FCC EMC Test Report

FCC ID: ACLAPBT31

Project No.	:	2412H021
Equipment	:	Microwave Oven
Brand Name	:	Panasonic
Test Model	:	NN-SN69QS
Series Model	:	NN-SN68QS, NN-SN68QB, NN-SN67QS, NN-SN65QS, NN-SN65QW
Applicant	:	Panasonic Corporation of North America Two Riverfront Plaza, Newark New Jersey USA
Address	:	Two Riverfront Plaza, Newark New Jersey USA
Manufacturer	:	Panasonic Kitchen Appliances Technology (Jiaxing) Co.,Ltd
Address	:	No.369 Chenggong Road, Economic and Technological Development Zone, Jiaxing, Zhejiang Province, China
Factory	:	Panasonic Kitchen Appliances Technology (Jiaxing) Co.,Ltd
Address	:	No.369 Chenggong Road, Economic and Technological Development Zone, Jiaxing, Zhejiang Province, China
Date of Receipt	:	Dec. 10, 2024
Date of Test	:	Dec. 12, 2024 ~ Dec. 24, 2024
Issued Date	:	Jan. 08, 2025
Report Version	:	R01
Test Sample	:	Engineering Sample No.: SH20241210150-1
Standard(s)	:	FCC Part 18 (using FCC MP-5:1986)

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.(Shanghai)

Devo.wang

Prepared by : Devo Wang

Simon.Jia

Approved by : Simon Jia

Add: No. 29, Jintang Road, Tangzhen Industry Park, Pudong New Area, Shanghai 201210, China.
Tel: +86-021-61765666 Web: www.newbtl.com Service mail: btl_qa@newbtl.com

Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** assumes no responsibility for the data provided by the customer, any statements, inferences or generalizations drawn by the customer or others from the reports issued by **BTL**. The report must not be used by the client to claim product certification, approval, or endorsement by A2LA or any agency of the U.S. Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

BTL's laboratory quality assurance procedures are in compliance with the ISO/IEC 17025: 2017 requirements, and accredited by the conformity assessment authorities listed in this test report.

BTL is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

Table of Contents Page

REPORT ISSUED HISTORY 4

1. SUMMARY OF TEST RESULTS 5

1.1 TEST FACILITY 6

1.2 MEASUREMENT UNCERTAINTY 6

1.3 TEST ENVIRONMENT CONDITIONS 6

2. GENERAL INFORMATION 7

2.1 GENERAL DESCRIPTION OF EUT 7

2.2 DESCRIPTION OF TEST MODES 8

2.3 EUT OPERATING CONDITIONS 9

2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED 9

2.5 DESCRIPTION OF SUPPORT UNITS 9

3. EMC EMISSION TEST 10

3.1 AC POWER LINE CONDUCTED EMISSIONS TEST 10

3.1.1 LIMIT 10

3.1.2 MEASUREMENT INSTRUMENTS LIST 10

3.1.3 TEST PROCEDURE 11

3.1.4 DEVIATION FROM TEST STANDARD 11

3.1.5 TEST SETUP 11

3.1.6 TEST RESULTS 12

3.2 RADIATION HAZARD MEASUREMENT 15

3.2.1 MEASUREMENT INSTRUMENTS LIST 15

3.2.2 RADIATION HAZARD MEASUREMENT FOR MICROWAVE 15

3.2.3 INPUT POWER 16

3.2.4 LOAD FOR MICROWAVE OVENS 16

3.2.5 POWER OUTPUT MEASUREMENT FOR MICROWAVE OVENS 17

3.2.6 OPERATING FREQUENCY MEASUREMENT 18

3.3 RADIATED EMISSIONS 20

3.3.1 LIMITS 20

3.3.2 MEASUREMENT INSTRUMENTS LIST 22

3.3.3 TEST PROCEDURE 23

3.3.4 DEVIATION FROM TEST STANDARD 23

3.3.5 TEST SETUP 24

3.3.6 TEST RESULTS-30 MHZ to 1 GHZ 25

3.3.7 TEST RESULTS- Above 1 GHZ 28

4. EUT TEST PHOTO 35

APPENDIX 39

DECLARATION LETTER 60

REPORT ISSUED HISTORY

Report No.	Version	Description	Issued Date	Note
BTL-FCCE-1-2412H021	R00	Original Report.	Jan. 03, 2025	Invalid
BTL-FCCE-1-2412H021	R01	1. Modified output power rating from 1200W to 1250W in Section 2.1. 2. Updated the test result of radiated emissions in Section 3.3.	Jan. 08, 2025	Valid

1. SUMMARY OF TEST RESULTS

Emission		
Ref Standard(s)	Test Item	Result
FCC/OST MP-5 (1986)	AC Power Line Conducted Emissions	PASS
	Radiation hazard measurement	PASS
	Radiated emission between 30MHz and 1000MHz	PASS
	Radiated emission Above 1 GHz	PASS

NOTE:
(1) “N/A” denotes test is not applicable to this device.

1.1 TEST FACILITY

The test facilities used to collect the test data in this report at the location of No. 29, Jintang Road, Tangzhen Industry Park, Pudong New Area, Shanghai 201210, China.

BTL's Test Firm Registration Number for FCC: 964234

BTL's Designation Number for FCC: CN1374

1.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))
The BTL measurement uncertainty as below table:

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U,(dB)
SH-C01	CISPR 16-4-2	150 kHz ~ 30 MHz	2.02

B. Radiation hazard measurement:

Test Site	Method	Measurement Frequency Range	U,(dB)
SH-CB01 (3m)	CISPR 16-4-2	1GHz ~ 6GHz	4.70

C. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
SH-CB08 (10m)	CISPR 16-4-2	30MHz ~ 200MHz	V	4.28
		30MHz ~ 200MHz	H	4.12
		200MHz ~ 1,000MHz	V	3.74
		200MHz ~ 1,000MHz	H	4.00

Test Site	Method	Measurement Frequency Range	U,(dB)
SH-CB01 (3m)	CISPR 16-4-2	1GHz ~ 6GHz	4.70
		6GHz ~ 18GHz	4.42
		18 ~ 26.5 GHz	3.22

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Tested By
AC Power Line Conducted Emissions	19℃	44%	Landon Yang
Radiation hazard measurement	17°C~19℃	38%~50%	Toby Xiong Devo Wang
Radiated emission between 30MHz and 1000MHz	25℃	60%	Don Tang
Radiated emission Above 1 GHz	25℃	48%	Ranlon Shao

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Microwave Oven
Brand Name	Panasonic
Test Model	NN-SN69QS
Series Model	NN-SN68QS, NN-SN68QB, NN-SN67QS, NN-SN65QS, NN-SN65QW
Model Difference(s)	Differences in appearance only
Rate Voltage	AC 120V
Power Rating	Input: 1480W,12.4A (Microwave) Output: 1250W
Connecting I/O Port(s)	1*AC Port
Highest Internal Frequency(Fx)	2450 MHz

Note:

1. For a more detailed features description, please refer to the manufacturer’s specifications or the user's manual.

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Max Power

Radiation hazard measurement	
Final Test Mode	Description
Mode 1	Max Power

AC Power Line Conducted Emissions test	
Final Test Mode	Description
Mode 1	Max Power

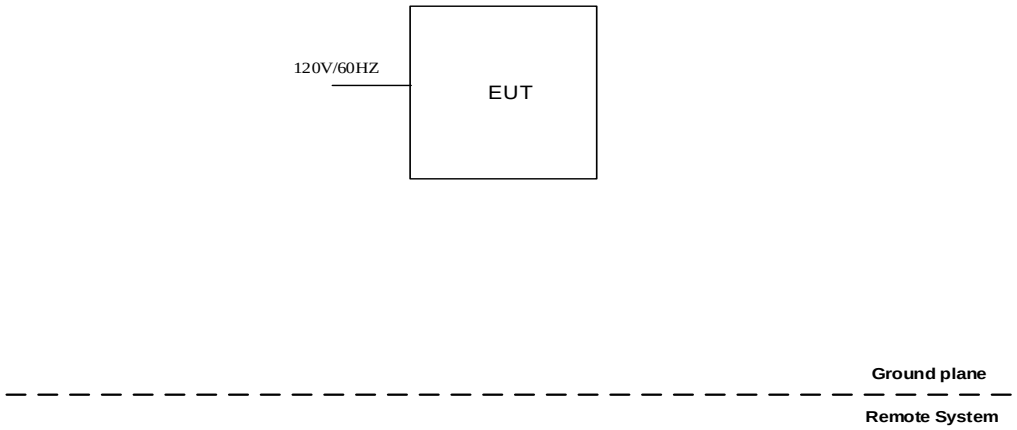
Radiated Emission between 30MHz and 1000MHz	
Final Test Mode	Description
Mode 1	Max Power

Radiated Emission Above 1 GHz	
Final Test Mode	Description
Mode 1	Max Power

2.3 EUT OPERATING CONDITIONS

Used in EUT classical mode during radiation and conduction disturbance measurements.
1. The microwave oven runs at maximum power.

2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.5 DESCRIPTION OF SUPPORT UNITS

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	Cable Type	Shielded Type	Ferrite Core	Length
1	AC Cable	NO	NO	1.1m

3. EMC EMISSION TEST

3.1 AC POWER LINE CONDUCTED EMISSIONS TEST

3.1.1 LIMIT

Frequency of Emission (MHz)	(dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5.0	56.00	46.00
5.0 - 30.0	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

(3) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)
Margin Level = Measurement Value - Limit Value

3.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TWO-LINE V-NETWORK	R&S	ENV216	101340	Jul. 12, 2025
2	Test Cable	emci	EMCRG400-BM-NM-10000	N/A	Mar. 09, 2025
3	EMI Test Receiver	R&S	ESR3	100082	Dec. 22, 2025
4	50Ω coaxial switch	Anritsu	MP59B	6201750902	Feb. 2, 2025
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

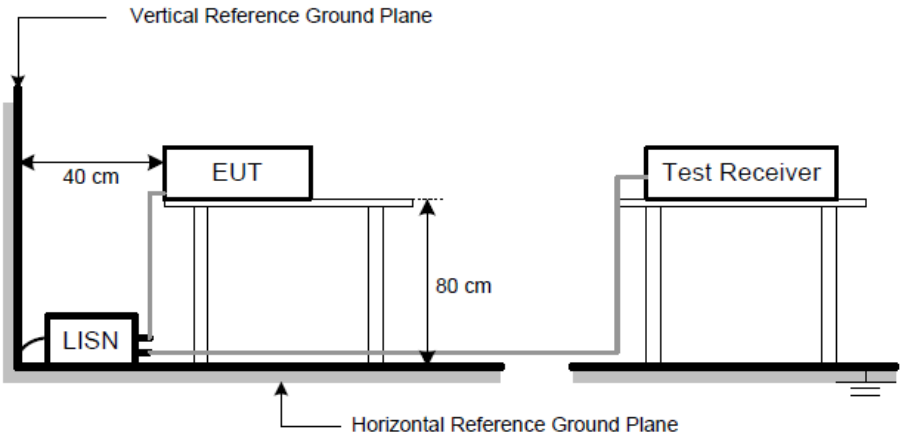
3.1.3 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line 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.
b. 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.
c. 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.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.
f. Measuring frequency range from 150KHz to 30MHz,IF B/W:9 kHz

3.1.4 DEVIATION FROM TEST STANDARD

No deviation

3.1.5 TEST SETUP



3.1.6 TEST RESULTS

Remark

(1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, Swp. Time =0.3 sec./MHz.

(2) All readings are QP Mode value unless otherwise stated AVG in column of『Note』. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a " * " marked in AVG Mode column of Interference Voltage Measured.

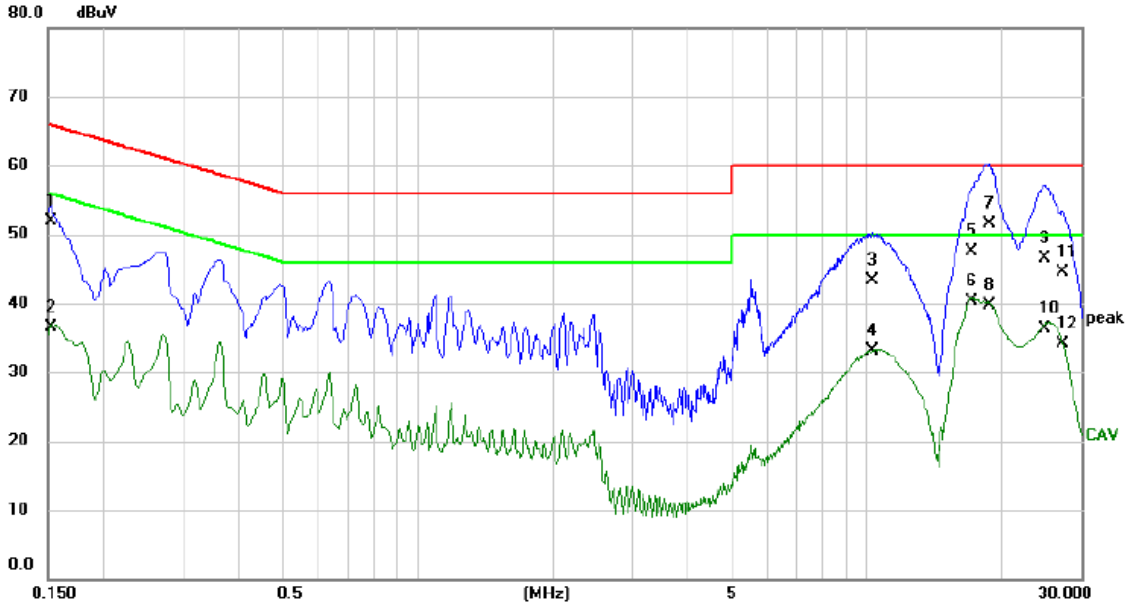
Test Result Summary:

Accordings to the recorded date in following table, the EUT complied with the FCC PART18, the worst Over limit reading as below:

Mode1：Max Power

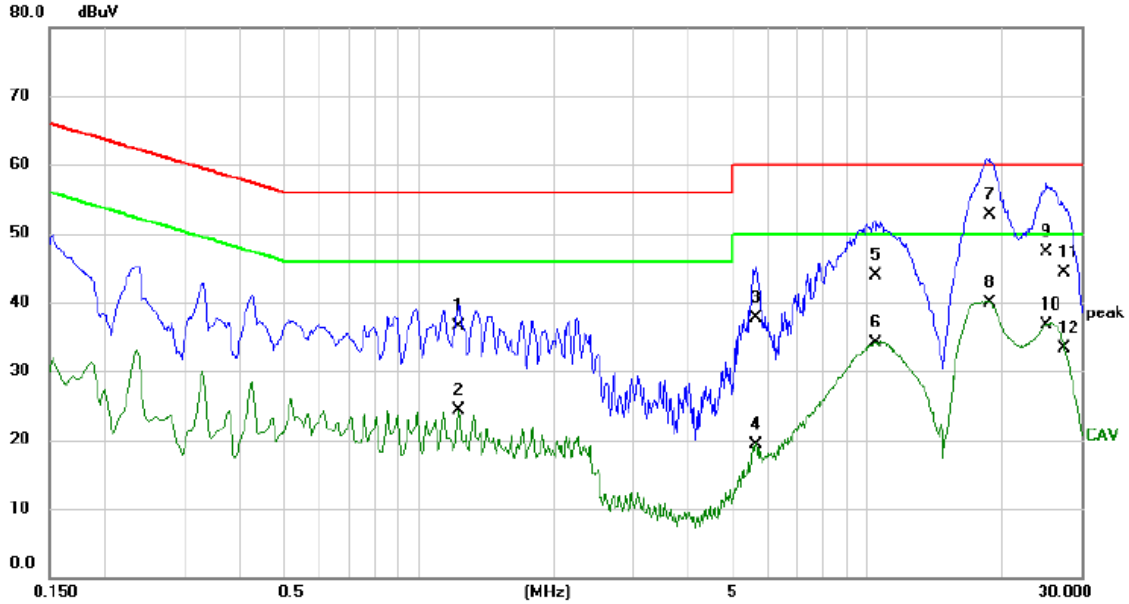
-8.42 dB at 18.7778 MHz in the Line conducted mode
-7.35 dB at 18.78 MHz in the Neutral conducted mode

Test Voltage	AC 120V/60Hz	Phase	Line
Test Mode	Mode 1		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1522	52.00	-0.04	51.96	65.88	-13.92	QP	
2		0.1522	36.60	-0.04	36.56	55.88	-19.32	AVG	
3		10.2705	43.10	0.26	43.36	60.00	-16.64	QP	
4		10.2705	32.90	0.26	33.16	50.00	-16.84	AVG	
5		17.0482	47.30	0.21	47.51	60.00	-12.49	QP	
6		17.0482	40.10	0.21	40.31	50.00	-9.69	AVG	
7	*	18.7778	51.40	0.18	51.58	60.00	-8.42	QP	
8		18.7778	39.50	0.18	39.68	50.00	-10.32	AVG	
9		24.9135	46.20	0.34	46.54	60.00	-13.46	QP	
10		24.9135	35.90	0.34	36.24	50.00	-13.76	AVG	
11		27.2715	44.00	0.43	44.43	60.00	-15.57	QP	
12		27.2715	33.60	0.43	34.03	50.00	-15.97	AVG	

Test Voltage	AC 120V/60Hz	Phase	Neutral
Test Mode	Mode 1		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over limit		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		1.2300	36.40	0.15	36.55	56.00	-19.45	QP	
2		1.2300	24.20	0.15	24.35	46.00	-21.65	AVG	
3		5.6535	37.40	0.26	37.66	60.00	-22.34	QP	
4		5.6535	19.10	0.26	19.36	50.00	-30.64	AVG	
5		10.4505	43.70	0.25	43.95	60.00	-16.05	QP	
6		10.4505	33.80	0.25	34.05	50.00	-15.95	AVG	
7	*	18.7800	52.50	0.15	52.65	60.00	-7.35	QP	
8		18.7800	39.70	0.15	39.85	50.00	-10.15	AVG	
9		25.1115	47.10	0.30	47.40	60.00	-12.60	QP	
10		25.1115	36.40	0.30	36.70	50.00	-13.30	AVG	
11		27.5616	43.90	0.40	44.30	60.00	-15.70	QP	
12		27.5616	33.00	0.40	33.40	50.00	-16.60	AVG	

3.2 RADIATION HAZARD MEASUREMENT

3.2.1 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Double-Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	206960	Mar. 12, 2025
2	Test Cable	RW	RWLP50-4.0A-SMSM-7M	20200824-001	Jul. 27, 2025
3	Test Cable	emci	EMC-104HS-SM-SM-3500	240626	Jul. 27, 2025
4	MXE EMI Receiver	Keysight	N9038A	MY57290116	Jul. 12, 2025
5	Dynamometer	HIOKI	PW3198	160527667	Mar. 02, 2025
6	Thermometer	SS	TP101	N/A	Jan. 03, 2025
7	Microwave leakage tester	ETS	HI-1710A	S81-042-DA	Jan. 01, 2025

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

3.2.2 RADIATION HAZARD MEASUREMENT FOR MICROWAVE

Test Procedure	The EUT was set up according to the FCC MP-5 and FCC 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 275ml water load in a beaker was located in the center of the oven and the Microwave oven was set to maximum power. While the oven operating, the microwave meter will check the leakage and then record the maximum leakage
Results	There was no microwave leakage exceeding a power level of 0.03 mW/cm² observed at any point 5cm or more from the external surface of the oven. A maximum of 1.0 mW/cm2 is allowed in accordance with the applicable FCC standards. Hence, microwave leakage in the as-received condition with the oven door closed was below the maximum allowed.

3.2.3 INPUT POWER

Input power and current was measured. A 1250mL water load was placed in the center of the oven and the oven was operated at maximum output power. A 1250mL water load was chosen for its compatibility with the procedure commonly used by manufacturers to determine their input ratings.

Input Voltage (V/Hz)	Input Current (A)	Measured Input Power (W)	Rated Input Power (W)	Operation Mode
120V / 60Hz	12.4	1488	1480	Microwave

* Based on the measured input power, the EUT was found to operate within the expected specifications.

3.2.4 LOAD FOR MICROWAVE OVENS

For all measurements, the energy developed by the oven was absorbed by a dummy load consisting of a quantity of tap water in a beaker. If the oven was provided with a shelf or other utensil support, this support was in its initial normal position. For ovens rated at 1000 watts or less power output, the beaker contained quantities of water as listed in the following subparagraphs. For ovens rated at more than 1000 watts output, each quantity was increased by 50% for each 500watts or fraction thereof in excess of 1000 watts. Additional beakers were 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.

The RF output power is rated at 1250 watts

According to the above content and product power, the water load is 1250 milliliters.

Load used for power output measurement = 1250 milliliters of water

Load used for frequency measurement = 1250 milliliters of water

Load used for harmonic measurement =875 & 375 milliliters of water

Load used for other measurement = 875 milliliters of water

3.2.5 POWER OUTPUT MEASUREMENT FOR MICROWAVE OVENS

The power output is measured by the calorimetric method, using the load specified in FCC MP-5 Section 4.1, computing the power output from the observed temperature rise of the load over a period of time. The measured value of power output is used to determine the allowable out-of-band field strength under the terms specified in Section 18.305 of the Rules.

A cylindrical container of borosilicate glass is used for the test. It has a maximum thickness of 3 mm, an external diameter of approximately 190 mm and a height of approximately 90 mm. The mass of the container is determined.

At the beginning of the test, the ambient temperature is recorded,
The temperature of the water is measured immediately before pouring into the container, and the initial temperature of the test water is 10ºC±1ºC.

Add 1250g±5g of water to the container to get its actual mass. The container was then immediately placed in the center of the microwave heating area, heated at maximum power until the water temperature reached 20ºC±2ºC, and the heating time was recorded.

m_w (g)	m_c (g)	T_0 (ºC)	T_1 (ºC)	T_2 (ºC)	t (s)
1250	450	25	10.3	20.8	45

RF Output Power = (4.187*1250*(20.8-10.3) + 0.55*450*(20.8-25))/45= 1198.1 Watts

P is the microwave power output, in watts;

m_w is the mass of the water, in grams;

m_c is the mass of the container, in grams;

T_0 is the ambient temperature, in degrees Celsius;

T_1 is the initial temperature of the water, in degrees Celsius;

T_2 is the final temperature of the water, in degrees Celsius;

t is the heating time, in seconds, excluding the magnetron filament heating-up time.

The measured output power was found to exceed 500 watts. Therefore, in accordance with Section 18.305 of Subpart-B, the measured out-of-band emissions were compared with the limit calculated as following:

Field Strength = 25*SQRT (Power Output/500)
Field Strength = 25*SQRT (1198.1 /500)
Field Strength = 38.7 uV/m

Where: LFS is the maximum allowable field strength for out-of-band emissions in μV/meter at a 300-meter measurement distance. Power Output is the measured output power in watts.

LFS μV/m@300m	dBμV/m@300m	dBμV/m@3m	dBμV/m@10m
38.7	31.75	71.75	61.30

Note: Limit (dBμV/m@3) =Limit (dBμV/m@300m) + 40(dB)

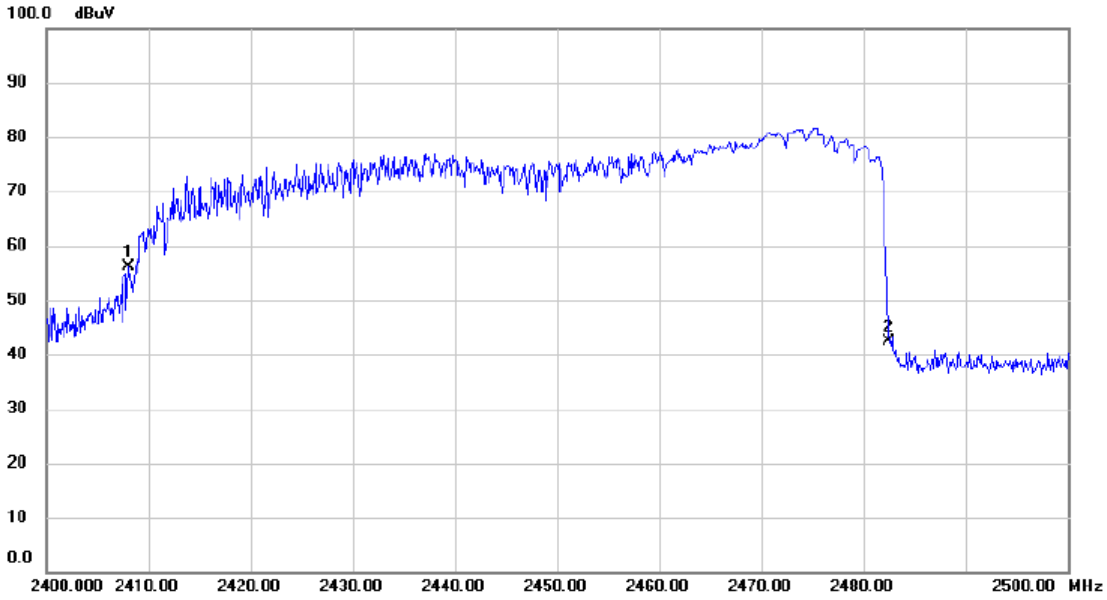
3.2.6 OPERATING FREQUENCY MEASUREMENT

The Variation of frequency with time

The operating frequency was measured using a spectrum analyzer,starting with EUT at room temperature, a 1250ml water load was located in the center of the oven, set a spectrum analyzer with antenna at 3 meters distance from the oven and 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.

The results of this test are as follows:

Low Frequency (MHz)	High Frequency (MHz)
2408	2482.533



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	2408.000	49.94	6.11	56.05			peak	
2		2482.533	36.02	6.28	42.30			peak	

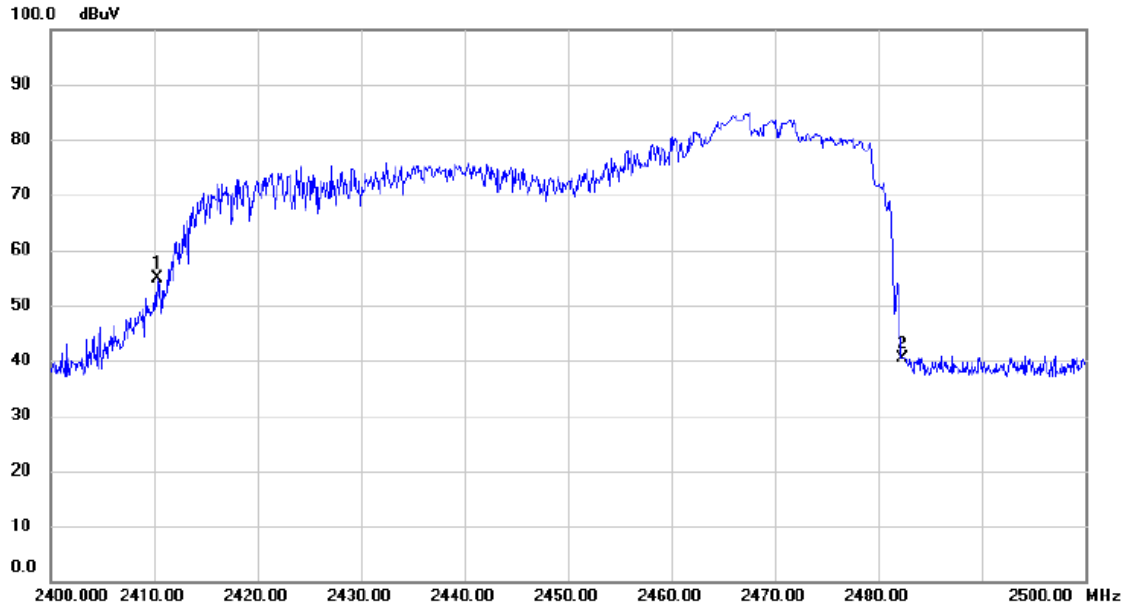
The variation of frequency with Line Voltage

The operating frequency was measured using a spectrum analyzer. The EUT was operated/ warmed by at least 10 minutes of use with a 1250ml water load at room temperature at the beginning of the test. Then th-e operating frequency was monitored as the input voltage was varied between 80 and 125 percent of the no-minal rating.

The results of this test are as follows:

Line voltage varied from 96 V_{AC} to 150 V_{AC}.

Low Frequency (MHz)	High Frequency (MHz)
2410.3	2482.267



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	2410.300	48.64	6.12	54.76			peak	
2		2482.267	34.10	6.28	40.38			peak	

3.3 RADIATED EMISSIONS

3.3.1 LIMITS

Operating frequency	Field Strength (uV/m)	Measurement Distance (meters)	F.S Limitation at 3or10m Distance
			(dBuV/m)
Any ISM	25*SQRT (Power Output/500)	300	71.75 at 3m
			61.3 at 10m

NOTE:

(1) Operation of ISM equipment within the following safety, search and rescue frequency bands is prohibited: 490–510 kHz, 2170–2194 kHz, 8354–8374 kHz, 121.4–121.6 MHz, 156.7–156.9 MHz, and 242.8–243.2 MHz.

(2) Emission level (dBuV/m) = 20log Emission level (uV/m);
3or10m Emission level (dBuV/m) = 300m Emission level +20log(300m/3or10m).

(3)The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
Margin Level = Measurement Value - Limit Value

Required highest frequency for radiated measurement

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.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 25 GHz.
During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector Type
30MHz-1000 MHz	120khz	300khz	120khz	QP
Above 1 GHz	1MHz	3MHz	/	Peak
	1MHz	10Hz	1MHz	AVG

3.3.2 MEASUREMENT INSTRUMENTS LIST

Radiated emission up to 1GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	787	Mar. 12, 2025
2	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	788	Mar. 12, 2025
3	Pre-Amplifier	emci	EMC9135	980412	Feb. 2, 2025
4	Pre-Amplifier	emci	EMC9135	980413	Feb. 2, 2025
5	EXA Spectrum Analyzer	Keysight	N9010A	MY56480561	Feb. 2, 2025
6	MXE EMI Receiver	Keysight	N9038A	MY57150106	Feb. 2, 2025
7	Test Cable	RW	KMR400-NMNM-6M	241030 001	Nov. 01, 2025
8	Test Cable	RW	LMR400-NMNM-10M	241030 001	Nov. 01, 2025
9	Test Cable	emci	EMC104-SM-NM-2500	170645	Nov. 01, 2025
10	Test Cable	emci	EMC104HS-SM-SM-800	240622	Nov. 01, 2025
11	Test Cable	emci	EMCCFD400-NM-NM-6000	170639	Nov. 01, 2025
12	Test Cable	emci	DLZJ-NM-NM-HA800-6M-6G	GD24022121	Nov. 01, 2025
13	Test Cable	emci	EMC104-SM-NM-2500	170644	Nov. 01, 2025
14	Test Cable	emci	EMC104HS-SM-SM-800	240623	Nov. 01, 2025
15	Measurement Software	Farad	EZ-EMC Ver.BTL-2ANT-1	N/A	N/A

Radiated emission above 1GHz					
Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Double-Ridged Waveguide Horn Antenna	ETS-Lindgren	3117	206960	Mar. 12, 2025
2	Pre-Amplifier	emci	EMC012645B	980264	Jul. 12, 2025
3	MXE EMI Receiver	Keysight	N9038A	MY57290116	Jul. 12, 2025
4	Test Cable	RW	RWLP50-4.0A-SMSM-7M	20200824-001	Jul. 27, 2025
5	Test Cable	emci	EMC-104HS-SM-SM-3500	240626	Jul. 27, 2025
6	Test Cable	emci	EMC-104HS-SM-SM-1000	240625	Jul. 27, 2025
7	Measurement Software	Farad	EZ-EMC Ver.NB-03A1	N/A	N/A
8	Antenna	Schwarzbeck	BBHA9170	9170-651	Mar. 15, 2025
9	Pre-Amplifier	EMC INSTRUMENT	EMC184045B	980265	Feb. 2, 2025
10	EXA Spectrum Analyzer	Keysight	N9010A	MY56480559	Feb. 2, 2025
11	Test Cable	emci	EMC-104HS-SM-SM-1000	240625	Aug. 5, 2025
12	Test Cable	emci	EMC104HS-SM-SM-5000	240627	Aug. 5, 2025
13	2.4G Filter	HJ	2.4GHz	N/A	Feb. 2, 2025

Remark: “N/A” denotes no model name, serial no. or calibration specified.
All calibration period of equipment list is one year.

3.3.3 TEST PROCEDURE

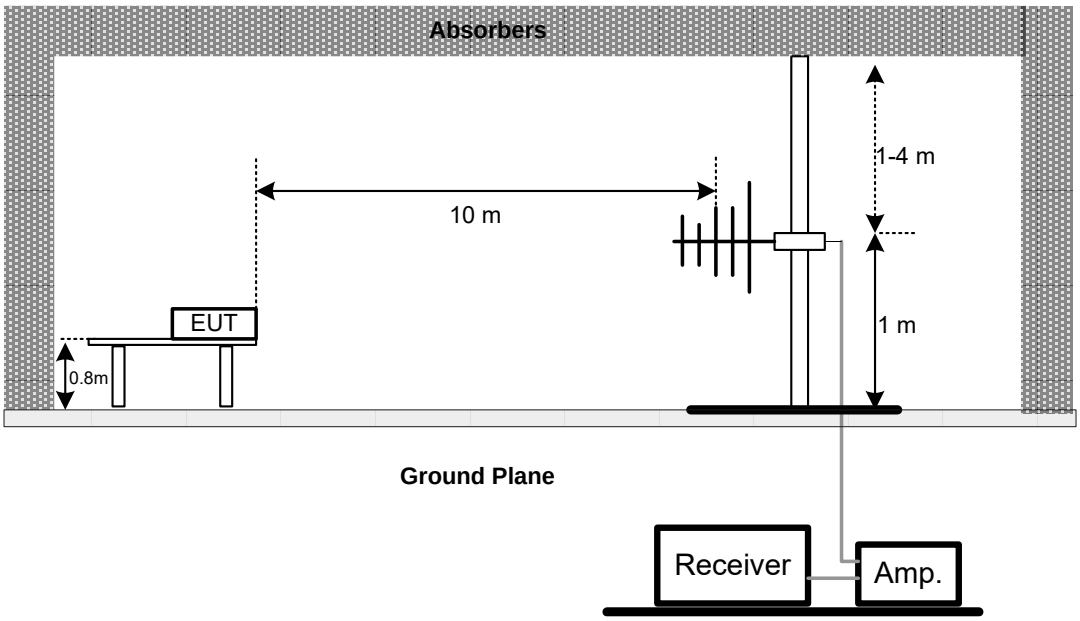
a. The measuring distance of 10 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The initial step in collecting radiated emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
d. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.3.4 DEVIATION FROM TEST STANDARD

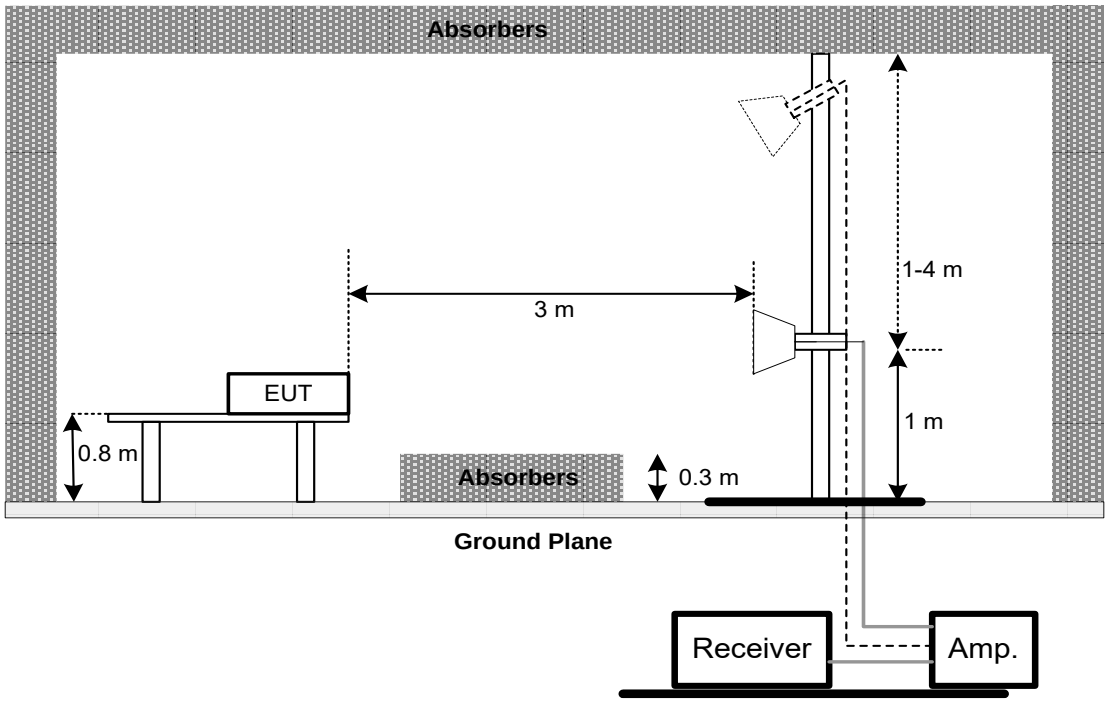
No deviation

3.3.5 TEST SETUP

30 MHz to 1 GHz



Above 1 GHz



3.3.6 TEST RESULTS-30 MHZ to 1 GHZ

Remark:

(1) All readings are Peak unless otherwise stated QP in column of『Note』. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform。

(2) Measuring frequency range from 30 MHz to 1000 MHz

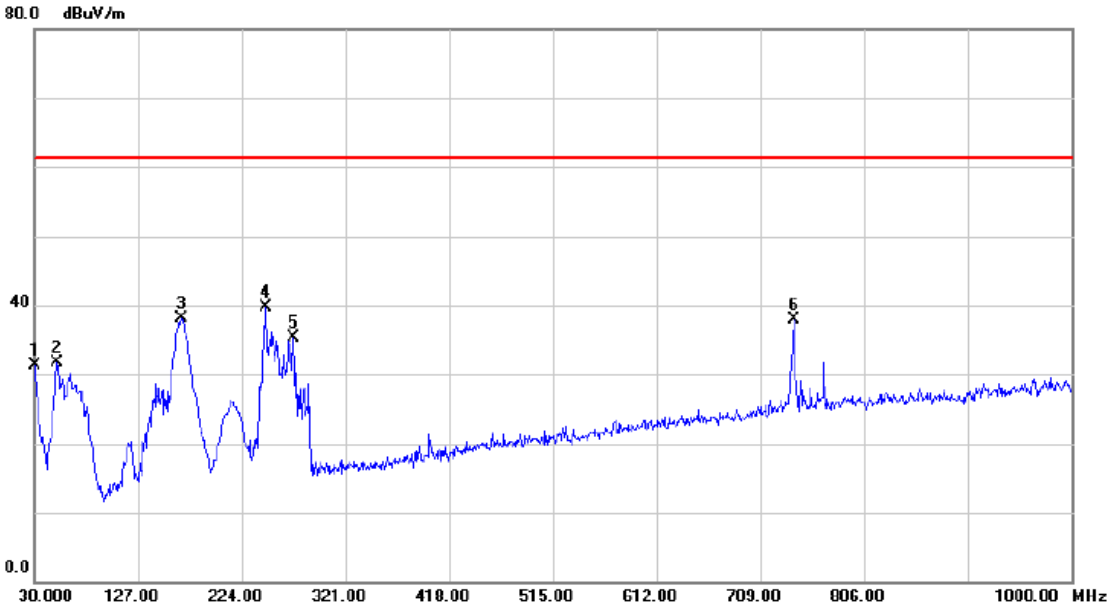
Test Result Summary:

Accordings to the recorded date in following table, the EUT complied with the FCC PART18, the worst over limit reading as below:

Mode1：Max Power

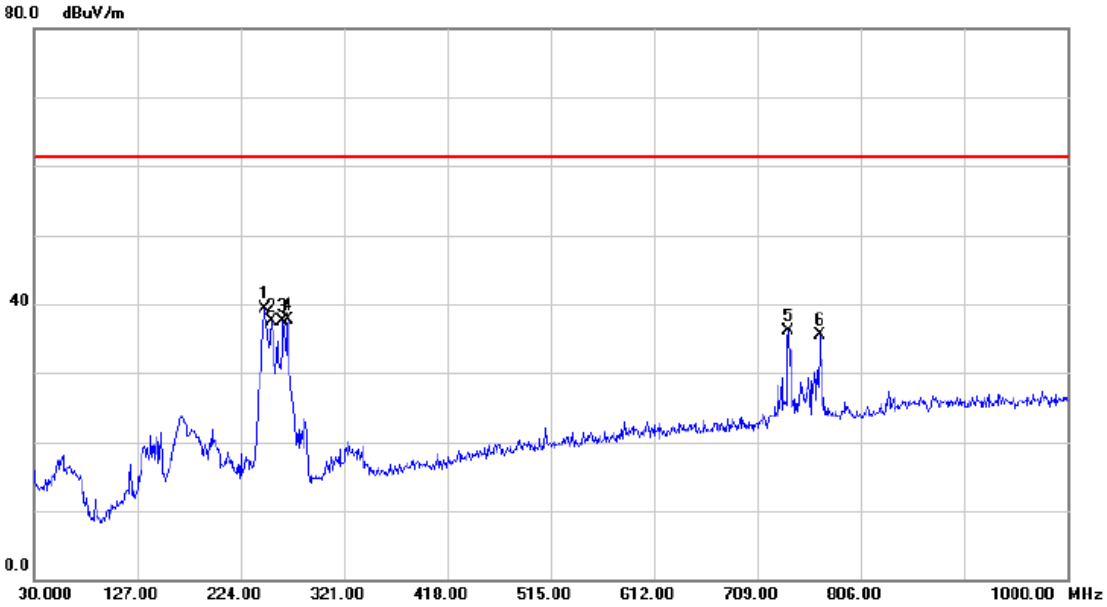
-21.68 dB at 246.31 MHz in the Vertical polarization, 30MHz-1GHz
-21.93 dB at 246.31 MHz in the Horizontal polarization, 30MHz-1GHz

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 1		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		30.0000	50.68	-19.30	31.38	61.30	-29.92	QP	
2		51.3400	48.72	-16.94	31.78	61.30	-29.52	QP	
3		168.2250	54.48	-16.35	38.13	61.30	-23.17	QP	
4	*	246.3100	56.81	-17.19	39.62	61.30	-21.68	QP	
5		272.5000	51.34	-16.07	35.27	61.30	-26.03	QP	
6		740.5250	44.03	-6.11	37.92	61.30	-23.38	QP	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 1		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	246.3100	56.67	-17.30	39.37	61.30	-21.93	QP	
2		253.1000	54.53	-17.09	37.44	61.30	-23.86	QP	
3		263.7700	54.21	-16.75	37.46	61.30	-23.84	QP	
4		268.6200	54.24	-16.51	37.73	61.30	-23.57	QP	
5		738.1000	42.76	-6.71	36.05	61.30	-25.25	QP	
6		768.1700	42.05	-6.51	35.54	61.30	-25.76	QP	

3.3.7 TEST RESULTS- Above 1 GHZ

Remark:

(1) All readings are AVG unless otherwise stated QP in column of『Note』.
(2) Measuring frequency range from Above 1 GHz

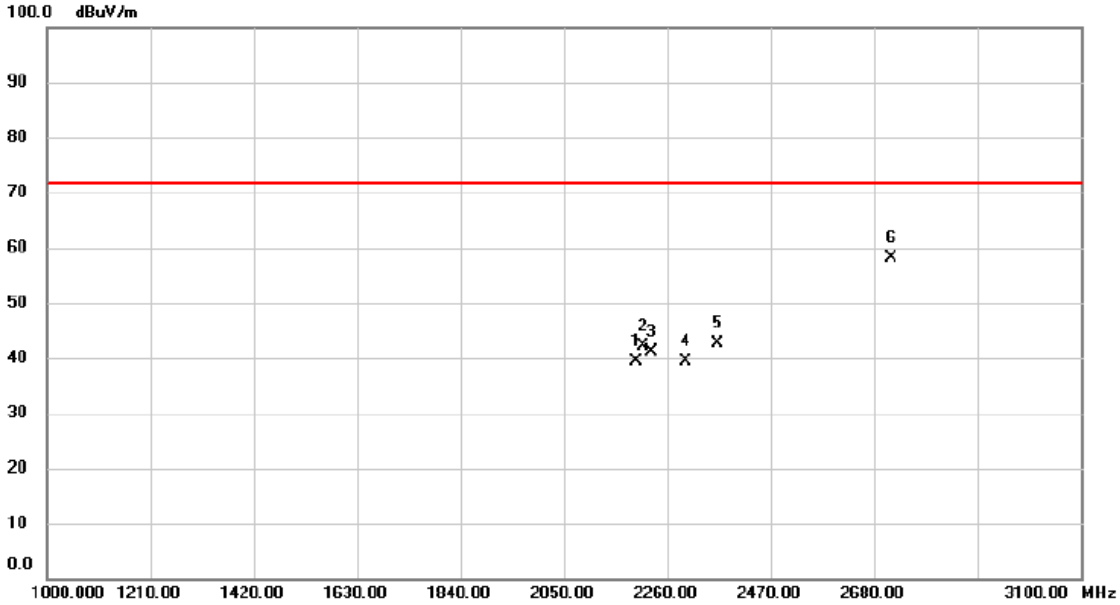
Test Result Summary:

Accordings to the recorded date in following table, the EUT complied with the FCC PART18, the worst over limit reading as below:

Mode1：Max Power

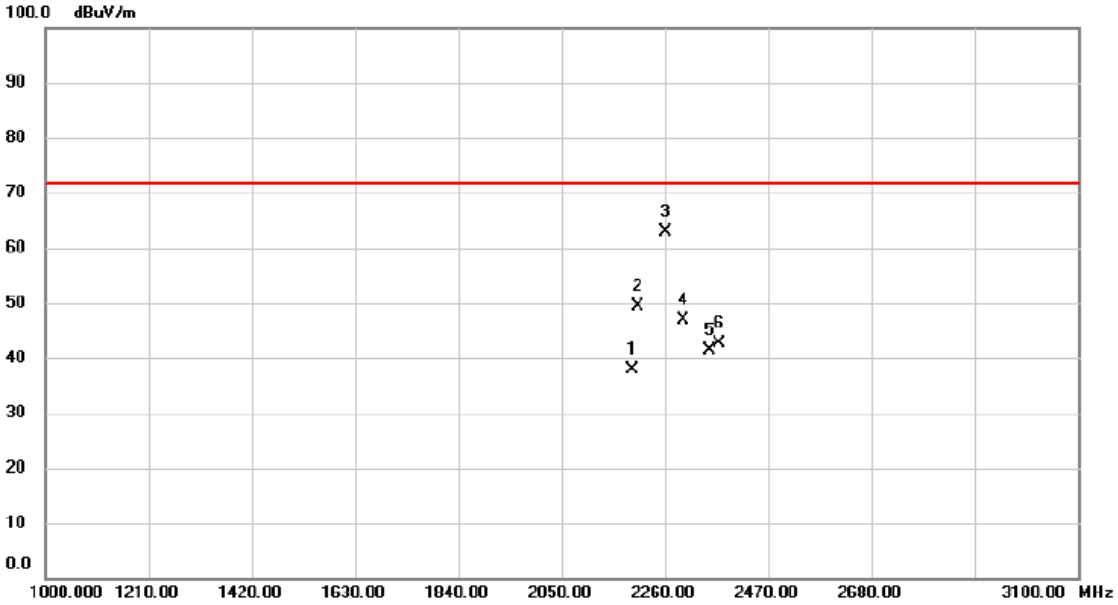
-9.14 dB at 19774.5 MHz in the Vertical polarization, 1-25GHz
-8.29 dB at 24702.5 MHz in the Horizontal polarization, 1-25GHz

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 1		



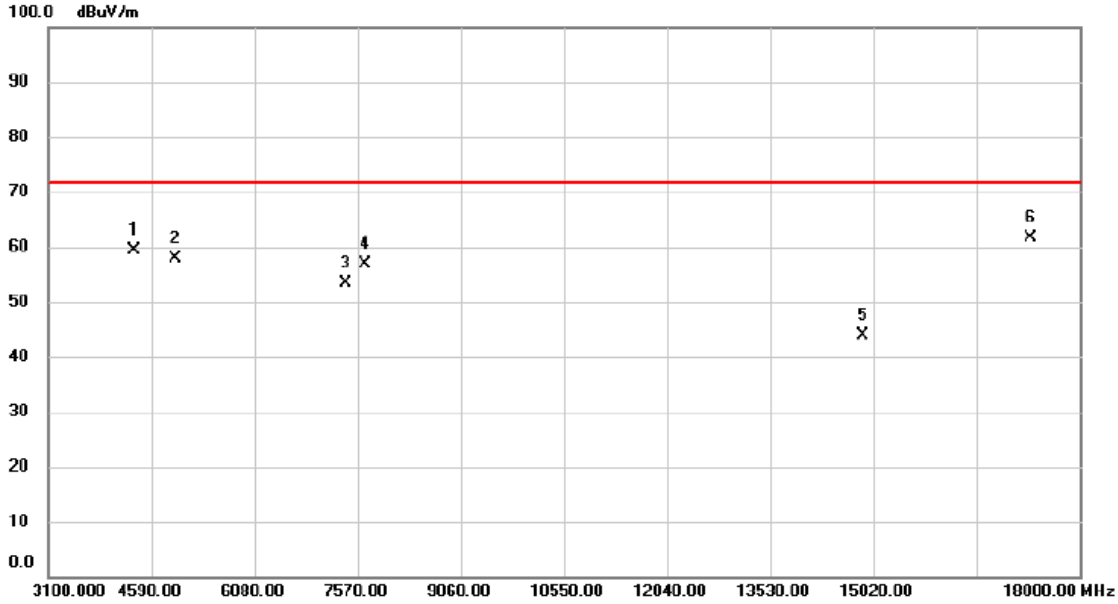
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV		dBuV/m	dBuV/m	dB	Detector	Comment
1		2195.950	53.16	-13.71	39.45	71.75	-32.30	AVG	
2		2211.700	55.85	-13.67	42.18	71.75	-29.57	AVG	
3		2227.450	54.85	-13.63	41.22	71.75	-30.53	AVG	
4		2296.750	52.74	-13.45	39.29	71.75	-32.46	AVG	
5		2362.900	55.99	-13.27	42.72	71.75	-29.03	AVG	
6	*	2715.700	70.74	-12.64	58.10	71.75	-13.65	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 1		



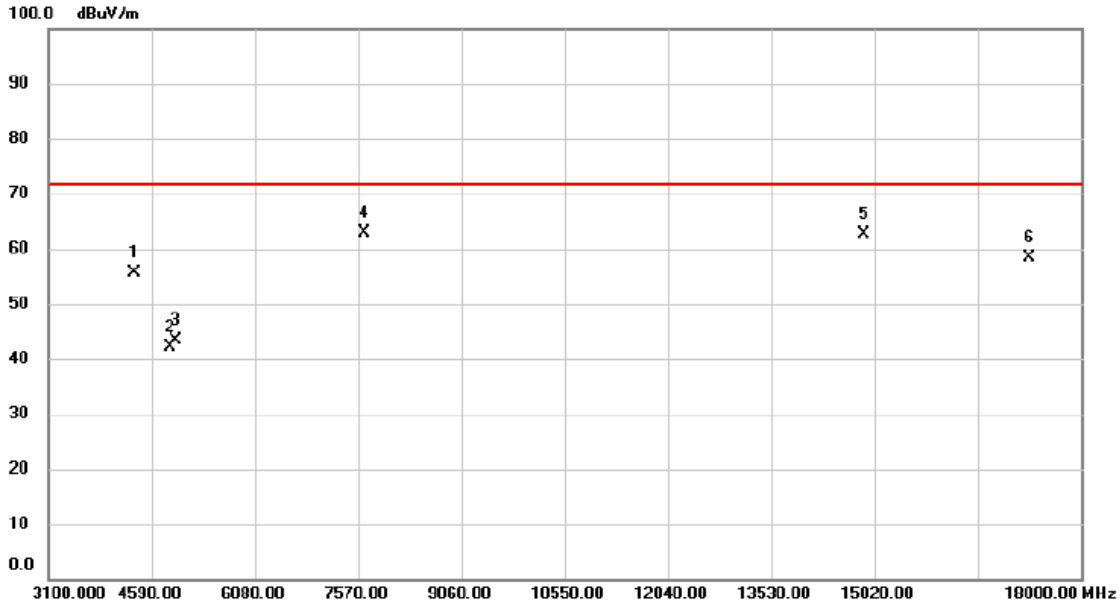
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV		dBuV/m	dBuV/m	dB	Detector	Comment
1		2192.800	51.56	-13.71	37.85	71.75	-33.90	AVG	
2		2206.450	63.02	-13.68	49.34	71.75	-22.41	AVG	
3	*	2262.100	76.47	-13.53	62.94	71.75	-8.81	AVG	
4		2297.800	60.39	-13.45	46.94	71.75	-24.81	AVG	
5		2350.300	54.75	-13.31	41.44	71.75	-30.31	AVG	
6		2371.300	55.98	-13.25	42.73	71.75	-29.02	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 1		



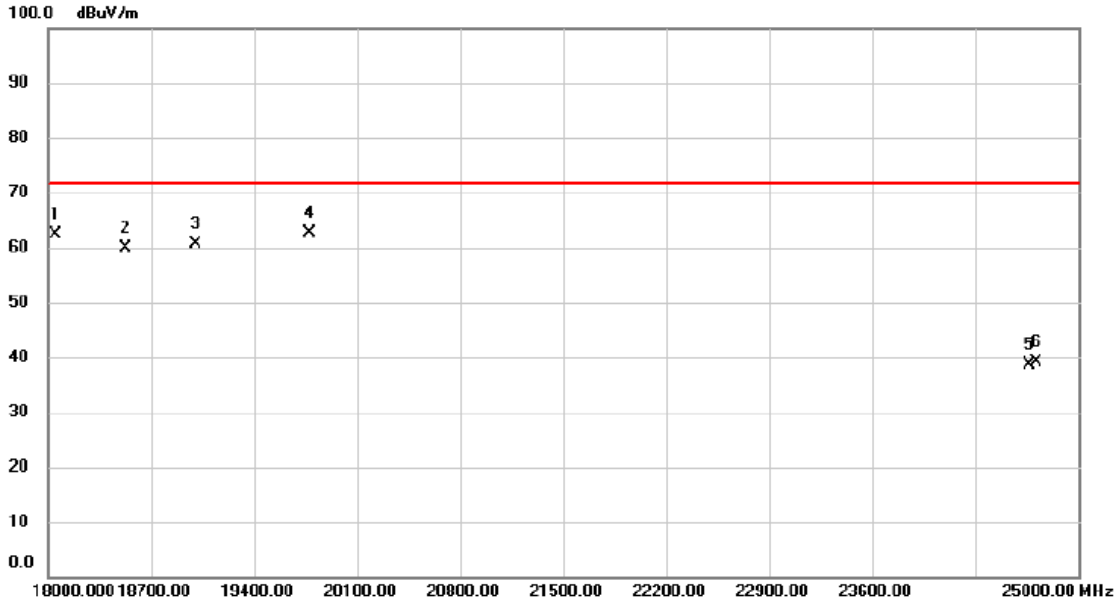
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV		dBuV/m	dBuV/m	dB	Detector	Comment
1		4344.150	68.62	-9.30	59.32	71.75	-12.43	AVG	
2		4940.150	64.98	-7.16	57.82	71.75	-13.93	AVG	
3		7391.200	57.57	-4.31	53.26	71.75	-18.49	AVG	
4		7674.300	59.94	-3.04	56.90	71.75	-14.85	AVG	
5		14878.450	35.89	7.97	43.86	71.75	-27.89	AVG	
6	*	17292.250	51.05	10.62	61.67	71.75	-10.08	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 1		



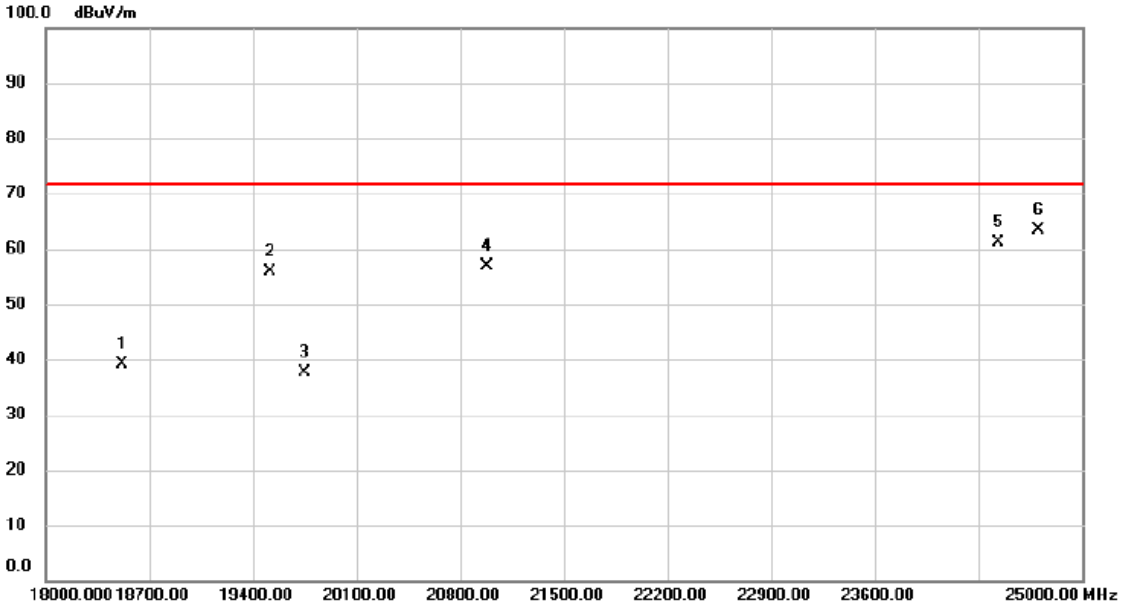
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV		dBuV/m	dBuV/m	dB	Detector	Comment
1		4344.150	65.05	-9.30	55.75	71.75	-16.00	AVG	
2		4865.650	49.66	-7.44	42.22	71.75	-29.53	AVG	
3		4932.700	50.56	-7.20	43.36	71.75	-28.39	AVG	
4	*	7659.400	66.04	-3.17	62.87	71.75	-8.88	AVG	
5		14871.000	54.76	7.94	62.70	71.75	-9.05	AVG	
6		17262.450	47.62	10.66	58.28	71.75	-13.47	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 1		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV		dBuV/m	dBuV/m	dB	Detector	Comment
1		18052.500	72.89	-10.41	62.48	71.75	-9.27	AVG	
2		18528.500	69.39	-9.55	59.84	71.75	-11.91	AVG	
3		19004.500	69.52	-8.97	60.55	71.75	-11.20	AVG	
4	*	19774.500	71.00	-8.39	62.61	71.75	-9.14	AVG	
5		24664.000	42.57	-3.82	38.75	71.75	-33.00	AVG	
6		24716.500	42.74	-3.70	39.04	71.75	-32.71	AVG	

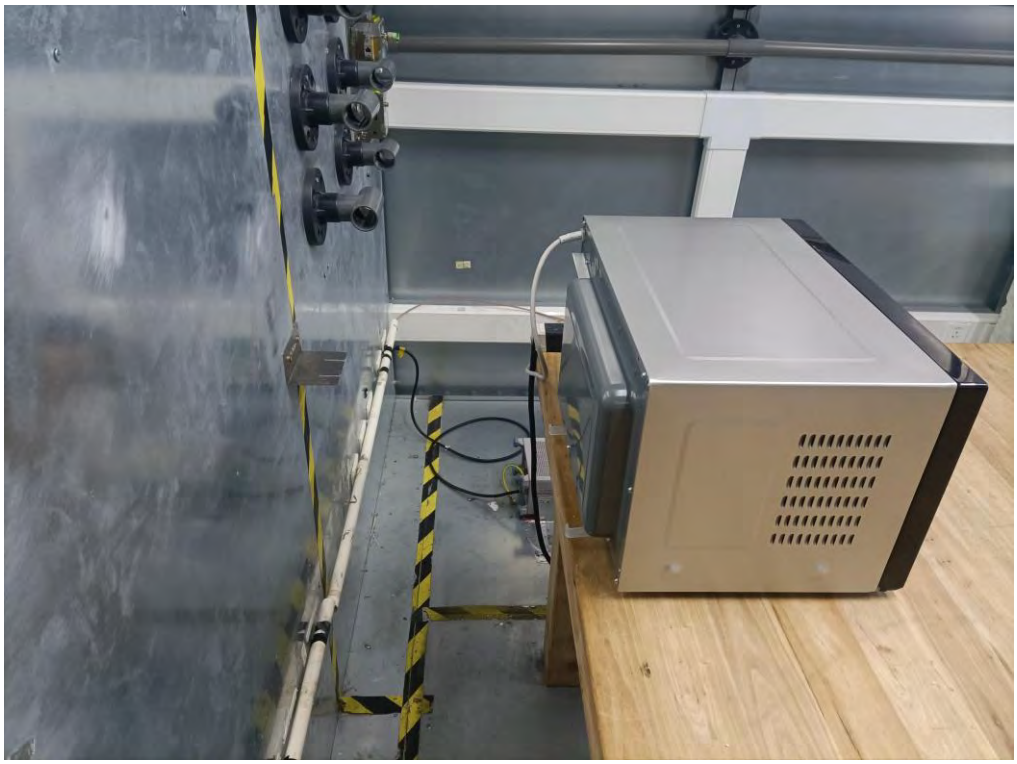
Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 1		



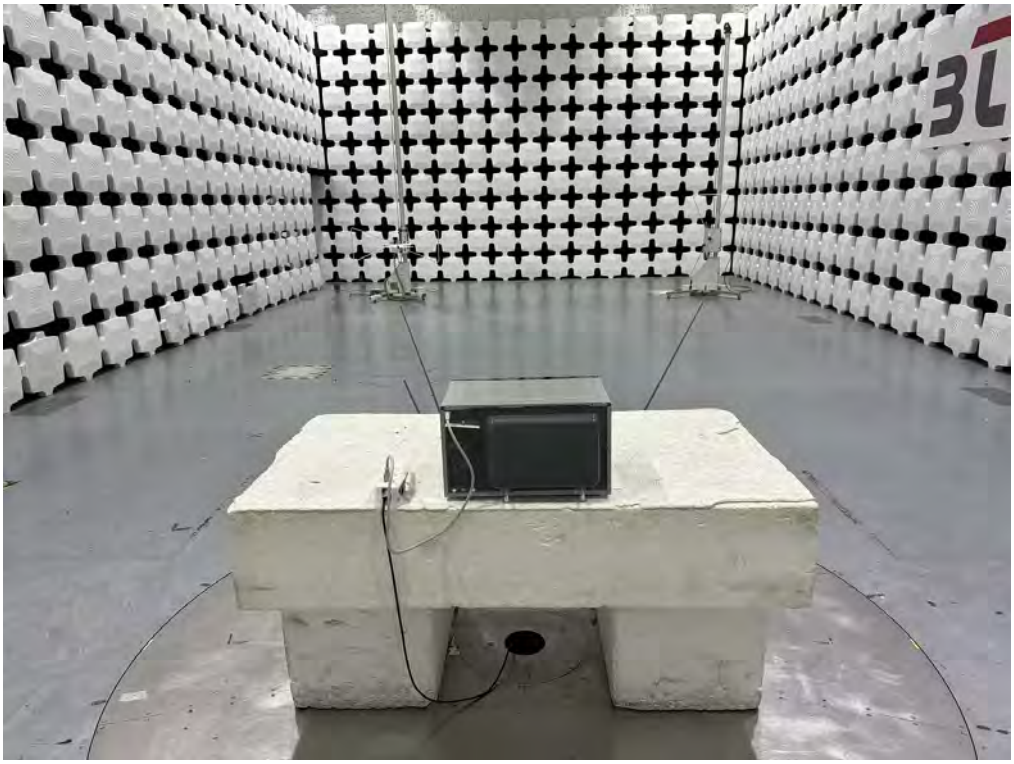
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV		dBuV/m	dBuV/m	dB	Detector	Comment
1		18518.000	48.79	-9.56	39.23	71.75	-32.52	AVG	
2		19512.000	64.56	-8.61	55.95	71.75	-15.80	AVG	
3		19746.500	45.93	-8.41	37.52	71.75	-34.23	AVG	
4		20978.500	64.22	-7.29	56.93	71.75	-14.82	AVG	
5		24436.500	65.51	-4.27	61.24	71.75	-10.51	AVG	
6	*	24702.500	67.20	-3.74	63.46	71.75	-8.29	AVG	

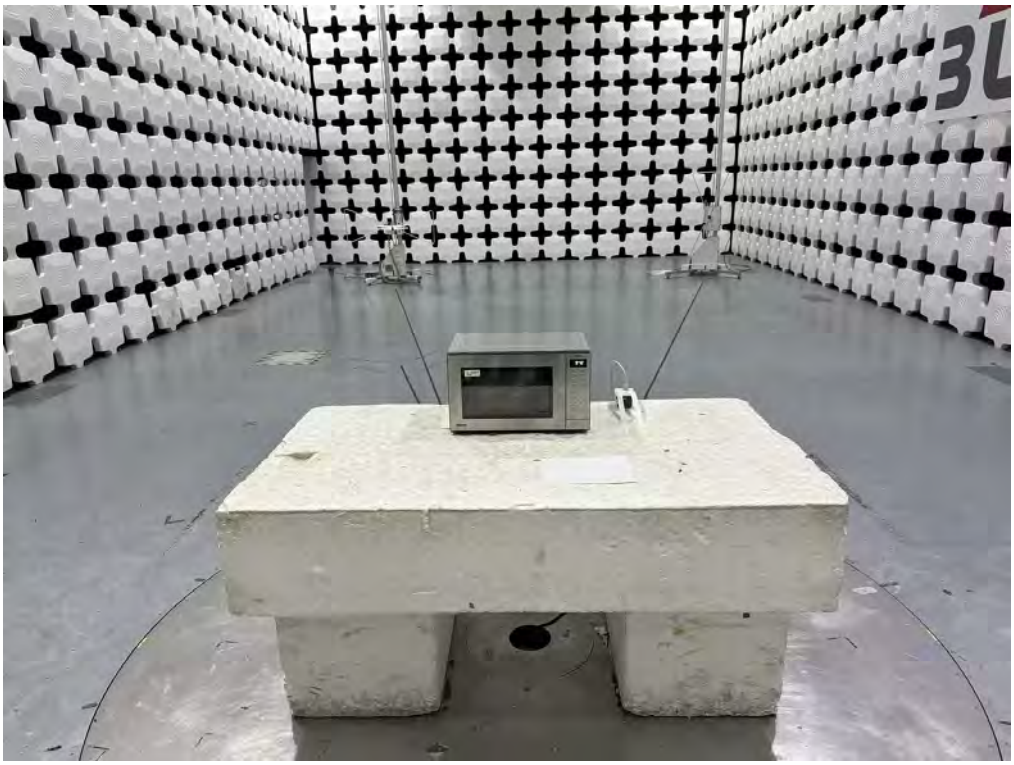
4. EUT TEST PHOTO

AC Power Line Conducted Emissions

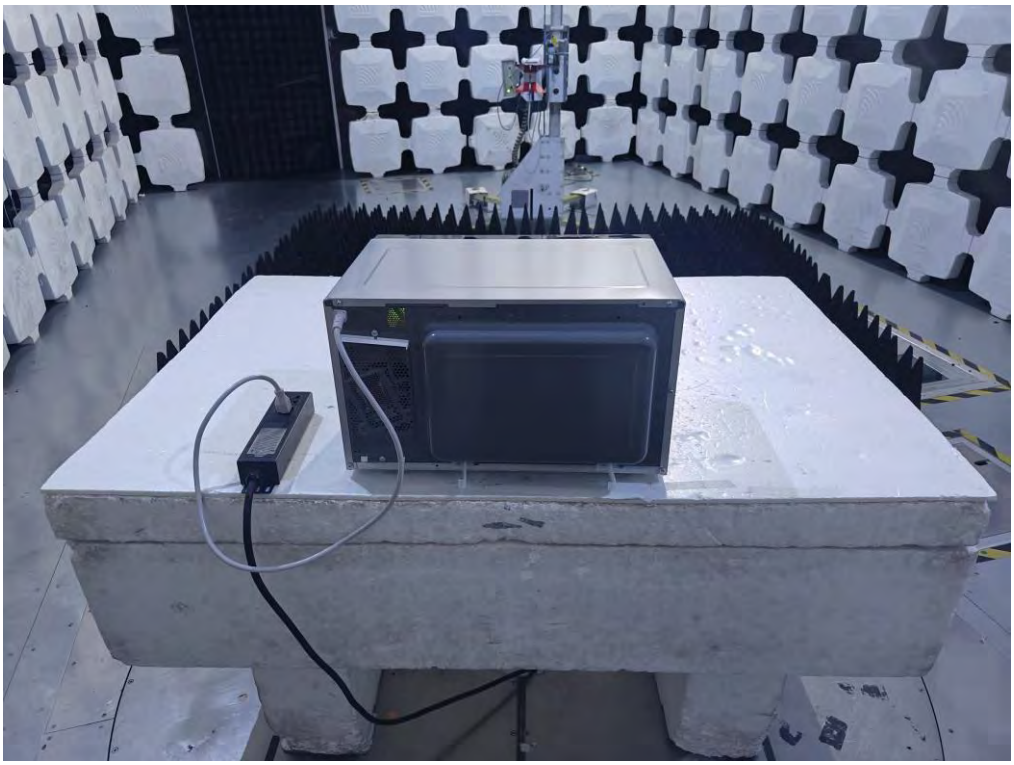


Radiated Emissions 30 MHz to 1 GHz

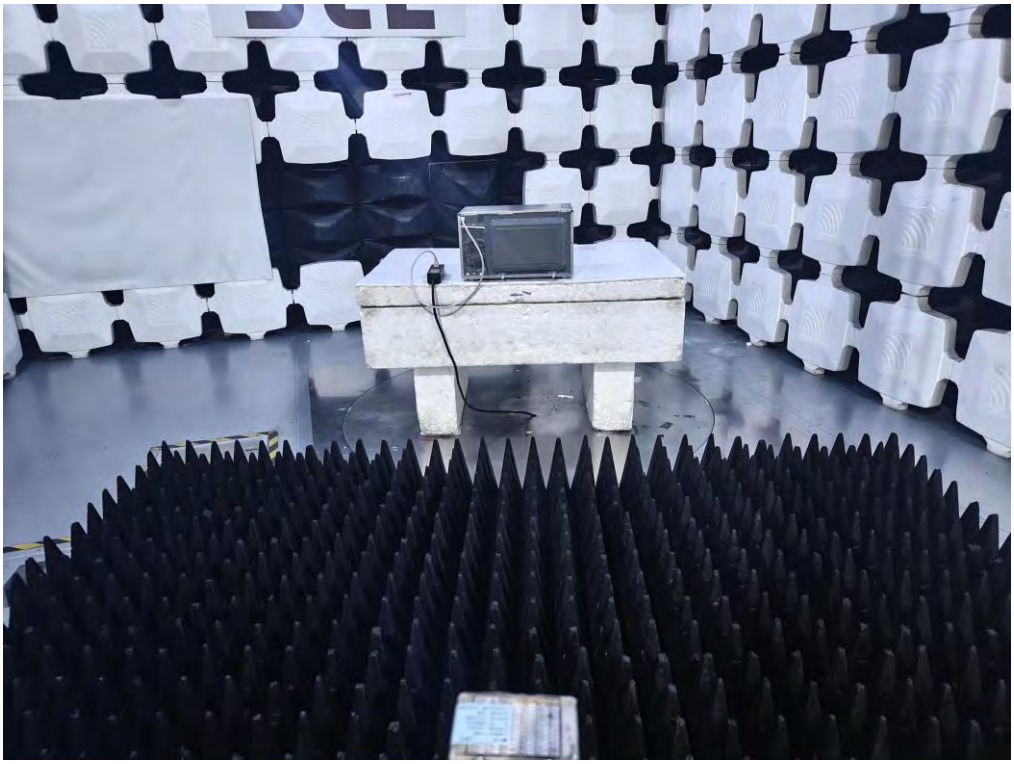




Radiated Emissions 1 GHz to 18 GHz

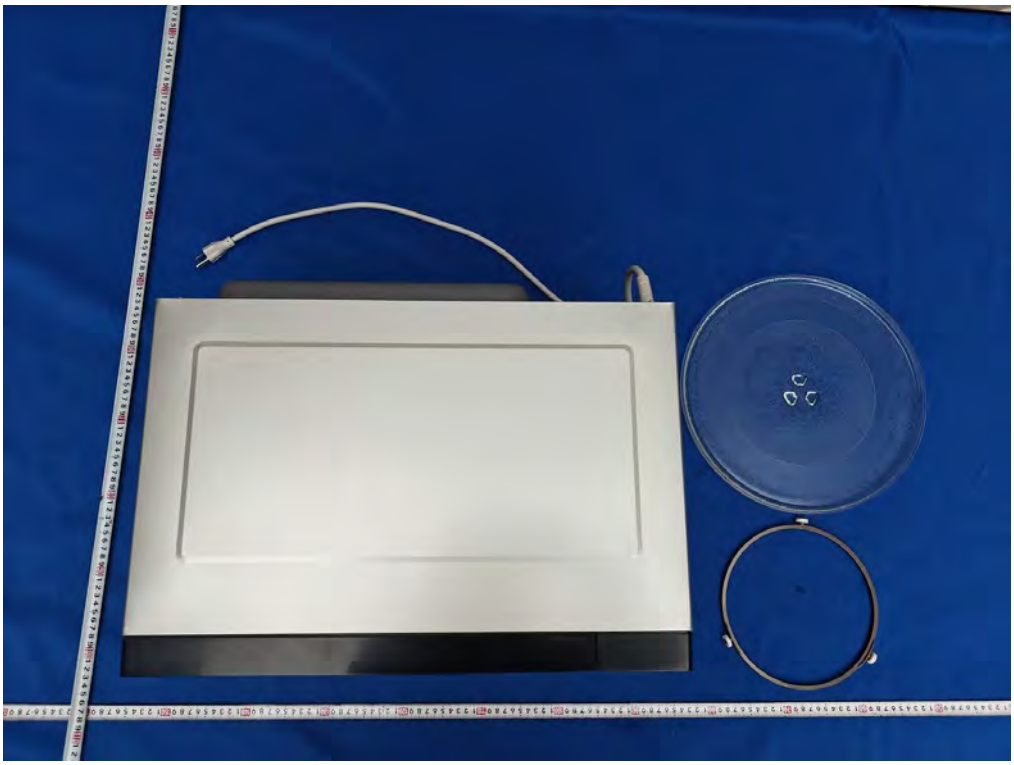


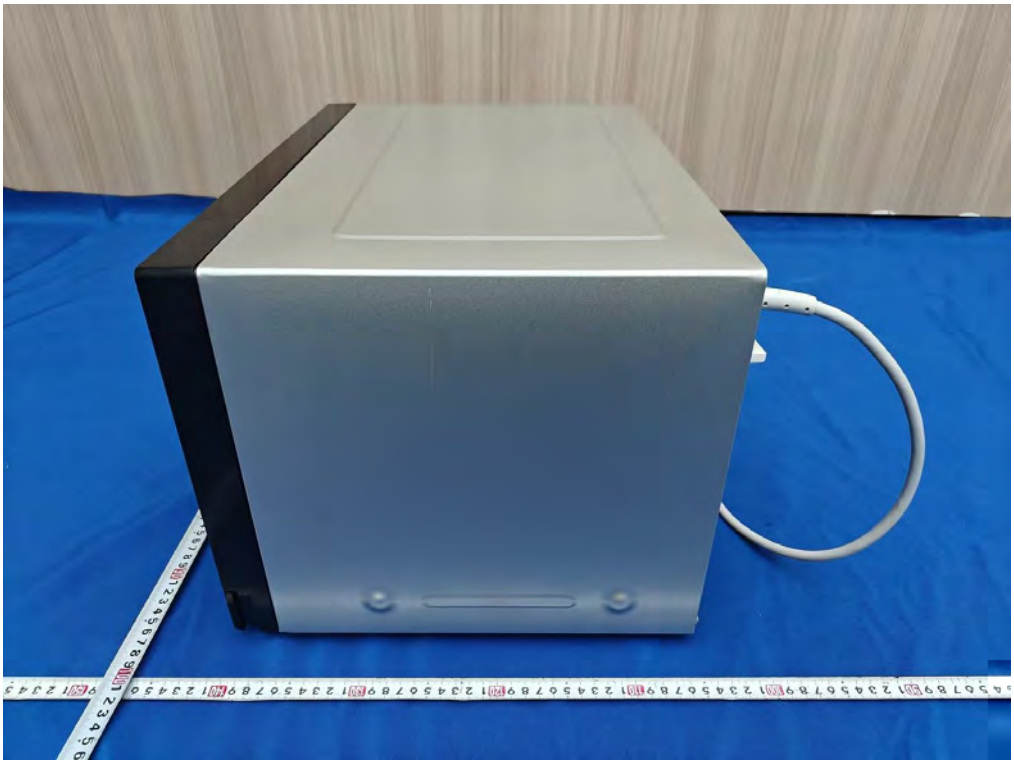
Radiated Emissions 18 GHz to 25 GHz

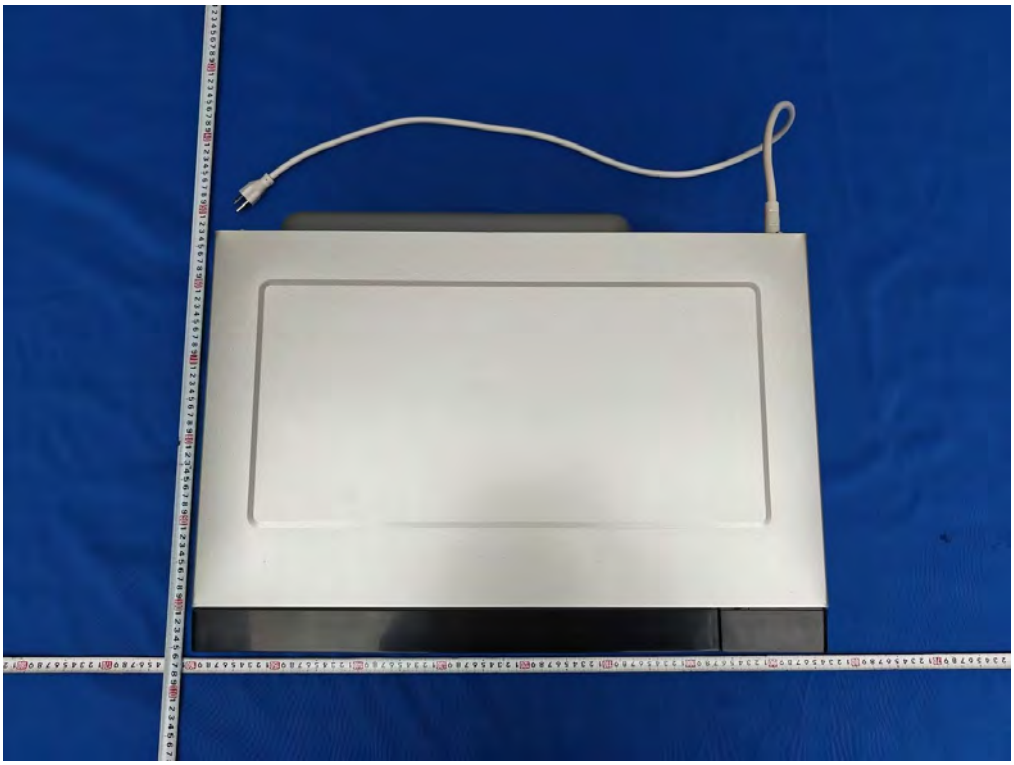


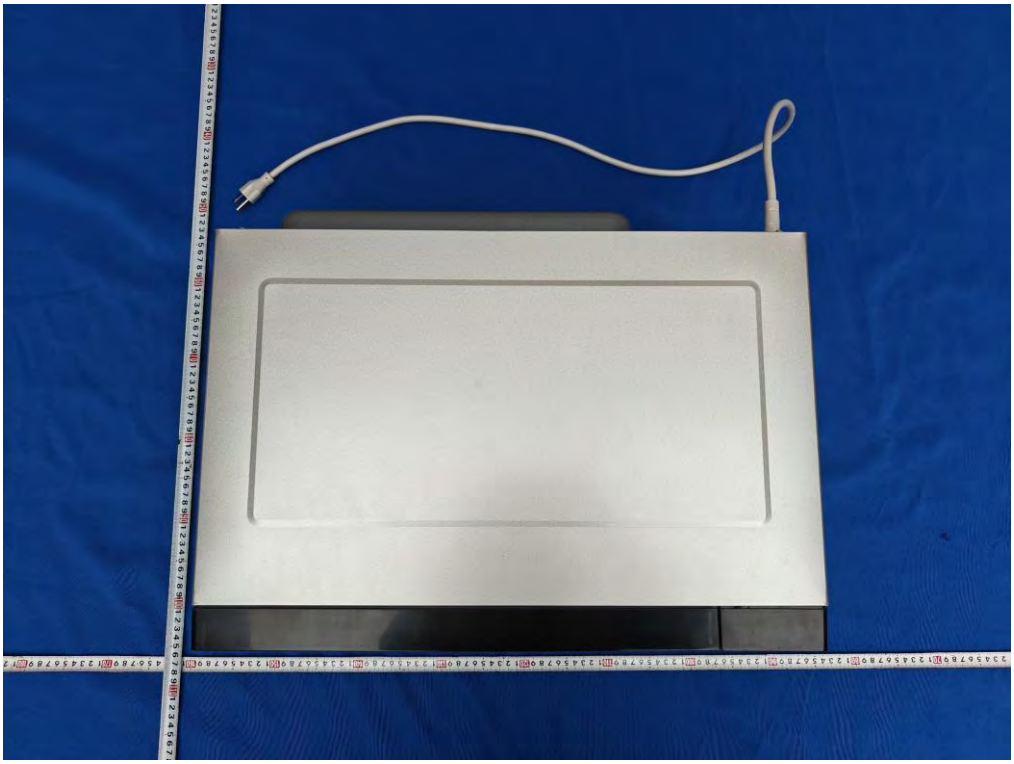
APPENDIX

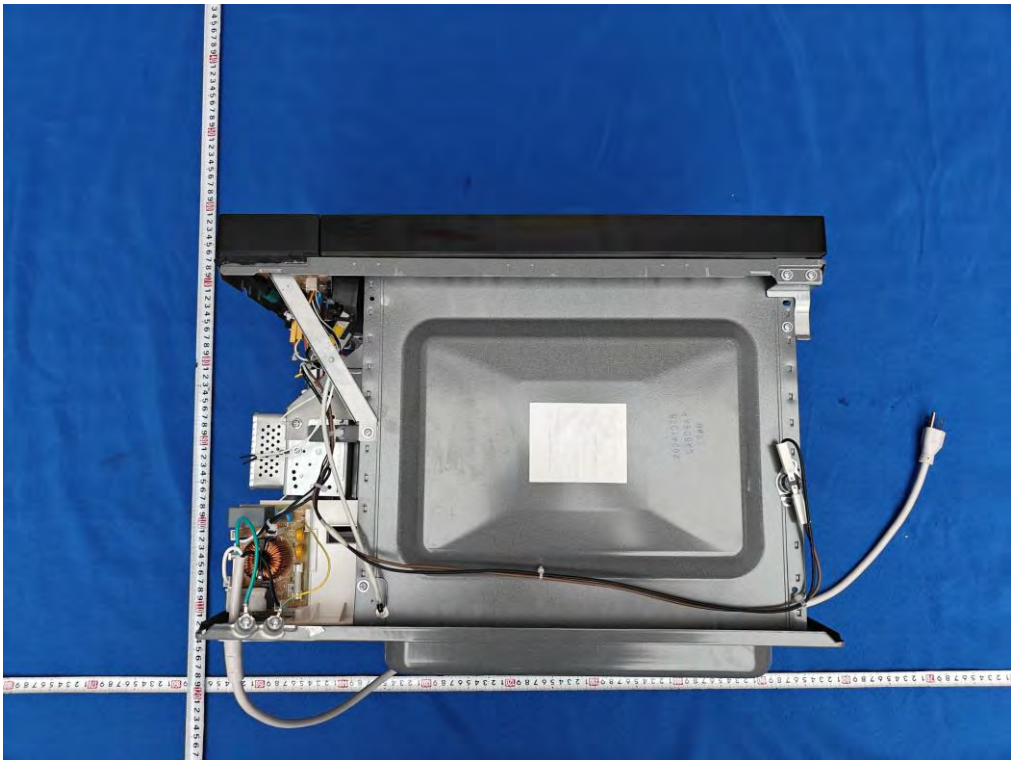
(Photos of EUT)

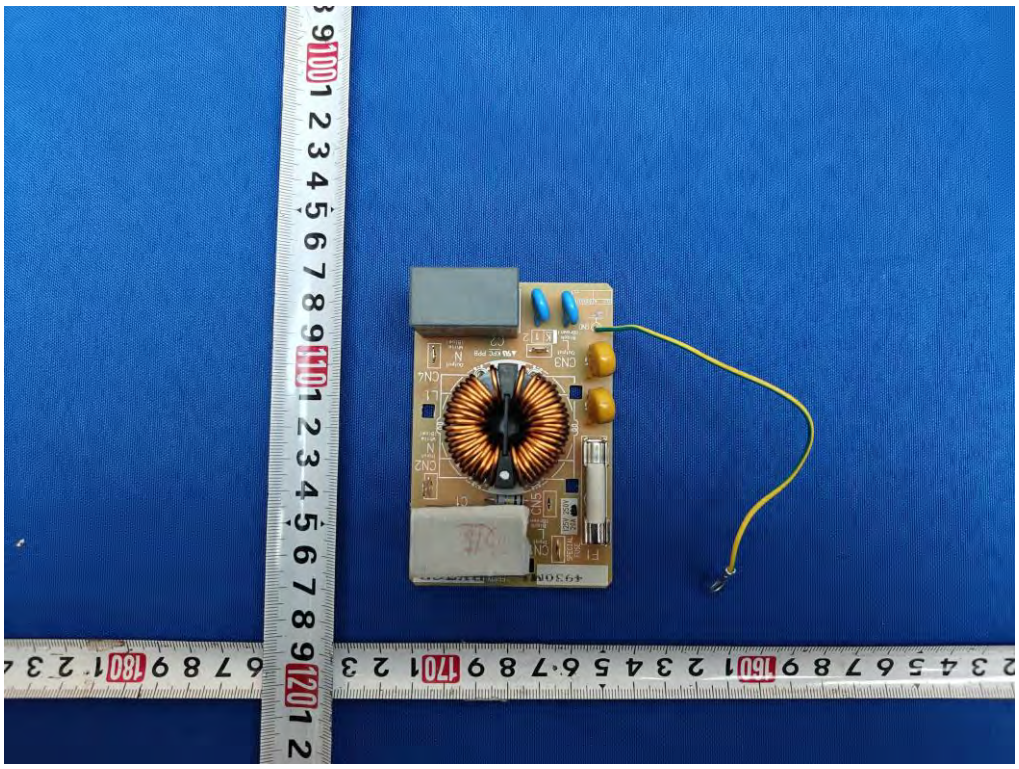


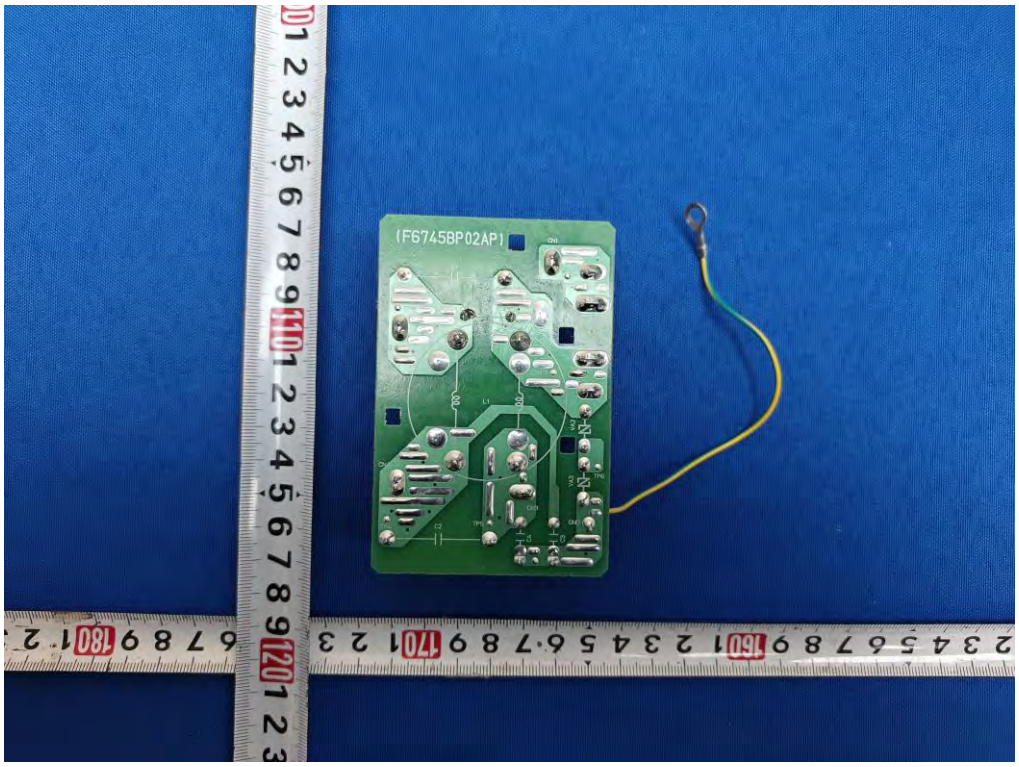


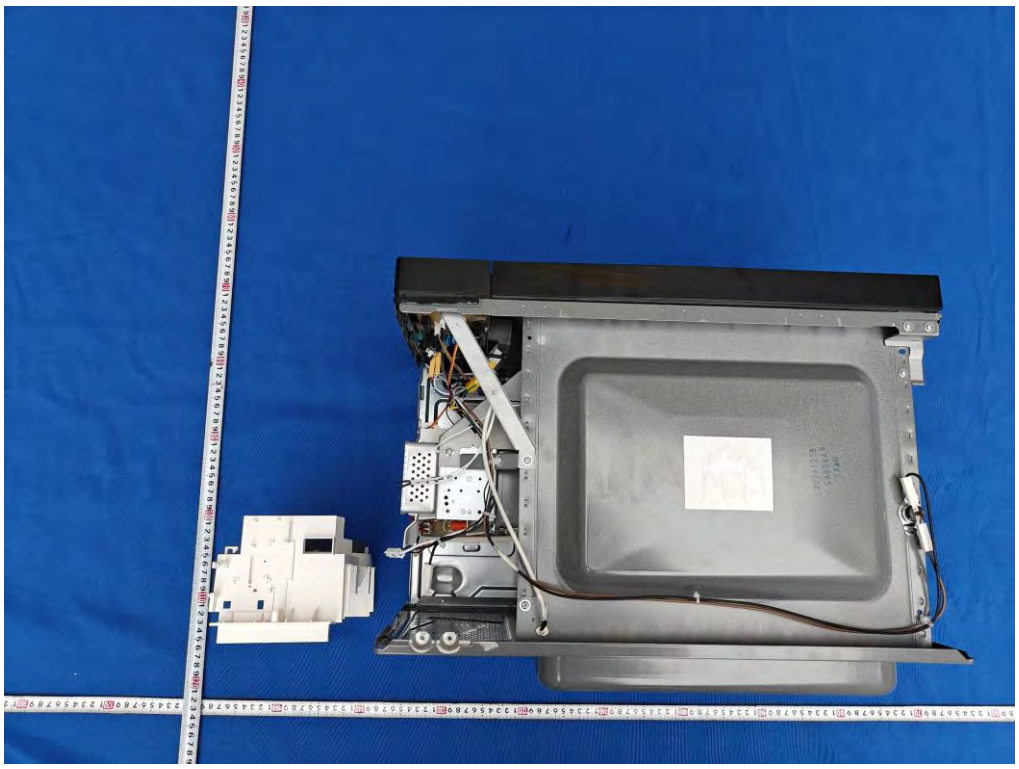


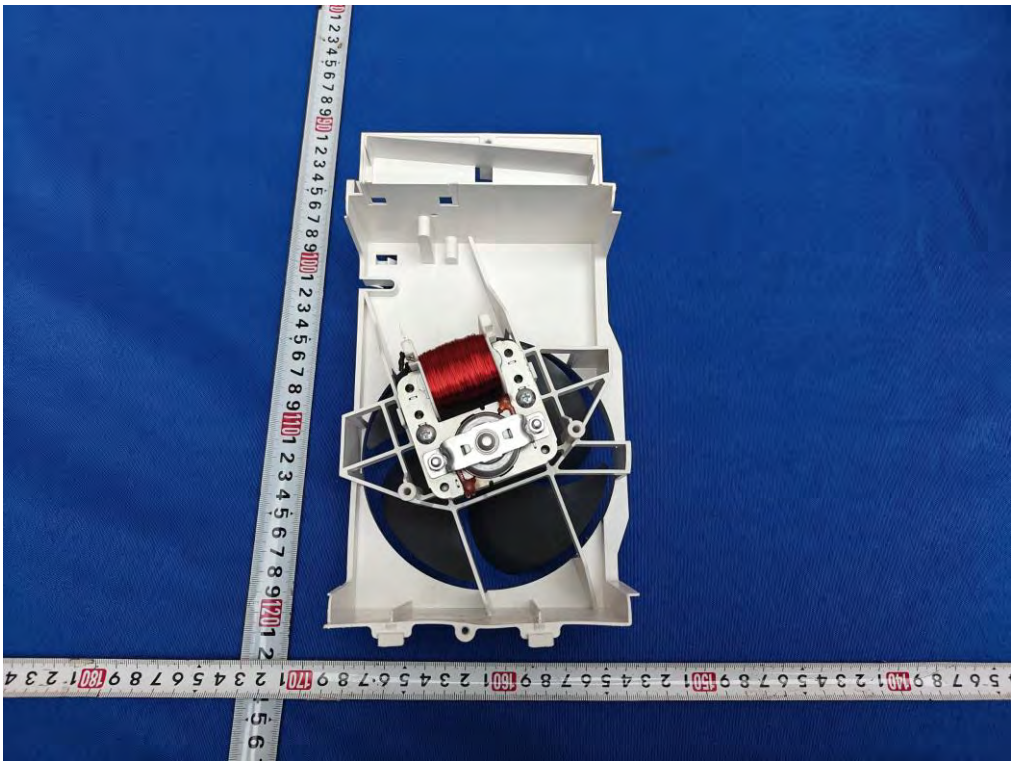


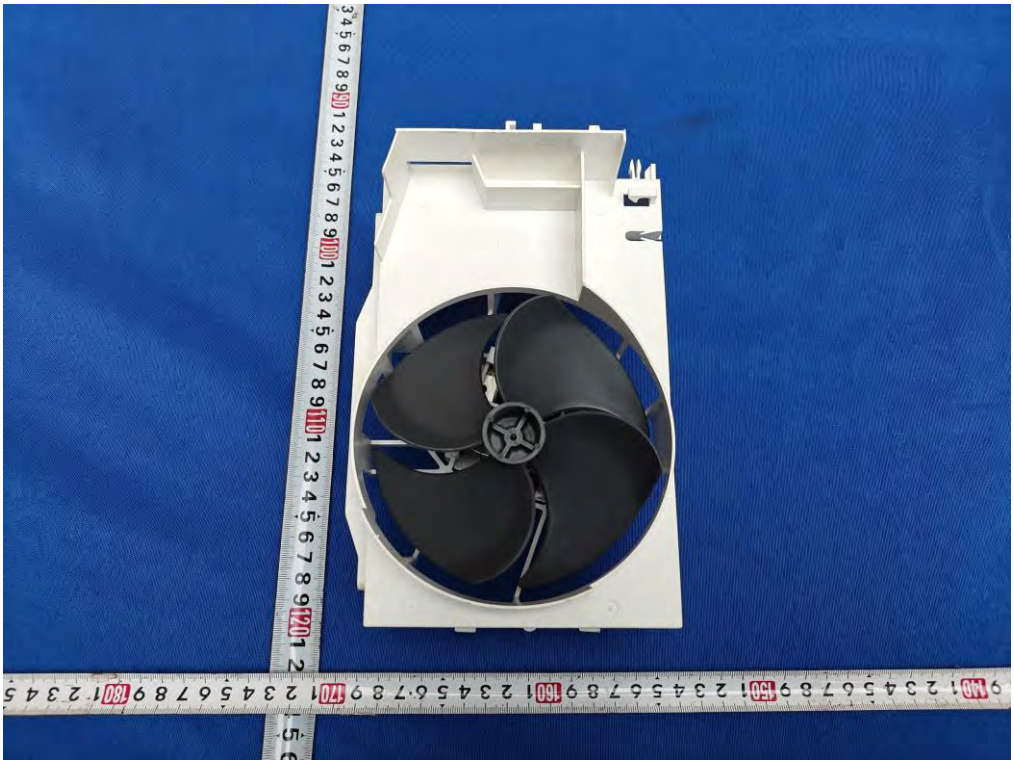


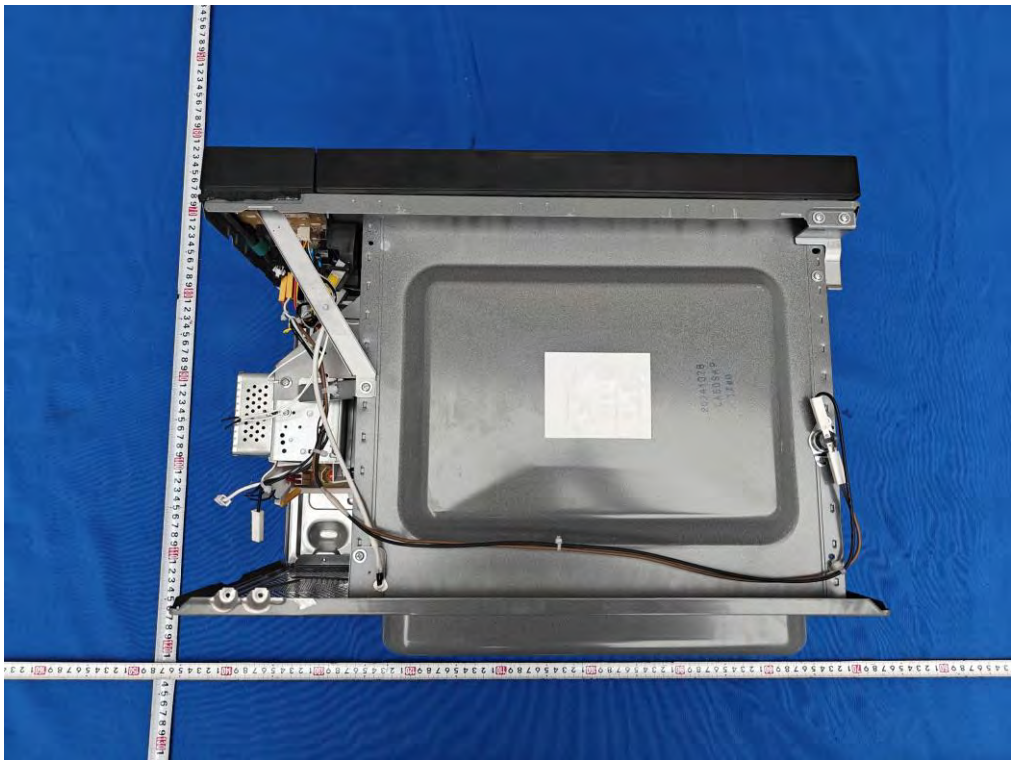


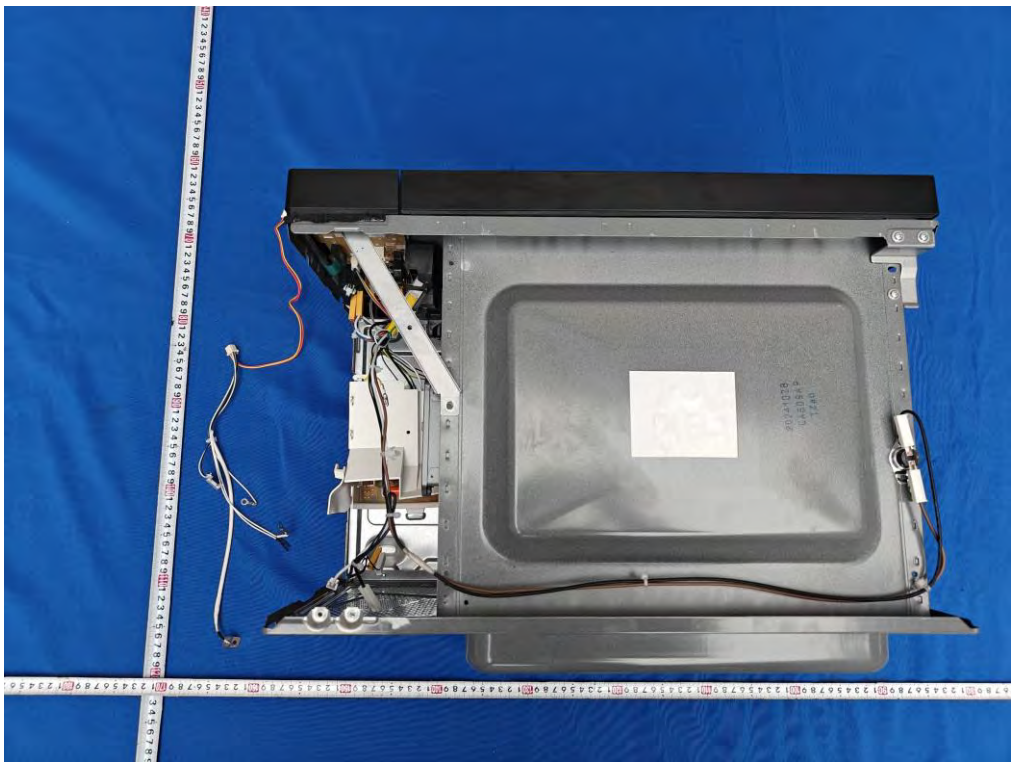

IF6745BP02AP1

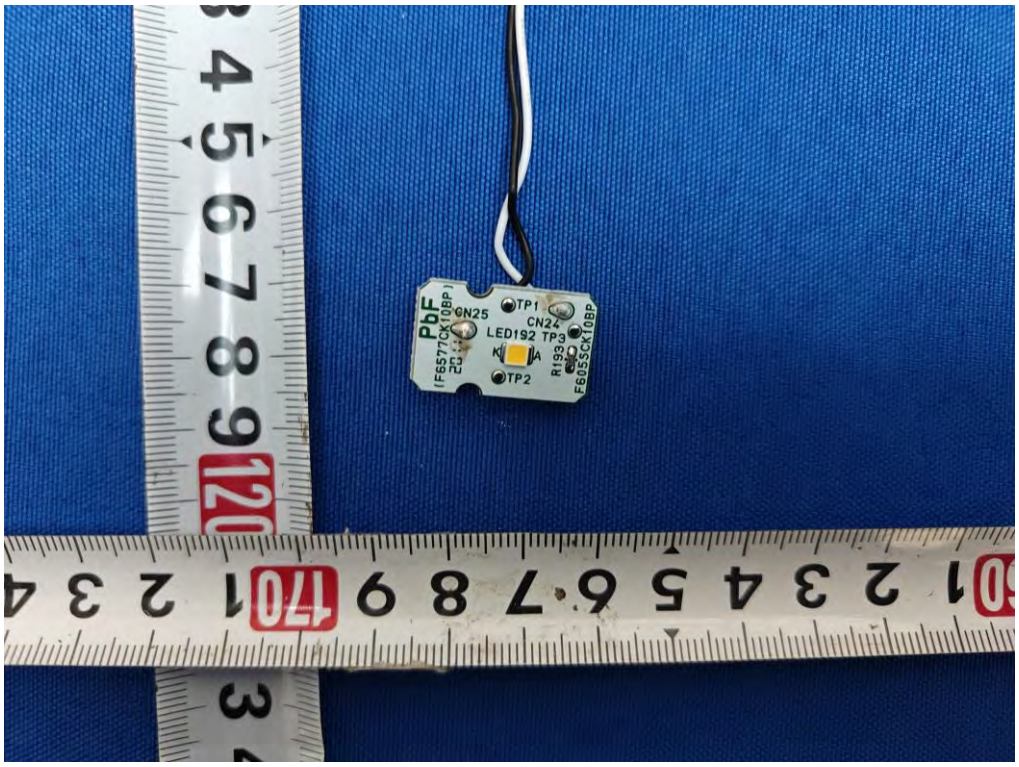


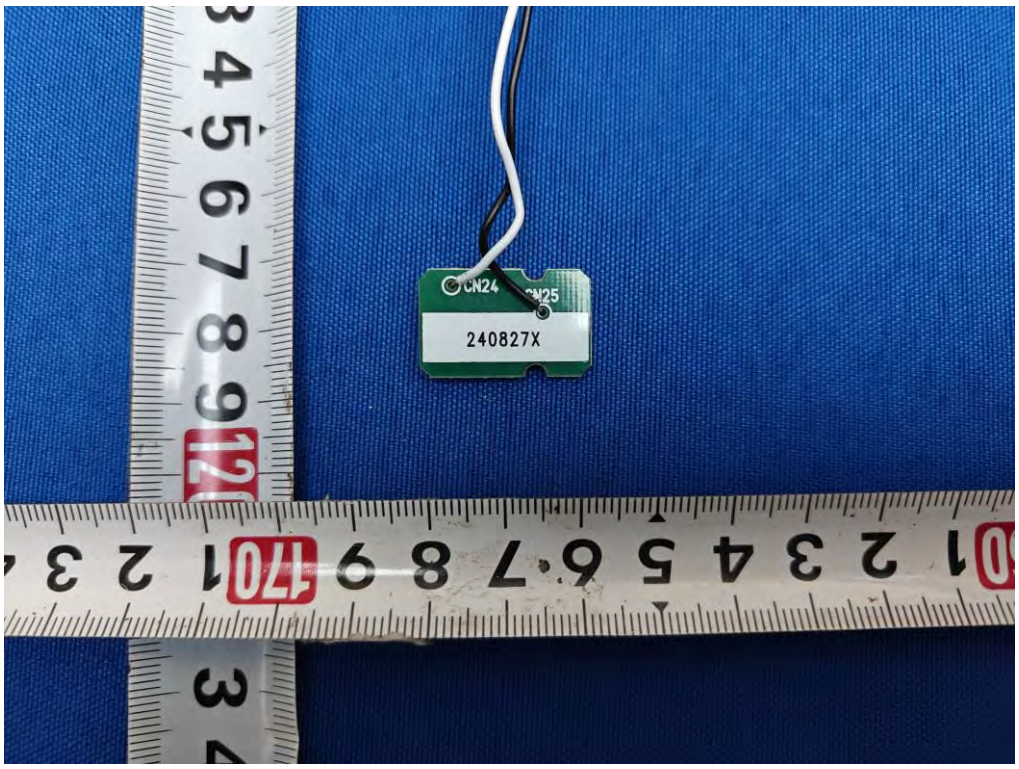


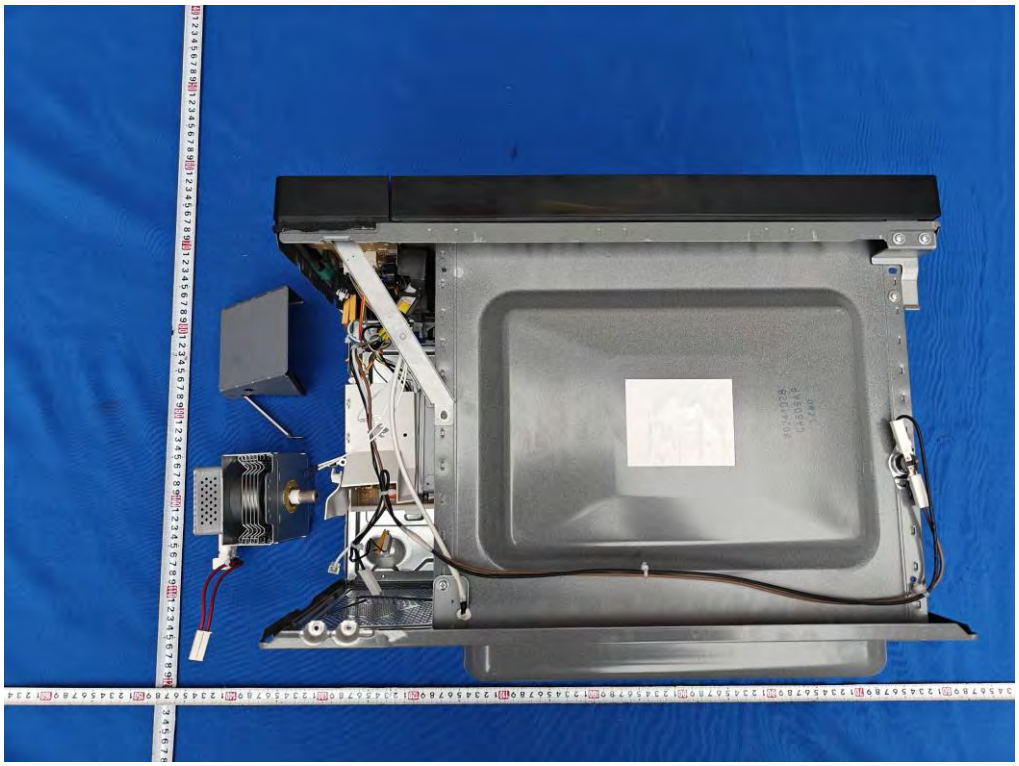


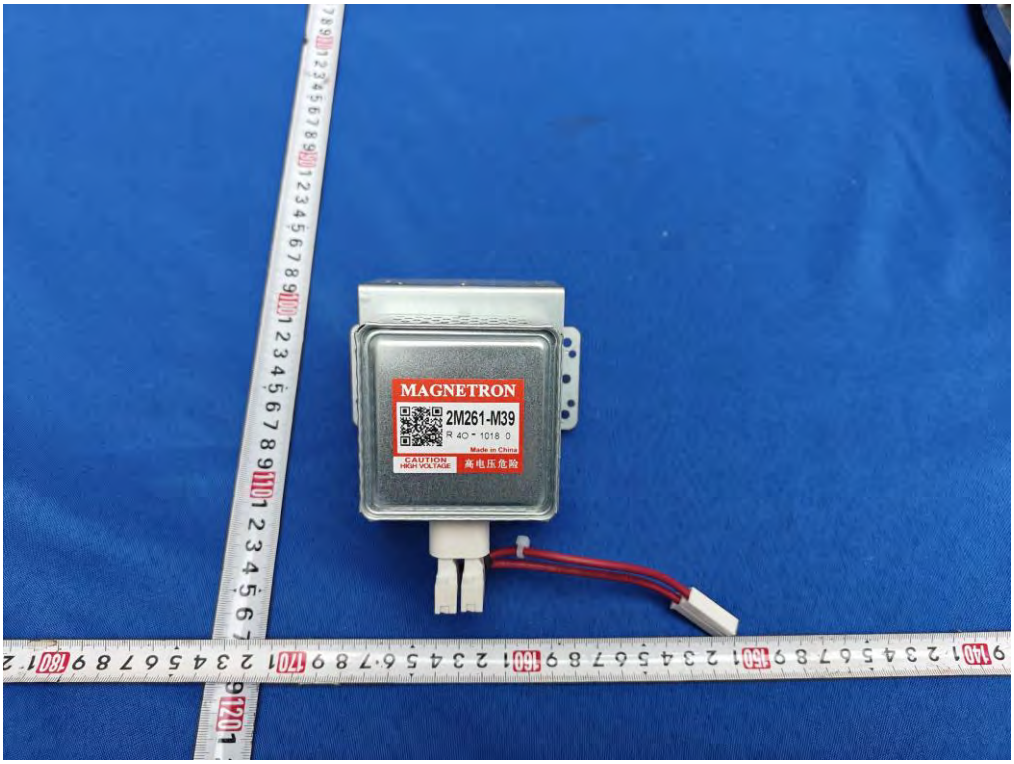


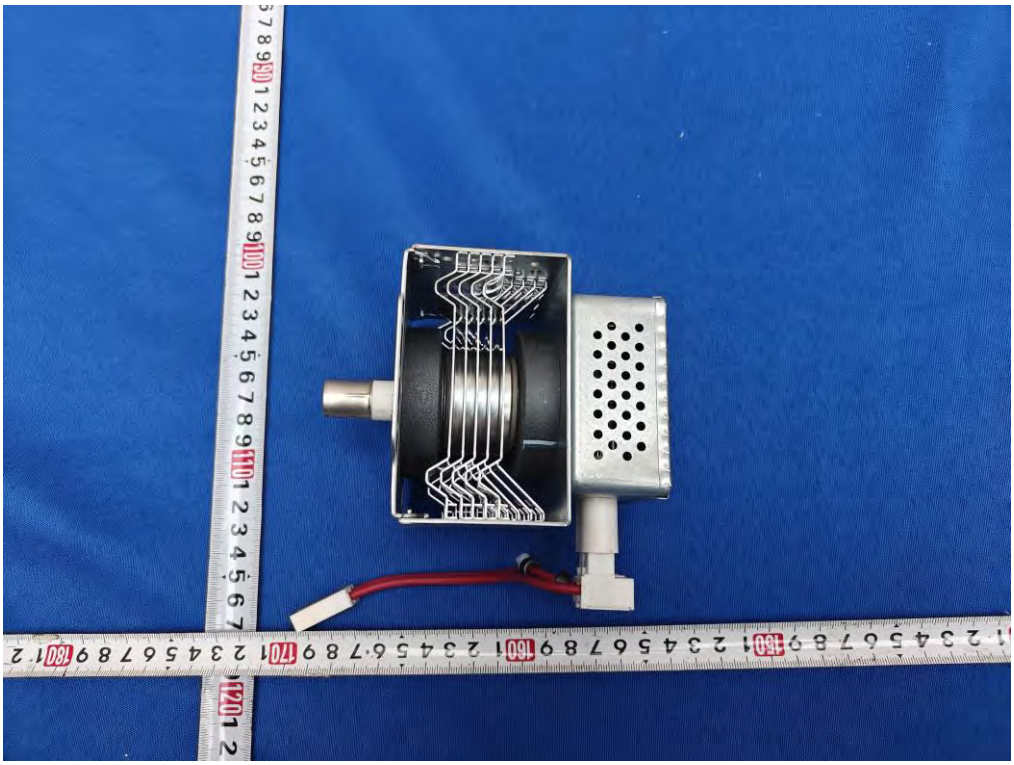


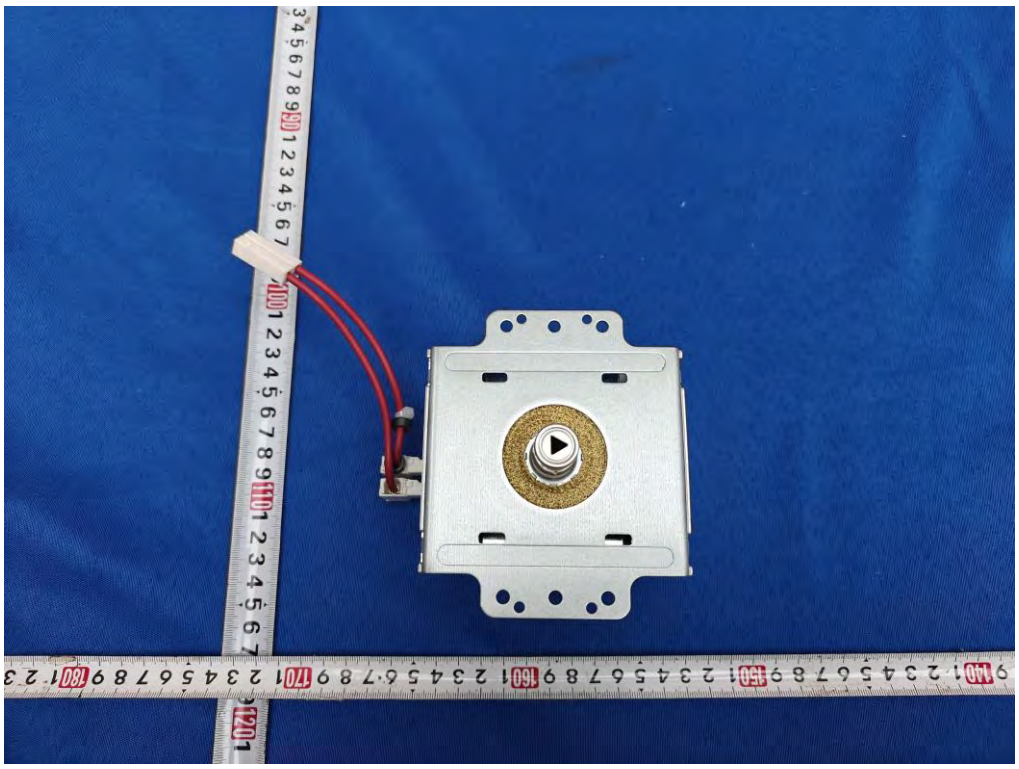

PbF
CN25
TP1
CN24
LED192
TP3
TP2
R199

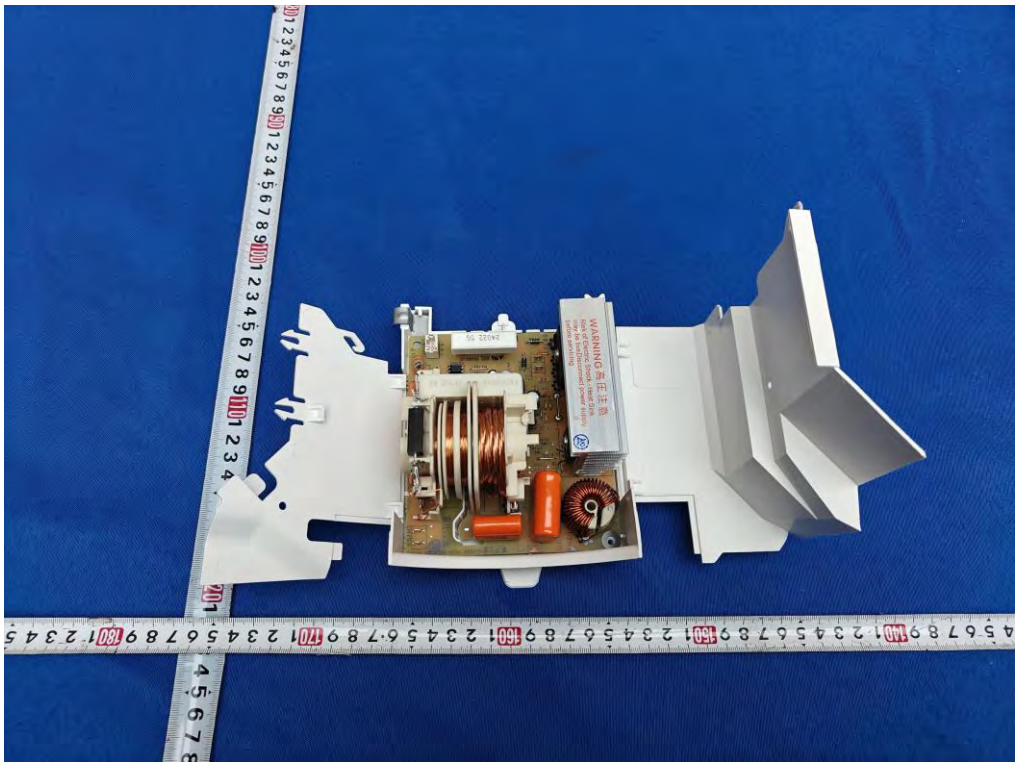

CN24
CN25
240827X

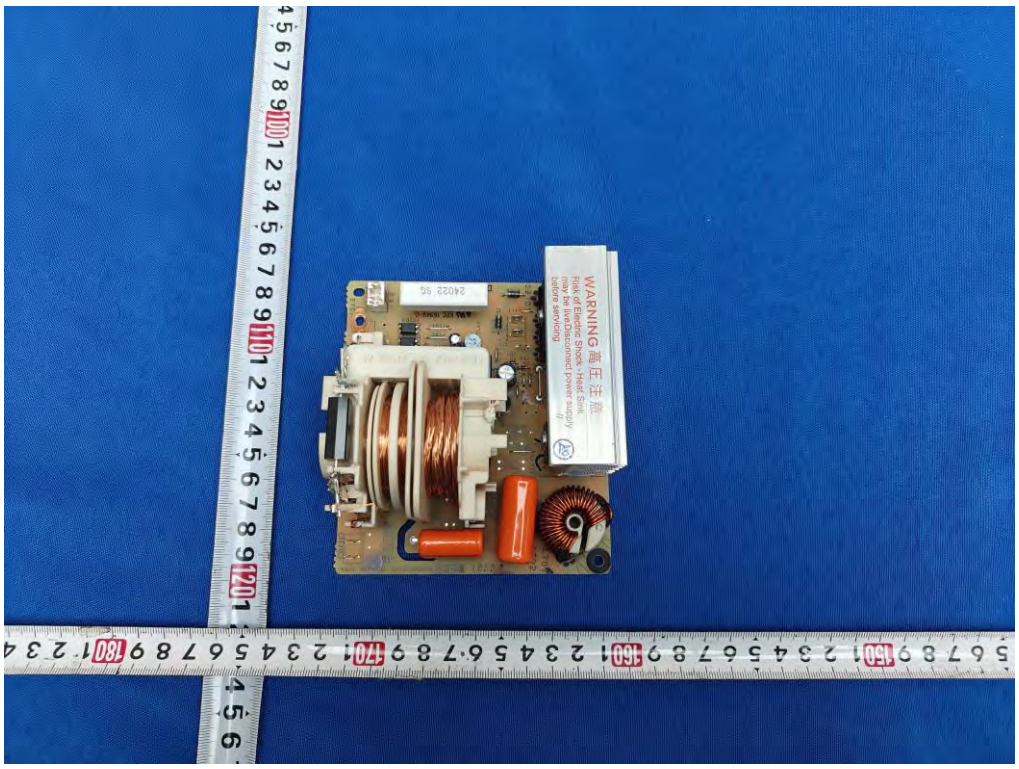


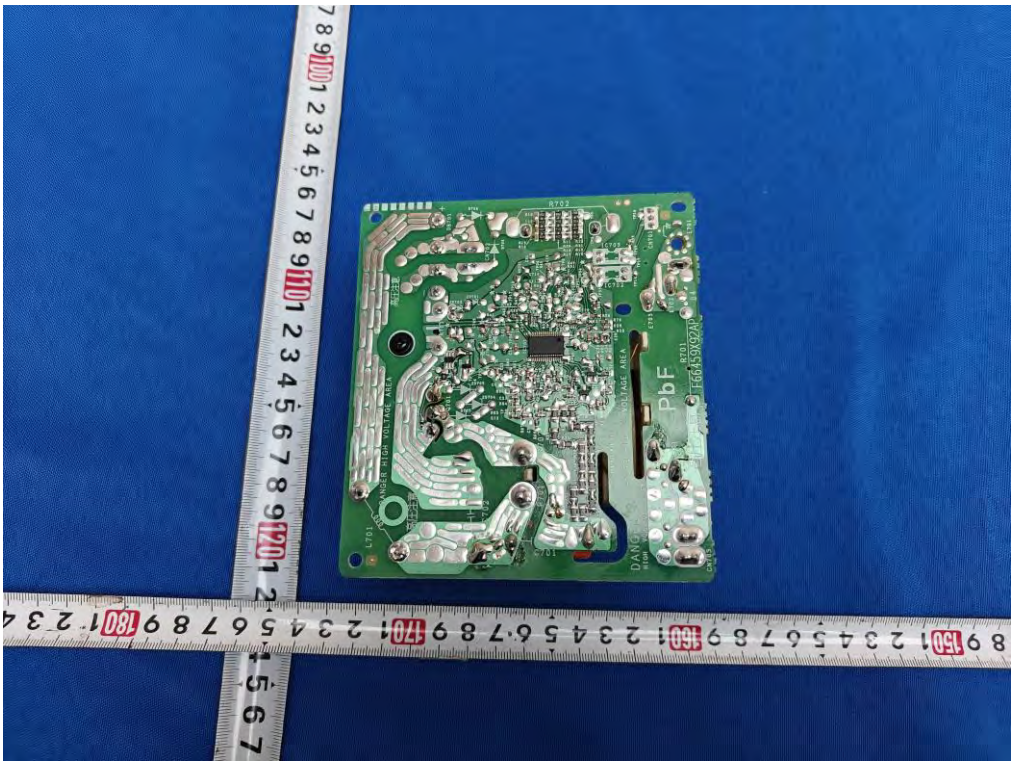

MAGNETRON
2M261-M39
Made in China
CAUTION
HIGH VOLTAGE
高电压危险

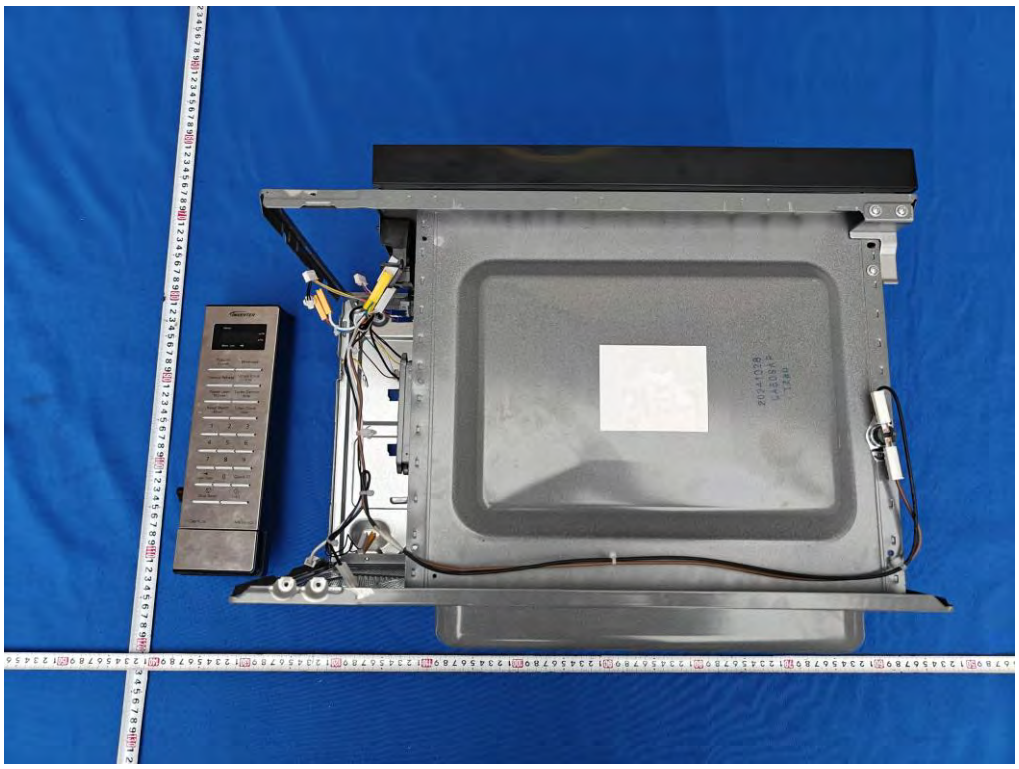




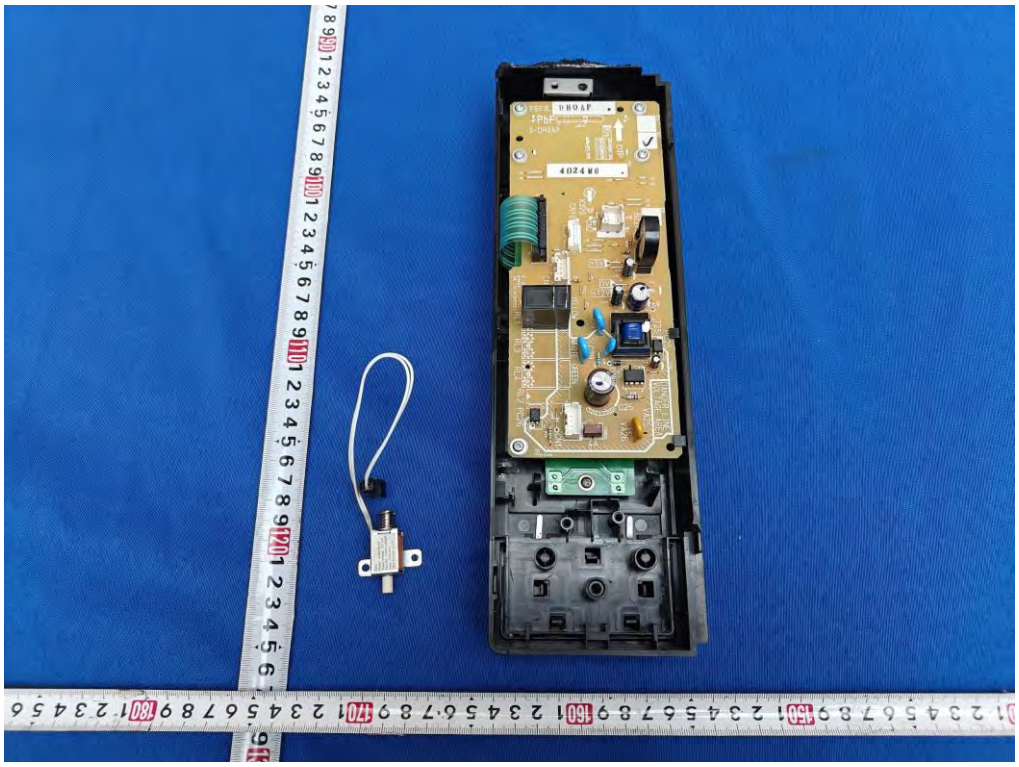


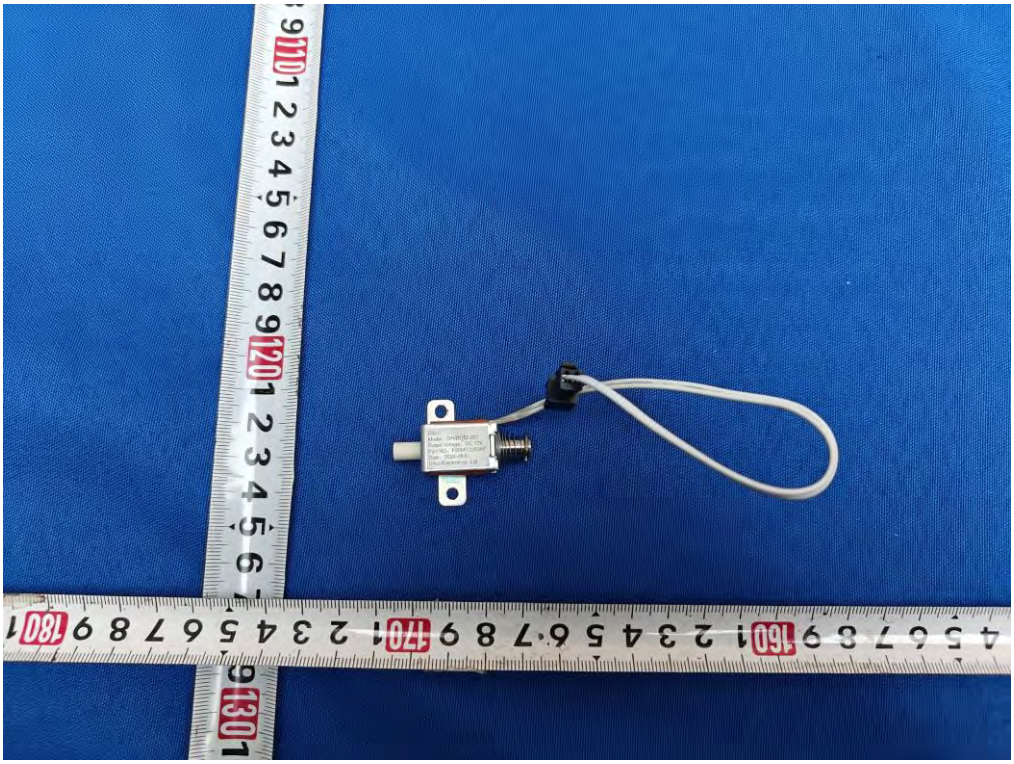

WARNING 高压注意
Risk of Electric Shock - Heat Sink
may be energized disconnect power supply
before servicing

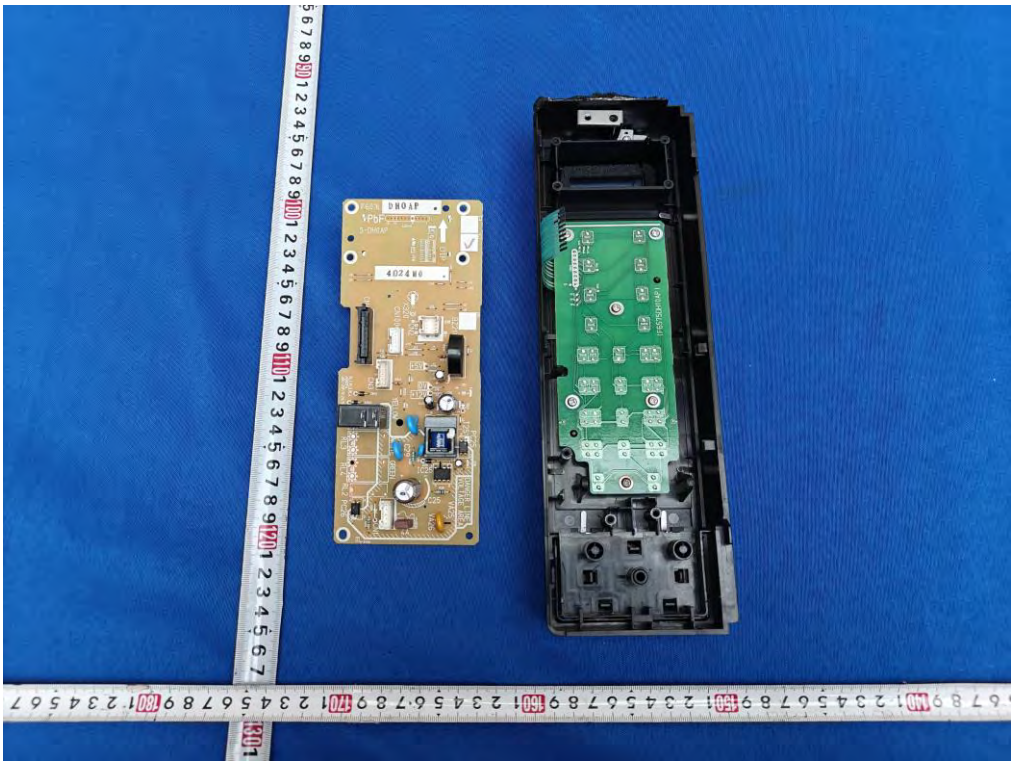

PbF

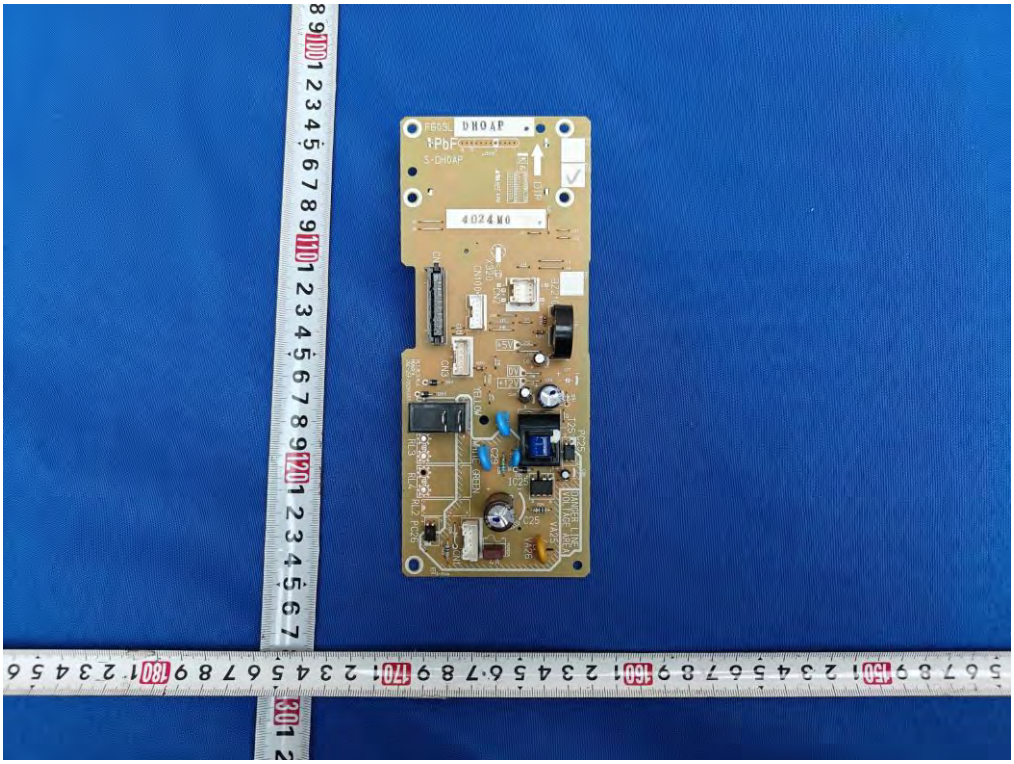


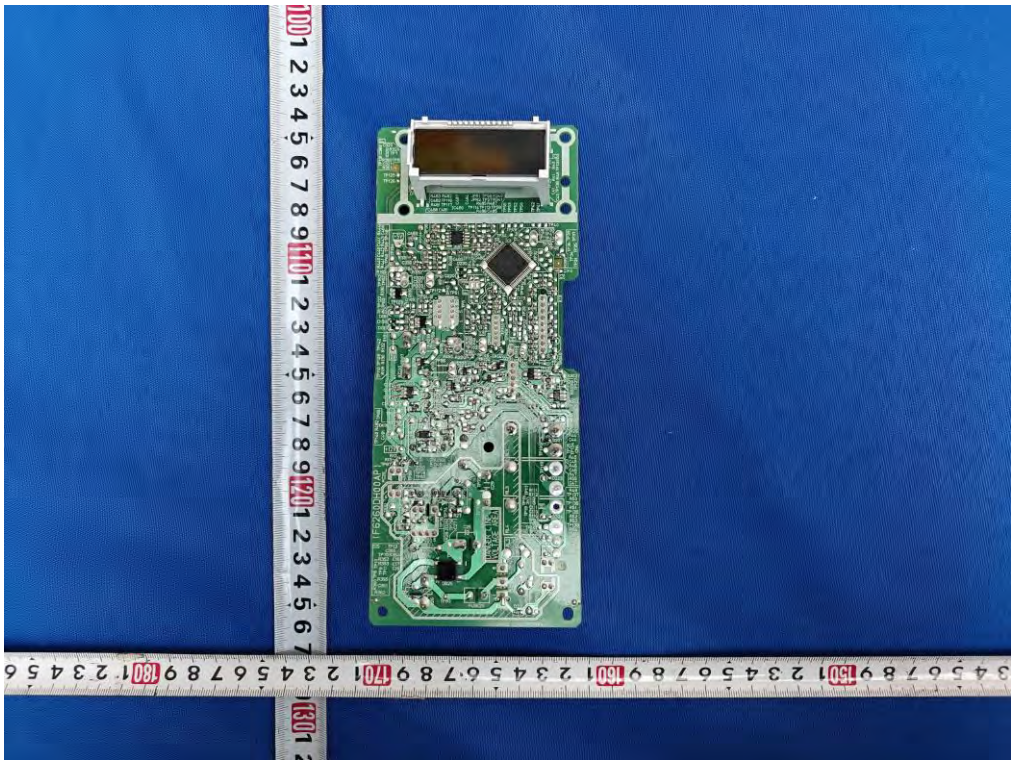

INVERTER
Popcorn
Beverage
Sensor Reheat
Sensor Cook
Power Level
Turbo Defrost
Keep Warm
Timer/Clock
1
2
3
4
5
6
7
8
9
Door Open
0
Quick 30
Stop/Reset
Start
Genius

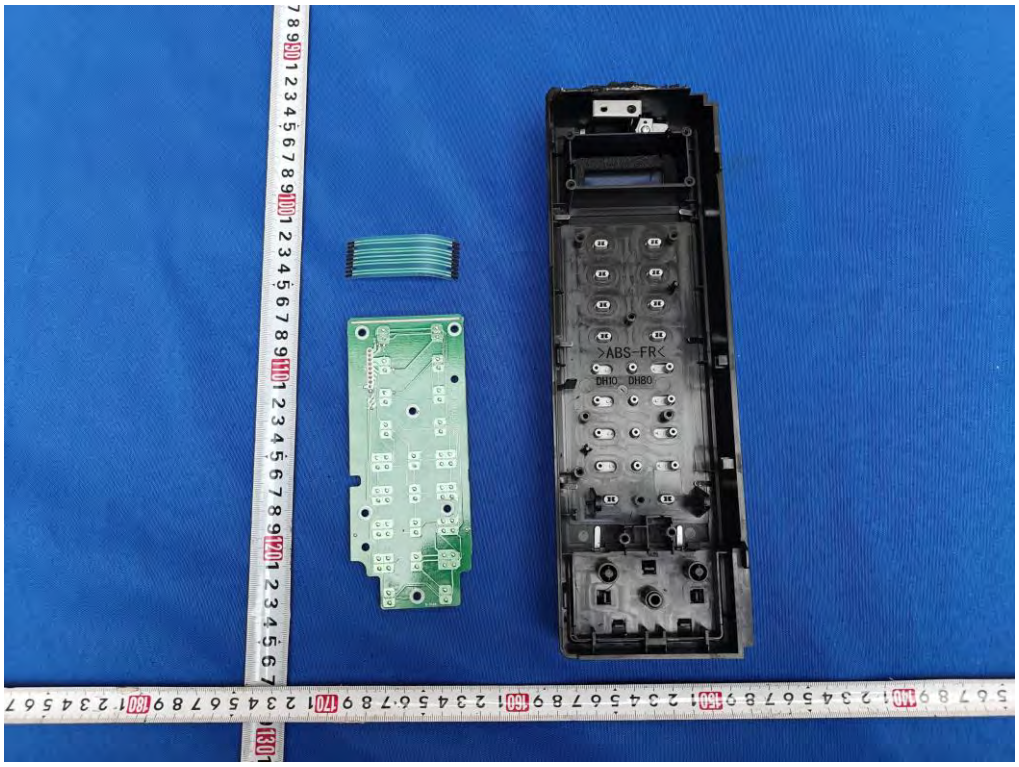


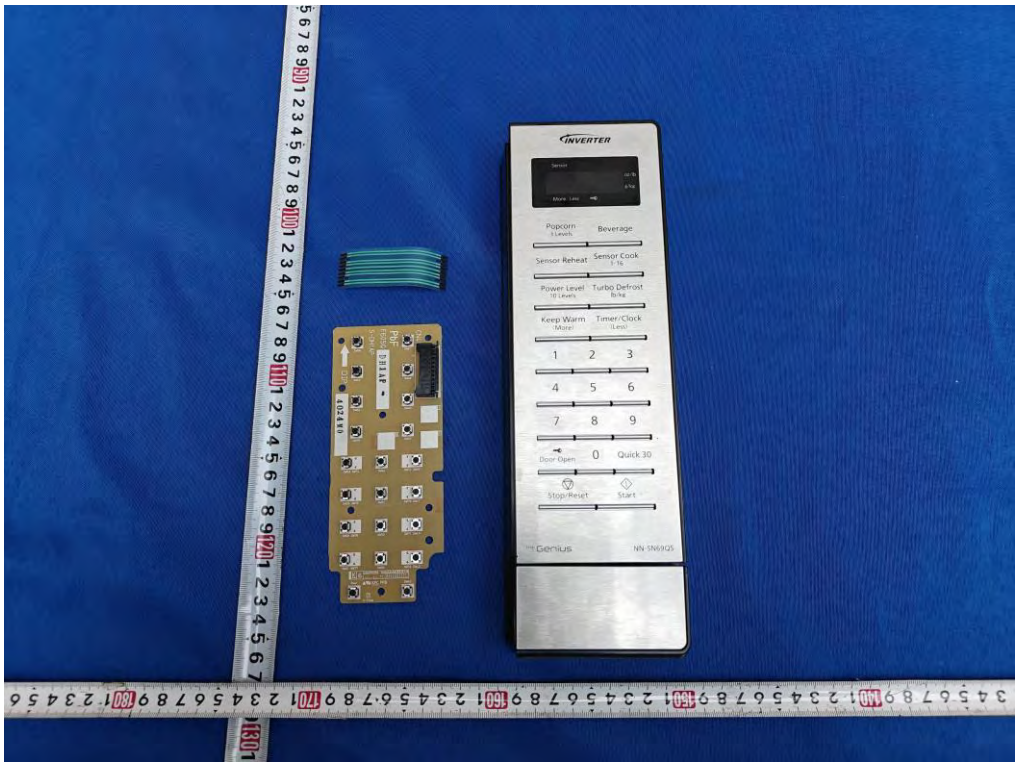









ABS-FR
DH10_DH80


INVERTER
Popcorn
Beverage
Sensor Reheat
Sensor Cook
Power Level
Turbo Defrost
Keep Warm
Timer/Clock
1 2 3
4 5 6
7 8 9
0
Quick 30
Stop/Reset
Start
Genius

BTL Inc.(Shanghai)

DECLARATION LETTER

Applicant for:
Panasonic Corporation of North America

Add : Two Riverfront Plaza, Newark New Jersey USA

TEL: 201-348-7558 FAX: 201-348-7758

DECLARATION

Date:12-24-2024

To:
BTL Inc.(Shanghai)
No. 29, Jintang Road, Tangzhen Industry Park, Pudong New Area, Shanghai 201210, China
www.newbtl.com

Dear Sir or Madam:

We, Panasonic Corporation of North America hereby declare that product: Microwave Oven, model: NN-SN69QS, which has been tested by BTL.

The differences between model NN-SN69QS and NN-SN68QS, NN-SN68QB, NN-SN67QS, NN-SN65QS, NN-SN65QW, are appearance color.

Please contact me if there is need for any additional clarification or information.

Best Regards,

Signature:

Printed name:
Title: Engineering Manager

********END OF REPORT********