
	Vertical	2466.50		Pass
150(125%)	Horizontal	2467.95		Pass
	Vertical	2467.37		Pass

Frequency for Normal Voltage Test (Worst case)



Date: 13.MAY.2024 18:18:48

Frequency for Line Voltage Test (Worst case)



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6.5. INPUT POWER MEASUREMENT

TEST PROCEDURE

The input power and current was measured using a power source. A 700ml water load in a beaker was located in the center of the microwave oven and the microwave oven was set to full power.

TEST ENVIRONMENT

Temperature	23.6 °C	Relative Humidity	55.2%
Atmosphere Pressure	101 kPa		

TEST DATE / ENGINEER

Test Date	May 21, 2024	Test By	Karl Wu

TEST RESULTS

Input Voltage (Vac)	Input Current (A)	Power Factor	Measured Input Power (W)	Rated Input Power (W)
120.03	13.556	0.932	1516.68	1450

Note: Based on the measured input power, the EUT was found to be operating within the intended specifications.

6.6. RF OUTPUT POWER MEASUREMENT

TEST PROCEDURE

The caloric method was used to determine full output power. The initial temp. of a 1000ml water load was measured for ovens rated at 1000 watts or less power output. The EUT at room temperature, a 1000mL water load was placed in the center of the microwave oven. For ovens more than 1000 watts output rating, additional beakers are used if necessary.

A 1000ml water load in a beaker was located in the center of the oven and the Household Microwave Combi Oven was set to maximum power and operation 120 seconds. Then the temperature of the water re-measured.

According to the calculated formula:
Output Power: ((4.2 Joules/Cal)*(Volume in ml)*(Temp. Rise))/(Time in seconds)

TEST ENVIRONMENT

Temperature	20.7 °C	Relative Humidity	56.9%
Atmosphere Pressure	101 kPa		

TEST DATE / ENGINEER

Test Date	May 10, 2024	Test By	Wite Chen

TEST RESULTS

Start Temp. of Water (℃)	Final Temp. of Water (℃)	Temp. Rise (℃)	Heating time (s)	Volume of Water (ml)	Power output (watts)
25.8	43.3	17.5	120	1000	612.5

Note: This formula refers to the caloric method.

Remark: For photographs of EUT and test configuration, please refer to appendix in separate documents.

END OF REPORT