Nemko Korea Co., Ltd.

165-51, Yurim-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, 17042, Republic of Korea
TEL : + 82 31 330 1700 FAX : + 82 31 322 2332

FCC PART 18 Class II Permissive Change

Applicant :

SAMSUNG ELECTRONICS Co., Ltd.
129, Samsung-ro, Yeongtong-gu Suwon-si,
Gyeonggi-do, 443-742, Korea
Attn : Ms. Jiyea Hong

Dates of Issue : February 13, 2024
Test Report No. : REP023127
Test Site : Nemko Korea Co., Ltd.
EMC site, Korea

FCC ID	***A3LME6000A***
Trade Mark	**SAMSUNG**
Contact Person	**SAMSUNG ELECTRONICS Co., Ltd.** **129, Samsung-ro, Yeongtong-gu Suwon-si,** **Gyeonggi-do, 443-742, Korea** **Ms. Jiyea Hong** **Telephone No. : + 82 31 8062 9326**

Applied Standard :	FCC Part 18 & Part 2
Classification :	Part 18 Consumer ISM equipment
EUT Type :	Microwave oven

The device bearing the Trade Mark and FCC ID specified above has been shown to comply with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in MP-5:1986.
I attest to the accuracy of data and all measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

February 13, 2024
Tested By : Seunghyuk Yoo
Engineer

February 13, 2024
Reviewed By : Taegyun Kim
Technical Manager

TABLE OF CONTENTS

SCOPE

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission under FCC part 18.

Responsible Party : SAMSUNG ELECTRONICS Co., Ltd.
Contact Person : Ms. Jiyea Hong
Tel No.: + 82 31 8062 9326

Manufacturer : SAMSUNG ELECTRONICS Co., Ltd.
129, Samsung-ro, Yeongtong-gu Suwon-si, Gyeonggi-do, 443-742, Korea

- FCC ID: A3LME6000A
- Model: ME11A7710DS
- Variant Model: ME11A7510DG, ME11A7510DS, ME11A7710DG, ME11A7710DS, ME11CB751012AA
- Trade Mark: SAMSUNG
- EUT Type: Microwave oven
- Applied Standard: FCC Part 18 & Part 2
- Test Procedure(s): MP-5:1986
- Dates of Test: January 08, 2024 to January 21, 2024
- Place of Tests: Nemko Korea Co., Ltd. EMC Site
- Test Report No.: REP023127

INTRODUCTION

The measurement procedure described in MP5:1986 for Methods of Measurement of radiated, powerline conducted radio noise, frequency and power output was used in determining emissions emanating from **Samsung Electronics Co., Ltd.**
FCC ID : **A3LME6000A, Microwave oven.**

These measurement tests were conducted at ***Nemko Korea Co., Ltd. EMC Laboratory***.
The site address is 165-51, Yurim-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, 17042, Republic of Korea.
The area of Nemko Korea Corporation Ltd. EMC Test Site is located in a mountain area at 80 kilometers (48 miles) southeast and Incheon International Airport (Incheon Airport), 30 kilometers (18 miles) south-southeast from central Seoul.

The Nemko Korea Co., Ltd. has been accredited as a Conformity Assessment Body (CAB).

Nemko Korea Co., Ltd.
165-51, Yurim-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, 17042, Republic of Korea.
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Fig. 1. The map above shows the Seoul in Korea vicinity area.
The map also shows Nemko Korea Corporation Ltd. EMC Lab and Incheon Airport.

ACCREDITATION AND LISTING

Accreditation type		Accreditation number
	CAB Accreditation for DOC	Designation No. KR0026
	KOLAS Accredited Lab. (Korea Laboratory Accreditation Scheme)	Registration No. KT155
Industry Canada	Canada IC Registered site	Site No. 2040E
	VCCI registration site(RE/CE/Telecom CE)	Member No. 2118
	EMC CBTL	TL124
	KCC(RRL)Designated Lab.	Registration No. KR0026

EUT INFORMATION

EUT Information

Intended use	Household
Type of appliance	Over The Range
Model	ME11A7710DS
Rated voltage & frequency	AC 120 V, 60 Hz Single Phase
Rated power output	1 100 W
Rated power consumption(MW)	1 650 W
Magnetron	2M303J by Toshiba

Component List

Item	Model	Manufacturer	Serial Number
MAGNETRON	2M303J	Toshiba	N/A
H.V TRANS	SHV-U1870E	DPC	N/A
H.V CAPACITOR	CH85-210095	Bicai	N/A
FAN MOTOR	SMF-U2070C	Samsung	N/A
Control	OTR_PF1_23	Samsung	N/A

Description of the Changes according to FCC part 2.1043

Report No.	Difference
-	-

DESCRIPTION OF TESTS

Radiation Hazard

A 700 ㎖ water load was placed in the center of the oven.
The power setting was set to maximum power.
While the oven was operating, the Microwave Survey Meter probe was moved slowly around the door seams to check for leakage.

Input Power Measurement

A 700 ㎖ water load was placed in the center of the oven and the oven set to maximum power. A 700 ㎖ water load was chosen for its compatibility.
Input power and current were measured using a Power Analyzer.
Manufacturers to determine their input ratings commonly use this procedure.

Output Power Measurement

The Caloric Method was used to determine maximum output power.
The initial temperature of a 1 000 ㎖ water load was measured. The water load was placed in the center of the oven. The oven was operated at maximum output power for 47 seconds. Then the temperature of the water re-measured.

Frequency Measurements

Following the above test, after operating the oven long enough to assure that stable operating temperature were obtained, the operating frequency was monitored as the input voltage was varied between 80 percent to 125 percent of the nominal rating.
And the load quantity was reduced by evaporation to approximately 20 % of the original quantity with nominal rating.

DESCRIPTION OF TESTS

Conducted Emissions

The Line conducted emission test facility is located inside a 4 x 7 x 2.5 m shielded enclosure.
It is manufactured by EM engineering. The shielding effectiveness of the shielded room is in accordance with MIL-STD-285 or NSA 65-6.
A 1 m x 1.5 m wooden table 0.8 m height is placed 0.4 m away from the vertical wall and 0.5 m away from the side of wall of the shielded room Rohde & Schwarz (ENV216) of the 50 ohm / 50 uH Line Impedance Stabilization Network(LISN) are bonded to the shielded room.
The EUT is powered from the Rohde & Schwarz (ENV216).
Power to the LISN s are filtered by high-current high insertion loss power line filters.
The purpose of filter is to attenuate ambient signal interference and this filter is also bonded to shielded enclosure. All electrical cables are shielded by tinned copper zipper tubing with inner diameter of 1/2".
If d.c. power device, power will be derived from the source power supply it normally will be powered from and this supply lines will be connected to the LISNs,
All interconnecting cables more than 1 m were shortened by non-inductive bundling (serpentine fashion) to a 1 m length.
Sufficient time for EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer to determine the frequency producing the maximum EME from the EUT.
The spectrum was scanned from 150 ㎑ to 30 ㎒ with 15 s sweep time.
The frequency producing the maximum level was re-examined using the EMI test receiver. (Rohde & Schwarz ESR3).
The detector functions were set to quasi-peak mode & CISPR average mode.
The bandwidth of receiver was set to 9 ㎑. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each EME emission.
Each emission was maximized by; switching power lines; varying the mode of operation or resolution; clock or data exchange speed; scrolling H pattern to the EUT and of support equipment, and powering the monitor from the floor mounted outlet box and computer aux AC outlet, if applicable; whichever determined the worst case emission.
Each EME reported was calibrated using the R&S signal generator.

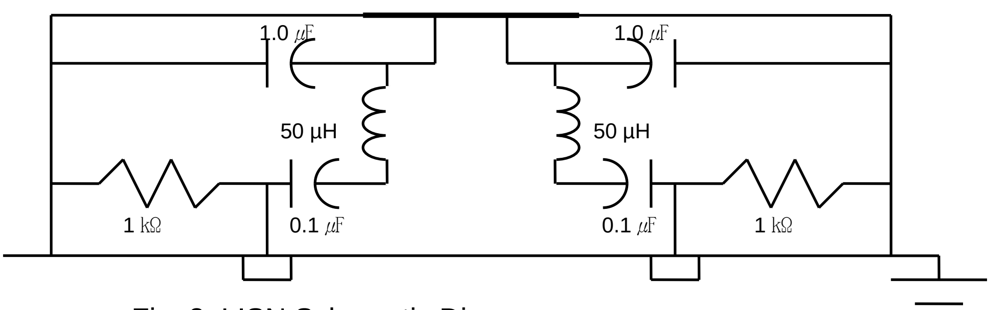


Fig. 2. LISN Schematic Diagram

DESCRIPTION OF TESTS

Radiated Emissions

Measurement were made indoors at 10 m & 3 m using antenna, signal conditioning unit and EMI test receiver to determine the frequency producing the maximum EME.
Appropriate precaution was taken to ensure that all EME from the EUT were maximized and investigated. The Technology configuration, clock speed, mode of operation or video resolution, turntable azimuth with respect to the antenna was note for each frequency found.
The spectrum was scanned from 0.15 ㎒ to 30 ㎒ using Loop Antenna (ROHDE & SCHWARZ, HFH2-Z2) and from 30 ㎒ to 1 000 ㎒ using TRILOG Broadband Test Antenna (Schwarzbeck, VULB 9163). 1 GHz to 6 GHz and 6 GHz to 18 GHz, Double Ridged Horn Antennas (ROHDE & SCHWARZ, HF907) was used.
The test equipment was placed on a Styrofoam table.
Final Measurements were made indoors at 3 m using Loop Antenna (ROHDE & SCHWARZ, HFH2-Z2) for measurement from 0.15 to 30 ㎒ with RBW 9 ㎑ and made indoor at 10 m using TRILOG Broadband Test Antenna (Schwarzbeck, VULB 9163) for measurement from 30 ㎒ to 1 000 ㎒ with RBW 120 ㎑ and made indoors at 3 m using Double Ridged Horn Antennas (ROHDE & SCHWARZ, HF907).
The detector function were set to quasi peak mode and the bandwidth of the receiver were set to 9 ㎑, 120 ㎑ and peak mode 1 ㎒ depending on the frequency or type of signal.
The Double Ridged Broadband Horn antenna was tuned to the frequency found during preliminary radiated measurements.
The EUT support equipment and interconnecting cables were re-configured to the setup producing the maximum emission for the frequency and were placed on top of a 0.8 m high non- metallic 1.0 X 1.5 meter table.
The EUT, support equipment and interconnecting cables were re-arranged and manipulated to maximize each EME emission.
The EUT is rotated about its vertical axis on the turntable, and the polarization and height of the receiving antenna are varied to obtain the highest field strength on the particular frequency under observation.
Each EME reported was calibrated using the R/S signal generator.

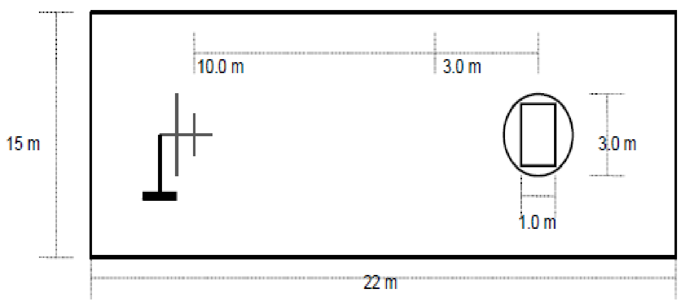


Fig. 3. Dimensions of 10 semi anechoic chamber

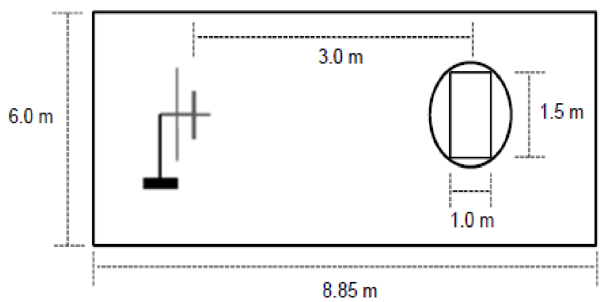


Fig. 4. Dimensions of 3 m full anechoic chamber

TEST DATA

Radiation Hazard

Probe Location	Maximum Leakage [mW/Cm2]	Limit [mW/Cm2]
A	0.10	1.00
B	0.10	1.00
C	0.10	1.00
D	0.10	1.00
E	0.10	1.00
F	0.10	1.00
G	0.10	1.00
H	0.10	1.00

Input Power Measurement

Operation mode	P rated (W)	P (W)	dP (%)	Required dP (%)
Power Input	1 650	1 814	9.04	+ 15 %

Output Power Measurement

Quantity of Water [ml]	Mass of the container [g]	Ambient temperature [℃]	Initial temperature [℃]	Final temperature [℃]	Heating time [s]	Power output [W]
1 000	405	23.5	10.0	20.3	44	959

Formula :

$$P = \frac{4.187 \times m_w \times (T_1 - T_0) + 0.55 \times m_c \times (T_1 - T_A)}{t}$$

NOTE :

P is the microwave power output (W)

m_w is the mass of the water (g)

m_c is the mass of the container (g)

T_A is the ambient temperature (℃)

T_0 is the initial temperature of the water (℃)

T_1 is the final temperature of the water (℃)

t is the heating time (s), excluding the magnetron filament heating-up time.

Tested by : ***Seunghyuk Yoo***

Frequency measurements

▶ **Frequency vs Line Voltage Variation Test**

[Room Temperature : 22.1 ± 1.0 ℃]

Line Voltage Variation (AC V)	*Pole	Frequency [㎒]	Allowed Tolerance for the ISM Band
96 (80 %)	H	Lower : 2413.65	Lower : 2 400 ㎒ Upper : 2 500 ㎒
	H	Upper : 2473.96	
	V	Lower : 2404.31	
	V	Upper : 2475.45	
108 (90 %)	H	Lower : 2403.90	
	H	Upper : 2475.76	
	V	Lower : 2408.15	
	V	Upper : 2474.80	
120 (100 %)	H	Lower : 2455.48	
	H	Upper : 2476.16	
	V	Lower : 2409.08	
	V	Upper : 2475.12	
132 (110 %)	H	Lower : 2439.89	
	H	Upper : 2480.56	
	V	Lower : 2417.00	
	V	Upper : 2477.12	
150 (125 %)	H	Lower : 2444.56	
	H	Upper : 2476.65	
	V	Lower : 2404.39	
	V	Upper : 2477.54	

NOTE :

1. *Pol. H = Horizontal V = Vertical
2. Initial load : 1 000 ㎖ of water in the beaker.
3. Line voltage varied from 80 % to 125 %.
4. ISM Frequency : 2 450 ㎒, Tolerance : ± 50 ㎒

RESULT : Pass

Tested by : ***Seunghyuk Yoo***

TEST DATA

▶ **Frequency vs Load Variation Test**

[Room Temperature : 22.1 ± 1.0 ℃]

Volume of water (㎖)	*)Pole	Frequency [㎒]	Allowed Tolerance for the ISM Band
200	H	Lower : 2421.95	Lower : 2 400 ㎒ Upper : 2 500 ㎒
	H	Upper : 2468.27	
	V	Lower : 2420.41	
	V	Upper : 2469.64	
400	H	Lower : 2409.49	
	H	Upper : 2482.39	
	V	Lower : 2455.56	
	V	Upper : 2489.20	
600	H	Lower : 2443.95	
	H	Upper : 2487.79	
	V	Lower : 2431.63	
	V	Upper : 2481.24	
800	H	Lower : 2407.70	
	H	Upper : 2476.95	
	V	Lower : 2417.33	
	V	Upper : 2494.14	
1 000	H	Lower : 2455.48	
	H	Upper : 2476.16	
	V	Lower : 2409.08	
	V	Upper : 2475.12	

NOTE :

1. ****Pol. H = Horizontal, V = Vertical***
2. **The water load was varied between 200 ㎖ to 1 000 ㎖.**
3. ***Frequency was measured by using nominal voltage (AC 120 V).***
4. ***ISM Frequency : 2 450 ㎒, Tolerance : ± 50 ㎒***

RESULT : Pass

Tested by : ***Seunghyuk Yoo***

TEST DATA

Conducted Emissions

FCC ID : A3LME6000A

[Room Temperature : 21.1 ± 1.0 ℃]

Test 1 / 2

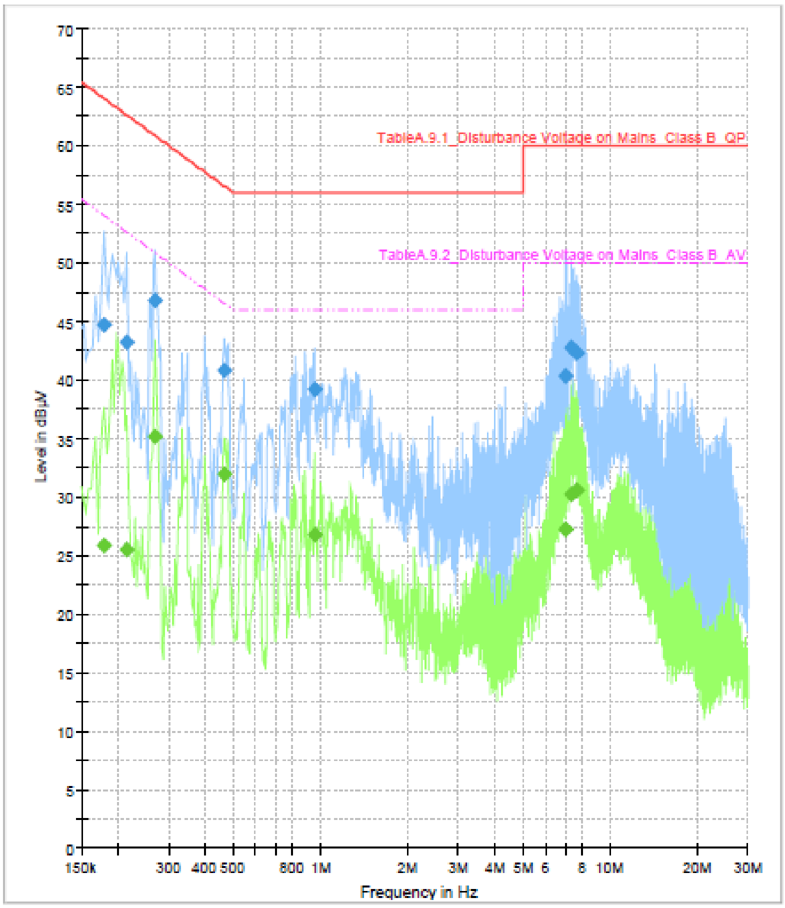
Test Report

Common Information

Test Description:	Conducted emission (NK-24-E-0017)
Test Site:	Shielded room
Test Standard:	FCC Part 18
Environment Conditions:	AC 120 V, 60 Hz
Operator Name:	SeungHyukYoo
Mode:	Microwave Mode

Full Spectrum

Full Spectrum



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Test 2 / 2

Final Result

Frequency (MHz)	QuasiPeak (dBµV)	CAverage (dBµV)	Limit (dBµV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter
0.179850	44.72	---	64.03	19.31	15000.0	9.000	L1	ON
0.179850	---	25.87	54.03	28.16	15000.0	9.000	L1	ON
0.215670	43.24	---	62.61	19.37	15000.0	9.000	L1	ON
0.215670	---	25.51	52.61	27.09	15000.0	9.000	L1	ON
0.269400	46.77	---	60.86	14.09	15000.0	9.000	L1	ON
0.269400	---	35.18	50.86	15.67	15000.0	9.000	L1	ON
0.469395	40.75	---	56.50	15.75	15000.0	9.000	L1	ON
0.469395	---	31.99	46.50	14.51	15000.0	9.000	L1	ON
0.955950	39.20	---	56.00	16.80	15000.0	9.000	L1	ON
0.955950	---	26.73	46.00	19.27	15000.0	9.000	L1	ON
7.012515	40.33	---	60.00	19.67	15000.0	9.000	L1	ON
7.012515	---	27.29	50.00	22.71	15000.0	9.000	L1	ON
7.379670	42.81	---	60.00	17.19	15000.0	9.000	L1	ON
7.379670	---	30.20	50.00	19.80	15000.0	9.000	L1	ON
7.687125	42.35	---	60.00	17.65	15000.0	9.000	L1	ON
7.687125	---	30.62	50.00	19.38	15000.0	9.000	L1	ON

(continuation of the "Final_Result" table from column 14 ...)

Frequency (MHz)	Corr. (dB)	Comment
0.179850	10.0	
0.179850	10.0	
0.215670	9.8	
0.215670	9.8	
0.269400	9.7	
0.269400	9.7	
0.469395	9.9	
0.469395	9.9	
0.955950	9.8	
0.955950	9.8	
7.012515	9.9	
7.012515	9.9	
7.379670	9.9	
7.379670	9.9	
7.687125	10.0	
7.687125	10.0	

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NOTES:

1. ***Measurements using quasi-peak mode & average mode.***
2. ***If no frequencies are specified in the tables, no measurement for quasi-peak or average was necessary.***
3. ***Line : L = Line , N = Neutral***
4. ***The limit for consumer device is on the FCC Part section 18.307(b).***

Tested by : ***Seunghyuk Yoo***

TEST DATA

Radiated Emissions (150 ㎑ to 30 ㎒)

FCC ID : A3LME6000A

[Room Temperature : 20.6 ± 1.0 ℃]

Test 1 / 2

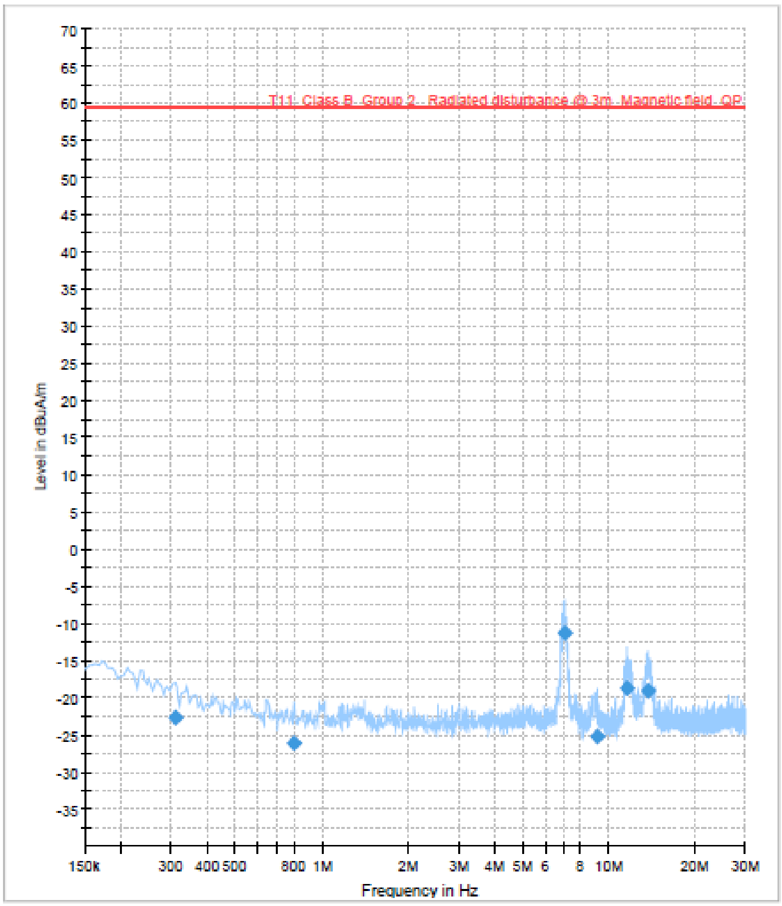
Test Report

Common Information

Test Description:	Radiated Emission(NK-24-E-0017)
Test Site:	10 m chamber
Test Standard:	FCC Part 18
Environment Conditions:	AC 120 V, 60 Hz
Operator Name:	SeungHyuk Yoo
Mode:	Microwave Mode

Full Spectrum

Full Spectrum



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Test 2 / 2

Final Result

Frequency (MHz)	QuasiPeak (dBuA/m)	Limit (dBuA/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
0.308029	-22.63	59.31	81.94	15000.0	9.000	200.0	H	160.0
0.804066	-26.15	59.31	85.46	15000.0	9.000	200.0	H	156.0
7.011110	-11.28	59.31	70.59	15000.0	9.000	200.0	H	180.0
9.122559	-25.25	59.31	84.56	15000.0	9.000	200.0	V	263.0
11.651029	-18.76	59.31	78.07	15000.0	9.000	200.0	V	138.0
13.793206	-19.13	59.31	78.44	15000.0	9.000	200.0	V	335.0

(continuation of the "Final_Result" table from column 15 ...)

Frequency (MHz)	Corr. (dB/m)	Comment
0.308029	-82.2	
0.804066	-82.3	
7.011110	-81.9	
9.122559	-81.8	
11.651029	-81.9	
13.793206	-81.8	

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<Radiated Measurements at 3 meters >

NOTES:

1. **Pol.   H = Horizontal   V = Vertical*
2. ***AF + CL + Amp. = Antenna Factor + Cable Loss + Amplifier.*
3. *Distance Correction factor : 40 * log (300 / 3) = 80 dBuV/m*
4. *The limit at 300 meters is 20 * log (25 * SQRT (RF Power / 500))*
5. *All other emissions were measured while a 700 ㎖ load was placed in the center of the oven.*
6. *The limit for consumer device is on the FCC Part section 18.305.*

Tested by : **Seunghyuk Yoo**

TEST DATA

Radiated Emissions (30 ㎒ to 1 ㎓)

FCC ID : A3LME6000A

[Room Temperature : 20.6 ± 1.0 ℃]

1 / 2

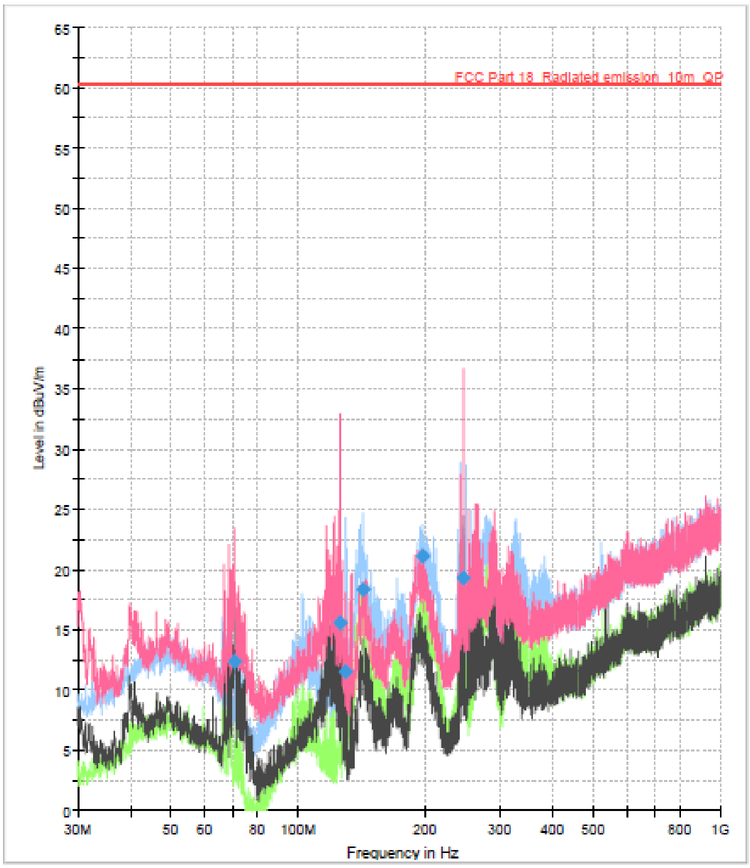
Test Report

Common Information

Test Description:	Radiated Emission(NK-24-E-0017)
Test Site:	10 m chamber
Test Standard:	FCC Part 18
Environment Conditions:	AC 120 V, 60 Hz
Operator Name:	SeungHyuk Yoo
Mode:	Microwave Mode

Full Spectrum

Full Spectrum



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2 / 2

Final Result

Frequency (MHz)	QuasiPeak (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)
70.578333	12.34	60.26	47.92	15000.0	120.000	392.0	V	108.0
125.706667	15.54	60.26	44.72	15000.0	120.000	213.0	V	8.0
129.425000	11.48	60.26	48.78	15000.0	120.000	170.0	H	-5.0
142.304444	18.39	60.26	41.87	15000.0	120.000	400.0	H	6.0
196.570556	21.14	60.26	39.12	15000.0	120.000	400.0	H	272.0
245.986667	19.36	60.26	40.90	15000.0	120.000	380.0	V	170.0

(continuation of the "Final_Result" table from column 15 ...)

Frequency (MHz)	Corr. (dB/m)	Comment
70.578333	-35.2	
125.706667	-35.1	
129.425000	-35.4	
142.304444	-35.7	
196.570556	-31.2	
245.986667	-29.7	

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<Radiated Measurements at 10 meters>

NOTES:

1. ****Pol. H = Horizontal V = Vertical***
2. *****AF + CL + Amp. = Antenna Factor + Cable Loss + Amplifier.***
3. ***Distance Correction factor : 20 * log (300/10) ≒ 29.5 dB ㎶/m***
4. ***The limit at 300 meters is 20 * log (25 * SQRT (RF Power/500))***
5. ***All other emissions were measured while a 700 ㎖ load was placed in the center of the oven.***
6. ***The limit for consumer device is on the FCC Part section 18.305.***

Tested by : ***Seunghyuk Yoo***

TEST DATA

Radiated Emissions (Above 1 ㎓)

FCC ID : A3LME6000A

[Room Temperature : 21.2 ± 1.0 ℃]

Frequency	Pol*	Antenna Heights	Turntable Angles	Reading Level	Total Loss**	Result at 3 m		K	Results at 300 m	Limits at 300 m
(MHz)	(H/V)	(cm)	(˚)	(dBμV)	(dB)	(dBμV/m)	(μV/m)		(μV/m)	(μV/m)
4889	V	100	215	31.94	3.3	35.24	57.81	0.0100	0.58	70.81
7342	V	100	235	25.95	7.2	33.15	45.45	0.0100	0.45	70.81
8459	V	100	351	25.87	8.6	34.47	52.91	0.0100	0.53	70.81
9796	V	100	212	24.86	10.5	35.36	58.61	0.0100	0.59	70.81
9891	H	100	350	29.27	10.5	39.77	97.39	0.0100	0.97	70.81
10118	V	100	339	26.00	11.1	37.1	71.61	0.0100	0.72	70.81
17900	V	100	208	21.24	32	53.24	459.20	0.0100	4.59	70.81

<Radiated Measurements at 3 meters>

NOTES:

1. * Pol. H =Horizontal V=Vertical

2. ** Total Loss = Antenna Factor + Cables Loss + Amplifier + HPF (High Pass Filter)

3. Field Strength (at 300 m) (uV/m) = K * 10 $^{[\text{Fieldstrength at 3 m (dBuV/m) / 20}]}$

4. Where K is given by :

Frequency	K
1830 MHz	.0046
2745 MHz	.0070
3660 MHz	.0090
4575 MHz and above	.0100

For frequencies between those given in the table, the value of K is determined by linear interpolation.

5. The limit at 300 meters is 25 * SQRT (RF Power/500)

6. Load for measurement of radiation on second and third harmonic : Two loads, one of 700 ㎖ and the other of 300 ㎖, of water were used. Each load was tested both with the beaker located in the center of the oven and with it in the corner.

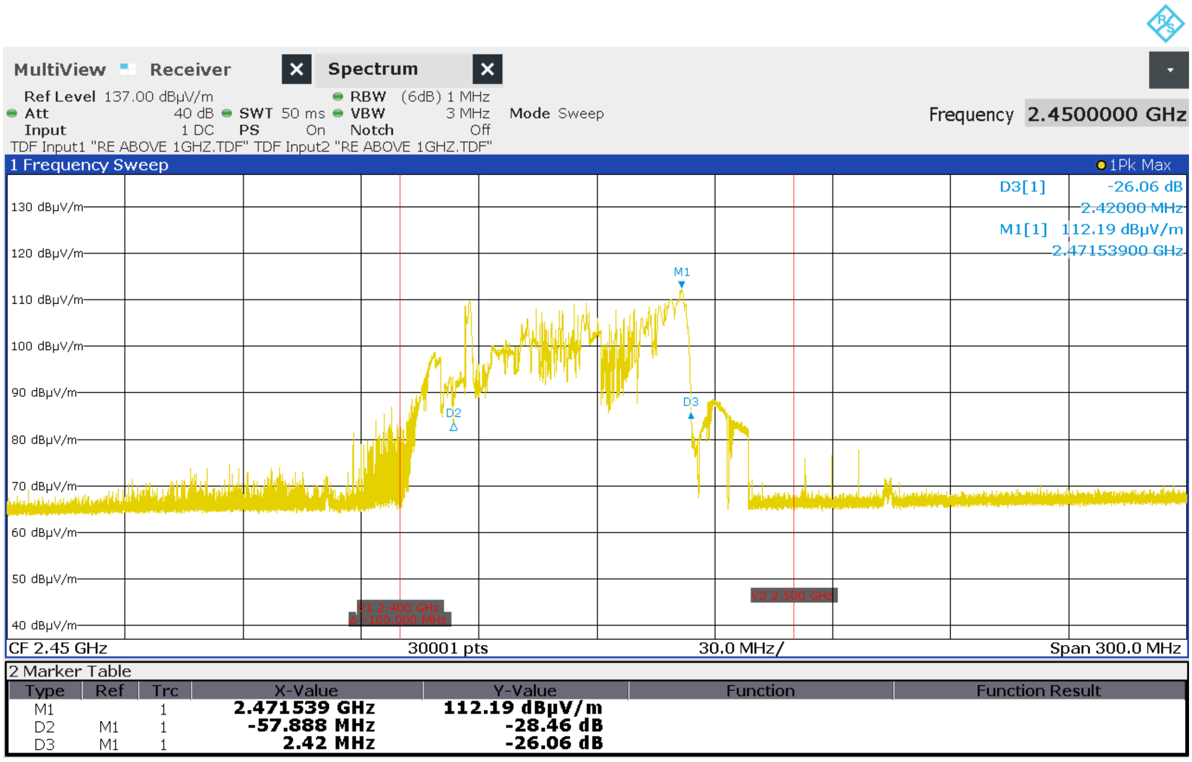
7. The test was performed at peak detector mode with average.

8. The limit for consumer device is on the FCC Part section 18.305.

Tested by : ***Seunghyuk Yoo***

PLOTS OF EMISSIONS

- ***Frequency vs Line Voltage Variation Test***



Horizontal (96 V, 1 000 ㎖)

PLOTS OF EMISSIONS

- ***Frequency vs Line Voltage Variation Test***

Vertical (96 V, 1 000 ㎖)

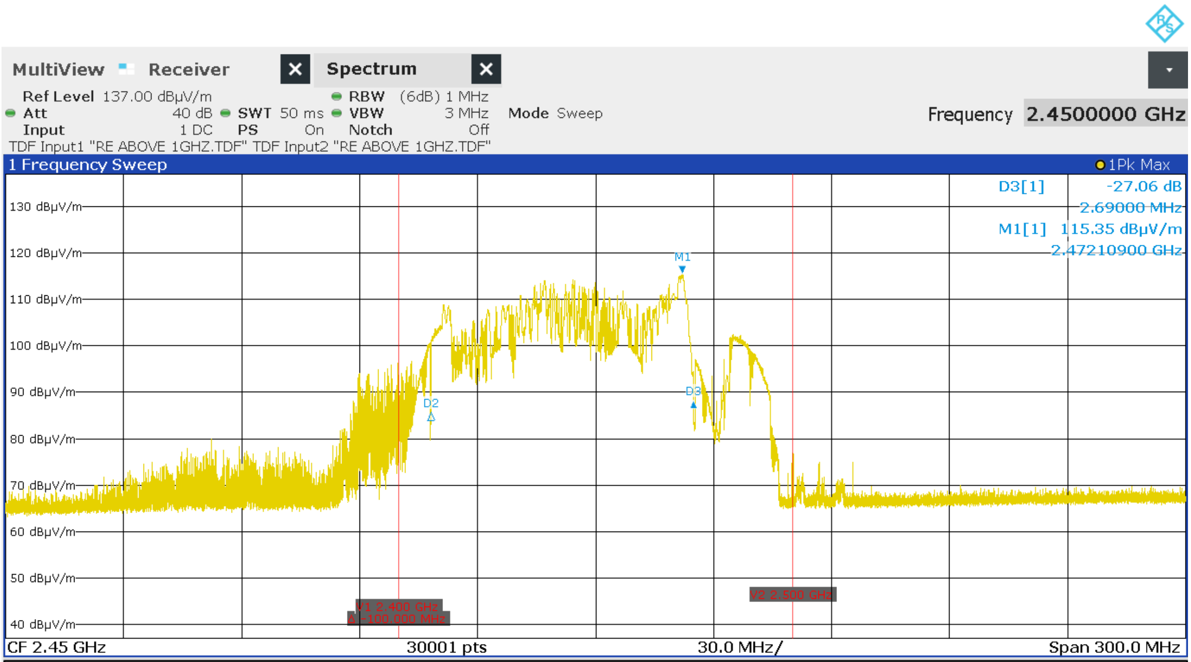
PLOTS OF EMISSIONS

- ***Frequency vs Line Voltage Variation Test***

Horizontal (108 V, 1 000 ㎖)

PLOTS OF EMISSIONS

- ***Frequency vs Line Voltage Variation Test***



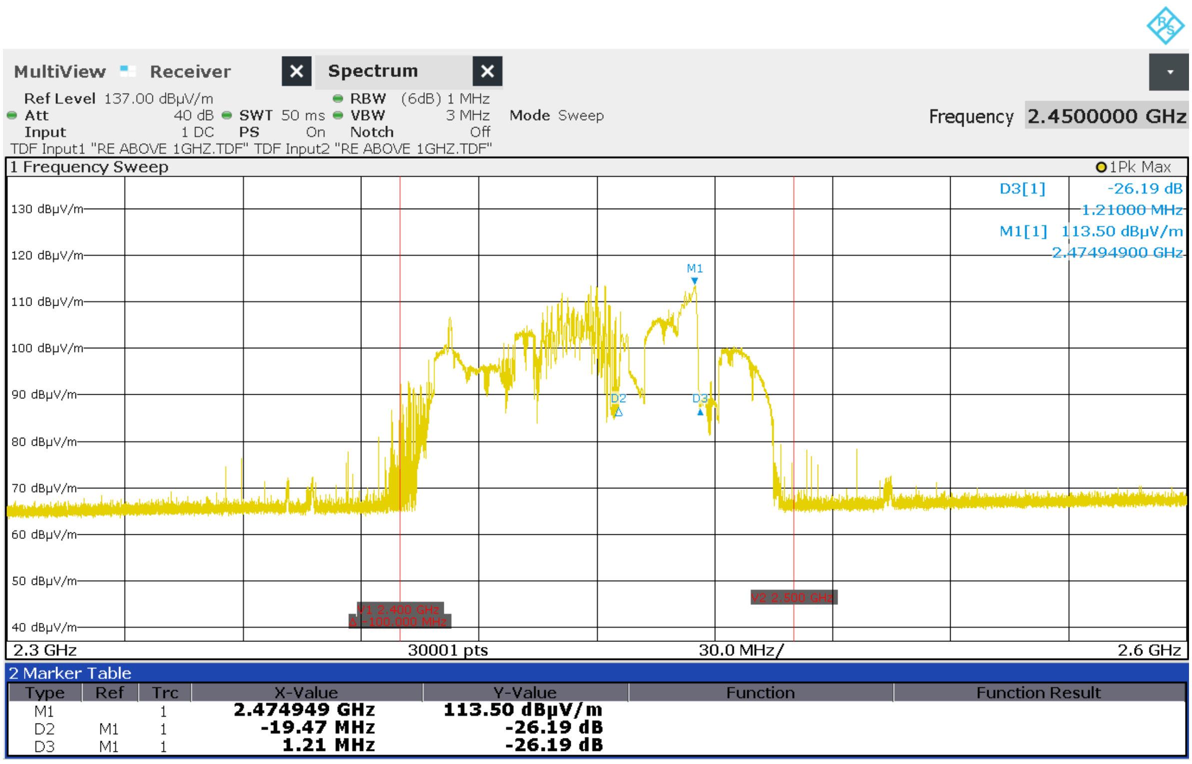
2 Marker Table

Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	2.472109 GHz	115.35 dBµV/m		
D2	M1	1	-63.958 MHz	-29.63 dB		
D3	M1	1	2.69 MHz	-27.06 dB		

Vertical (108 V, 1 000 ㎖)

PLOTS OF EMISSIONS

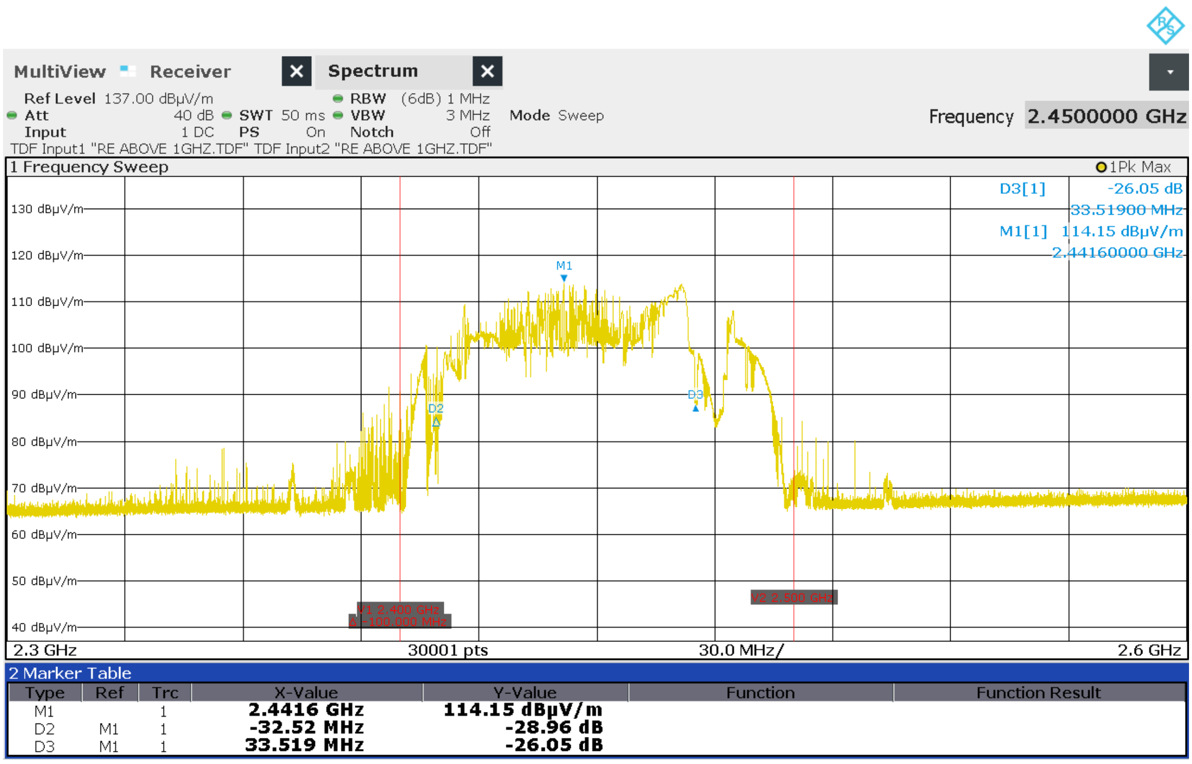
- ***Frequency vs Line Voltage Variation Test***



Horizontal (120 V, 1 000 ㎖)

PLOTS OF EMISSIONS

- ***Frequency vs Line Voltage Variation Test***

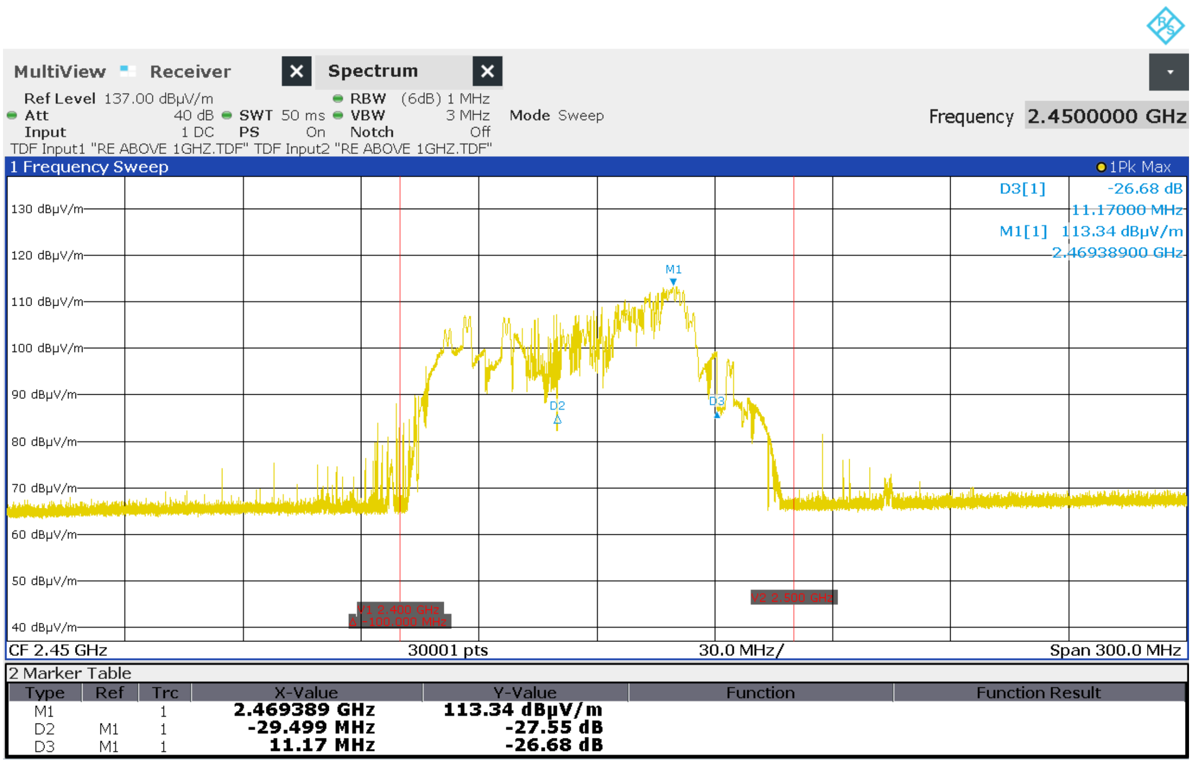


Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	2.4416 GHz	114.15 dBµV/m		
D2	M1	1	-32.52 MHz	-28.96 dB		
D3	M1	1	33.519 MHz	-26.05 dB		

Vertical (120 V, 1 000 ㎖)

PLOTS OF EMISSIONS

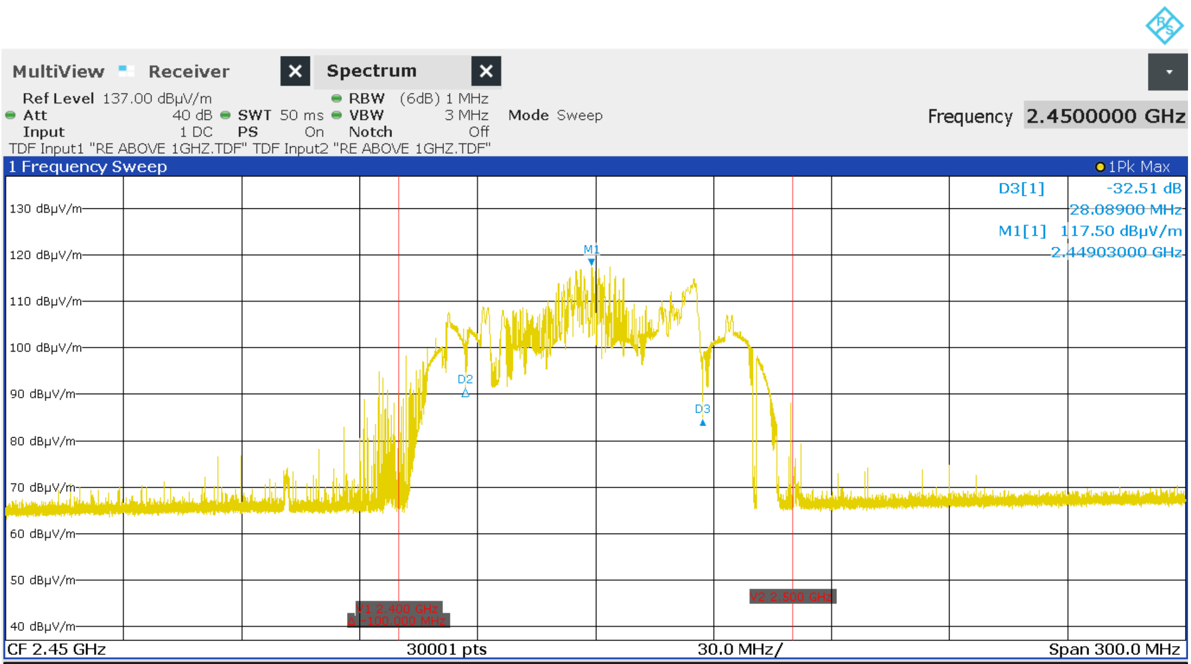
- ***Frequency vs Line Voltage Variation Test***



Horizontal (132 V, 1 000 ㎖)

PLOTS OF EMISSIONS

- ***Frequency vs Line Voltage Variation Test***



Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	2.44903 GHz	117.50 dBµV/m		
D2	M1	1	-32.029 MHz	-26.13 dB		
D3	M1	1	28.089 MHz	-32.51 dB		

Vertical (132 V, 1 000 ㎖)

PLOTS OF EMISSIONS

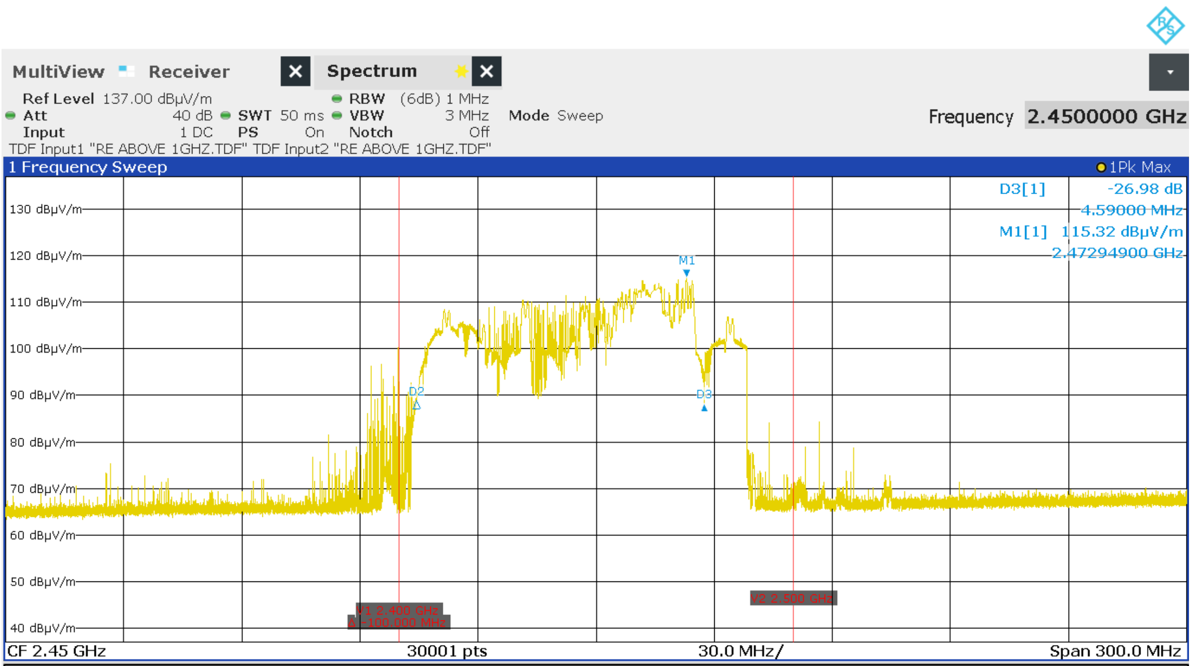
- ***Frequency vs Line Voltage Variation Test***

Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	2.467649 GHz	115.48 dBµV/m		
D2	M1	1	-23.089 MHz	-28.02 dB		
D3	M1	1	9.0 MHz	-26.50 dB		

Horizontal (150 V, 1 000 ㎖)

PLOTS OF EMISSIONS

- ***Frequency vs Line Voltage Variation Test***



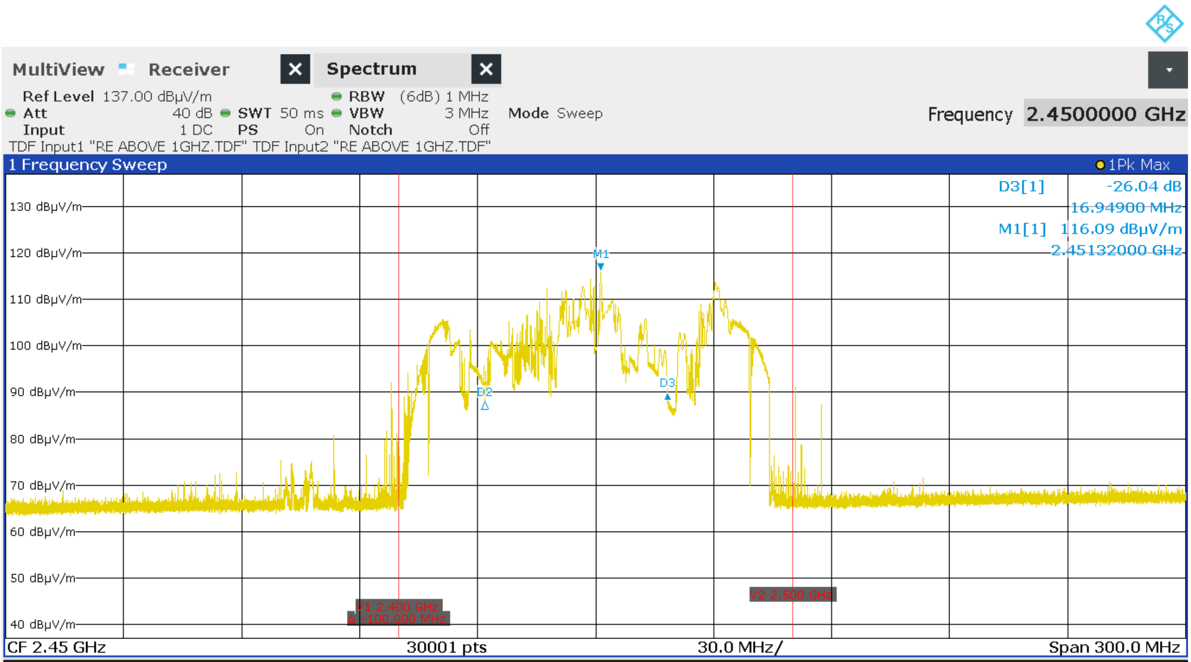
2 Marker Table

Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	2.472949 GHz	115.32 dBµV/m		
D2	M1	1	-68.558 MHz	-26.49 dB		
D3	M1	1	4.59 MHz	-26.98 dB		

Vertical (150 V, 1 000 ㎖)

PLOTS OF EMISSIONS

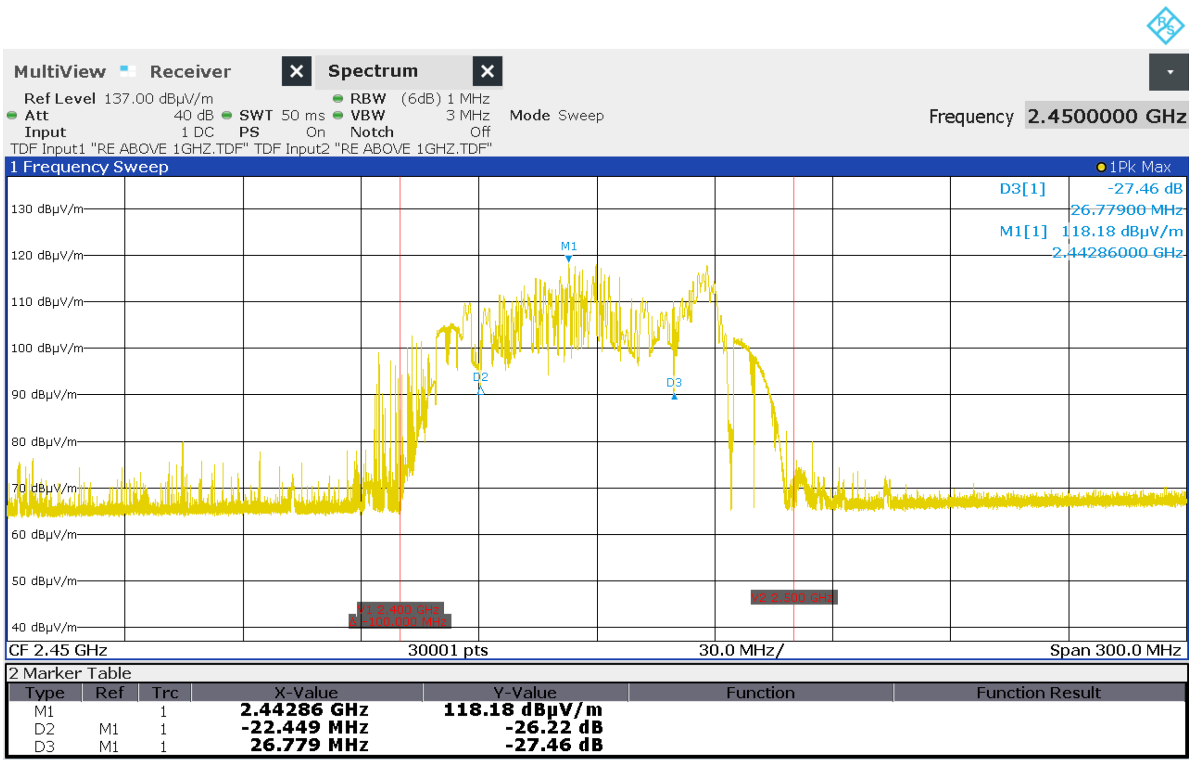
- ***Frequency vs Load Variation Test***



Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	2.45132 GHz	116.09 dBµV/m		
D2	M1	1	-29.369 MHz	-27.96 dB		
D3	M1	1	16.949 MHz	-26.04 dB		

Horizontal (120 V, 200 ㎖)

- ***Frequency vs Load Variation Test***



Vertical (120 V, 200 ㎖)

PLOTS OF EMISSIONS

- ***Frequency vs Load Variation Test***

Horizontal (120 V, 400 ㎖)

PLOTS OF EMISSIONS

- ***Frequency vs Load Variation Test***

Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	2.478589 GHz	116.37 dBµV/m		
D2	M1	1	-23.029 MHz	-27.76 dB		
D3	M1	1	10.61 MHz	-28.05 dB		

Vertical (120 V, 400 ㎖)

PLOTS OF EMISSIONS

- ***Frequency vs Load Variation Test***

Horizontal (120 V, 600 ㎖)

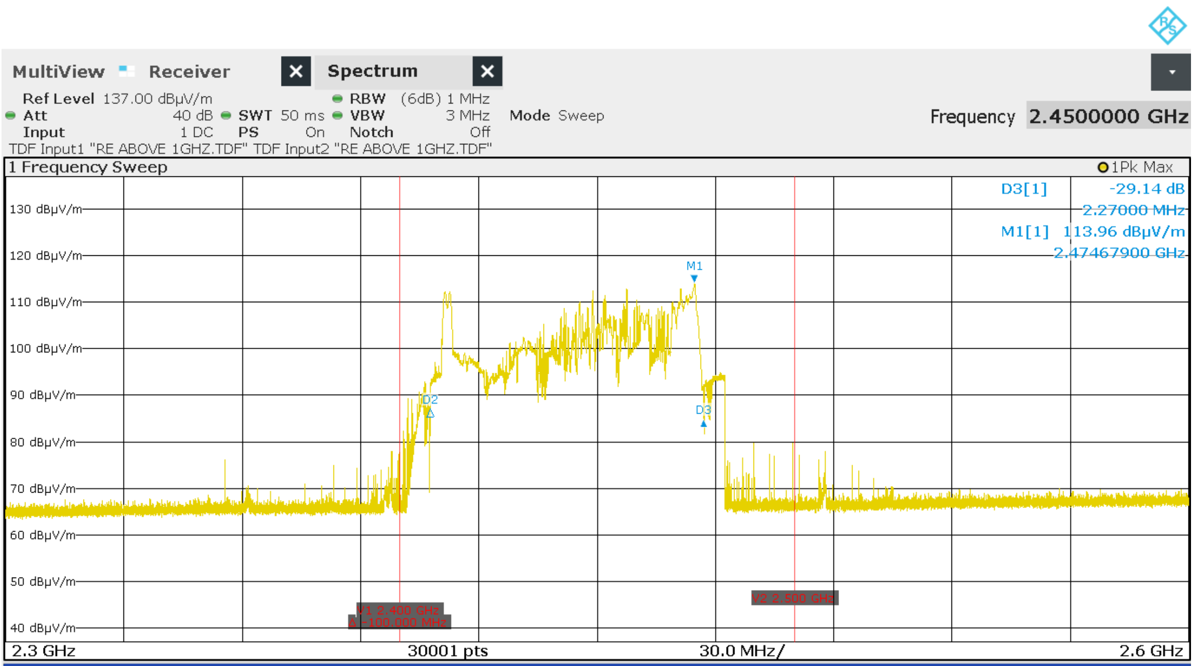
PLOTS OF EMISSIONS

- ***Frequency vs Load Variation Test***

Vertical (120 V, 600 ㎖)

PLOTS OF EMISSIONS

- ***Frequency vs Load Variation Test***



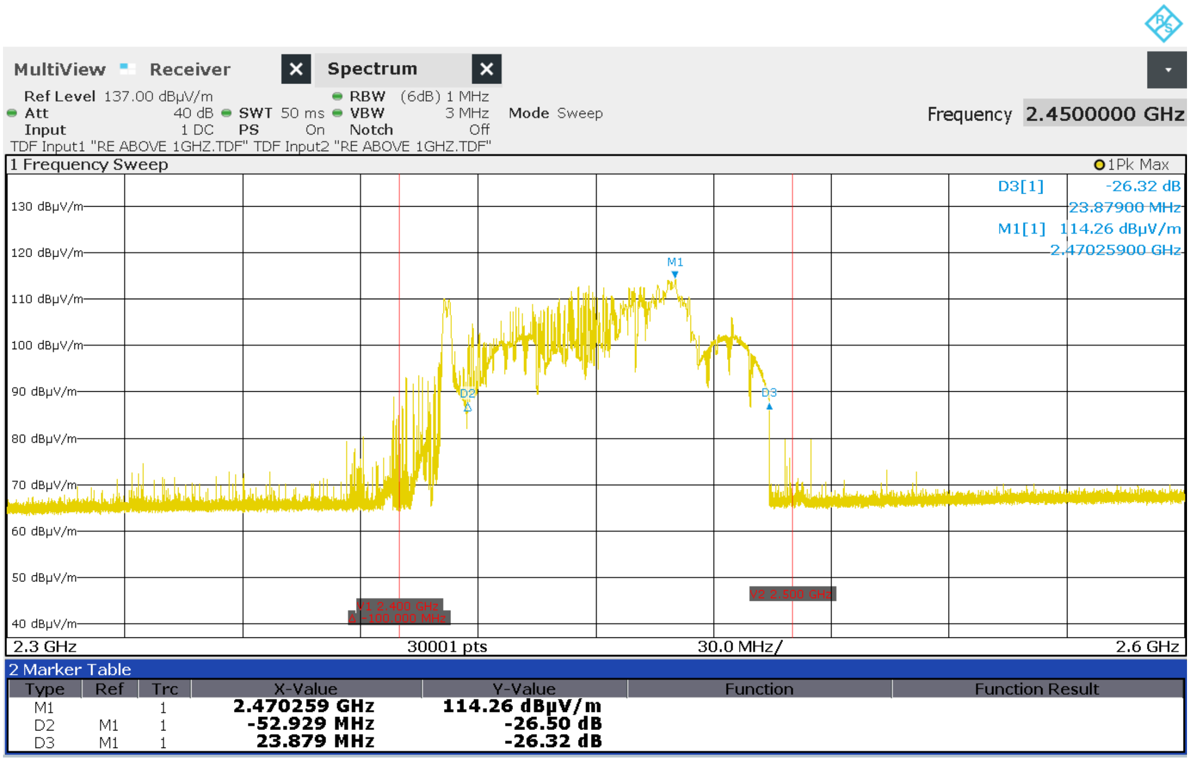
2 Marker Table

Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	2.474679 GHz	113.96 dBµV/m		
D2	M1	1	-66.979 MHz	-26.83 dB		
D3	M1	1	2.27 MHz	-29.14 dB		

Horizontal (120 V, 800 ㎖)

PLOTS OF EMISSIONS

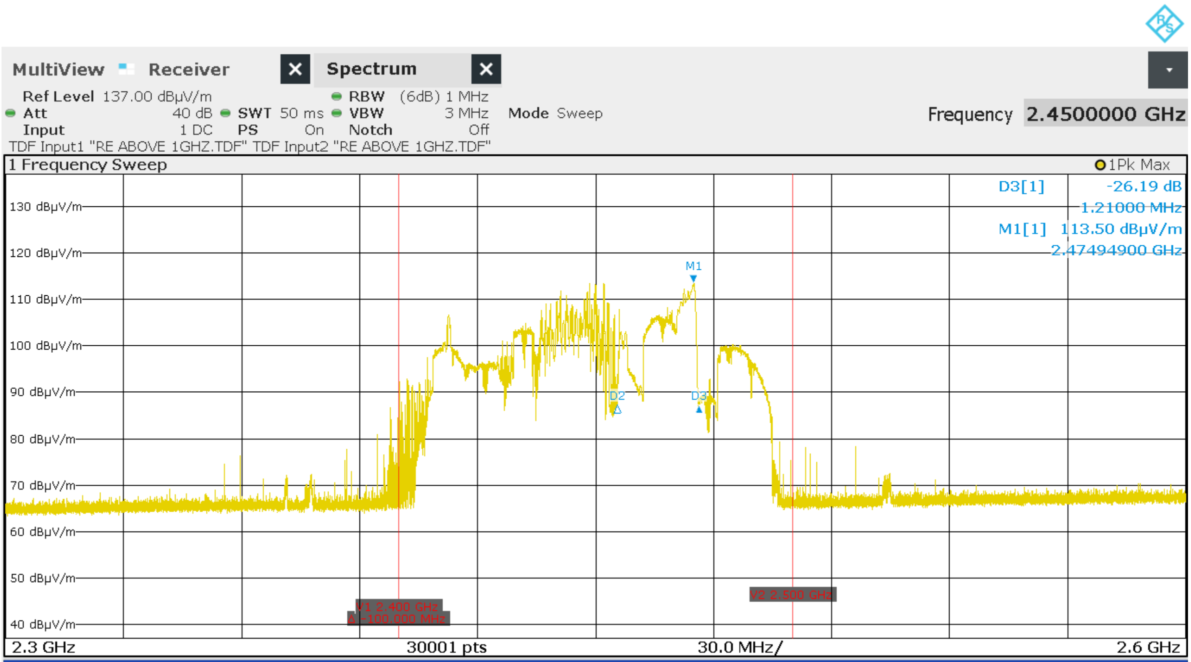
- ***Frequency vs Load Variation Test***



Vertical (120 V, 800 ㎖)

PLOTS OF EMISSIONS

- ***Frequency vs Load Variation Test***



2 Marker Table

Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	2.474949 GHz	113.50 dBµV/m		
D2	M1	1	-19.47 MHz	-26.19 dB		
D3	M1	1	1.21 MHz	-26.19 dB		

Horizontal (120 V, 1 000 ㎖)

PLOTS OF EMISSIONS

- ***Frequency vs Load Variation Test***

Type	Ref	Trc	X-Value	Y-Value	Function	Function Result
M1		1	2.4416 GHz	114.15 dBµV/m		
D2	M1	1	-32.52 MHz	-28.96 dB		
D3	M1	1	33.519 MHz	-26.05 dB		

Vertical (120 V, 1 000 ㎖)

PLOTS OF EMISSIONS

- ***Radiated Emissions (Above 1 GHz)***

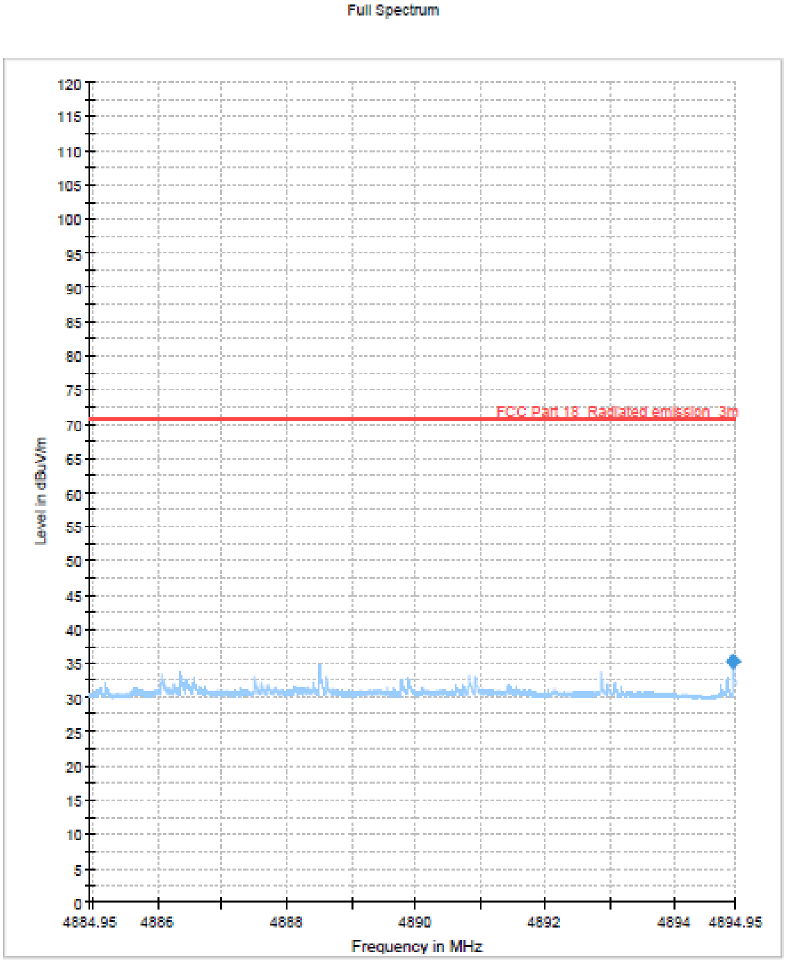
1 / 2

Test Report

Common Information

Test Description:	Radiated Emission(NK-24-E-0017)
Test Site:	10 m chamber (3m)
Test Standard:	FCC Part 18
Environment Conditions:	AC 120 V, 60 Hz
Operator Name:	SeungHyuk Yoo
Mode:	4889

Full Spectrum



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4894.91 MHz

PLOTS OF EMISSIONS

- ***Radiated Emissions (Above 1 GHz)***

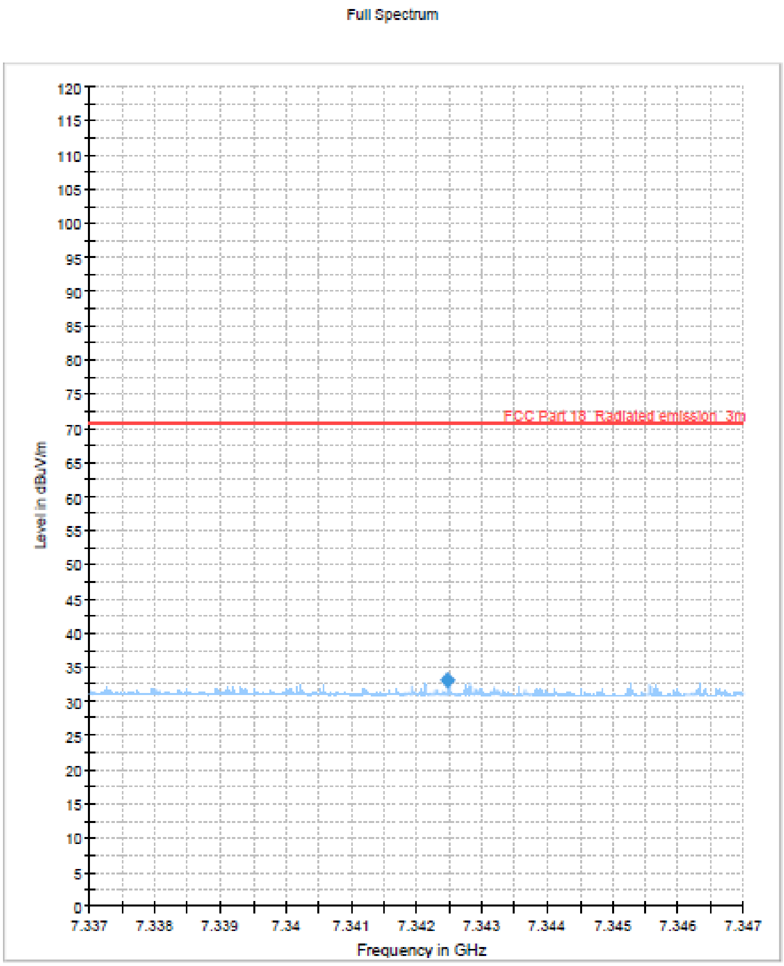
1 / 2

Test Report

Common Information

Test Description:	Radiated Emission(NK-24-E-0017)
Test Site:	10 m chamber (3m)
Test Standard:	FCC Part 18
Environment Conditions:	AC 120 V, 60 Hz
Operator Name:	SeungHyuk Yoo
Mode:	7342

Full Spectrum



1/21/2024 9:17:19 PM

7 342.48 MHz

PLOTS OF EMISSIONS

- ***Radiated Emissions (Above 1 GHz)***

1 / 2

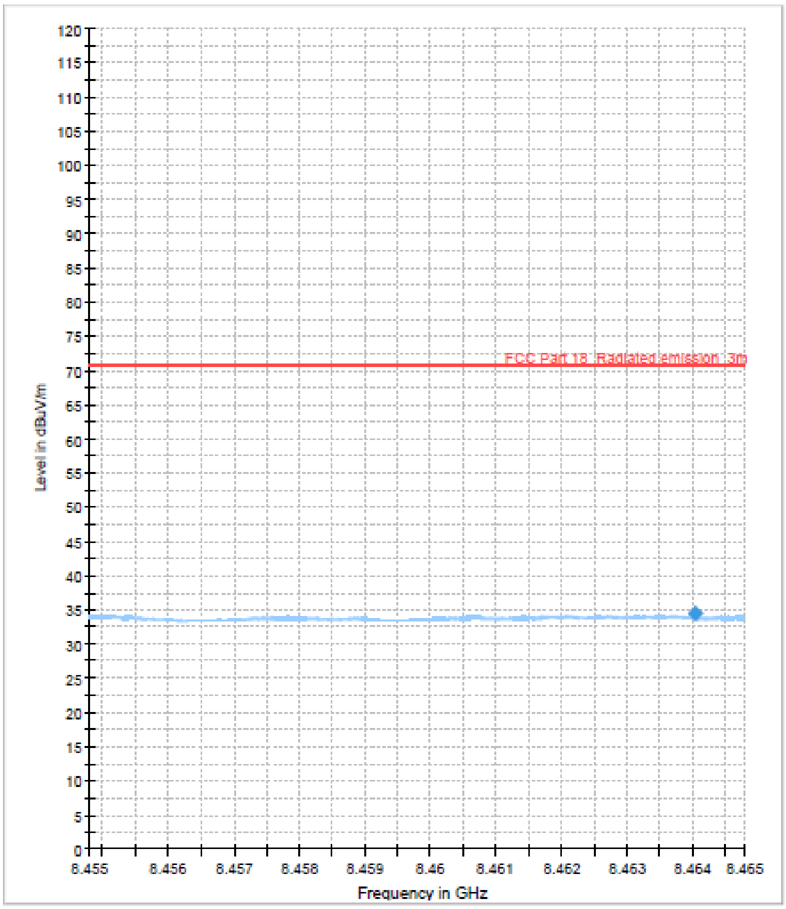
Test Report

Common Information

Test Description:	Radiated Emission(NK-24-E-0017)
Test Site:	10 m chamber (3m)
Test Standard:	FCC Part 18
Environment Conditions:	AC 120 V, 60 Hz
Operator Name:	SeungHyuk Yoo
Mode:	8459

Full Spectrum

Full Spectrum



1/21/2024 9:23:29 PM

8 464.05 MHz

PLOTS OF EMISSIONS

- ***Radiated Emissions (Above 1 GHz)***

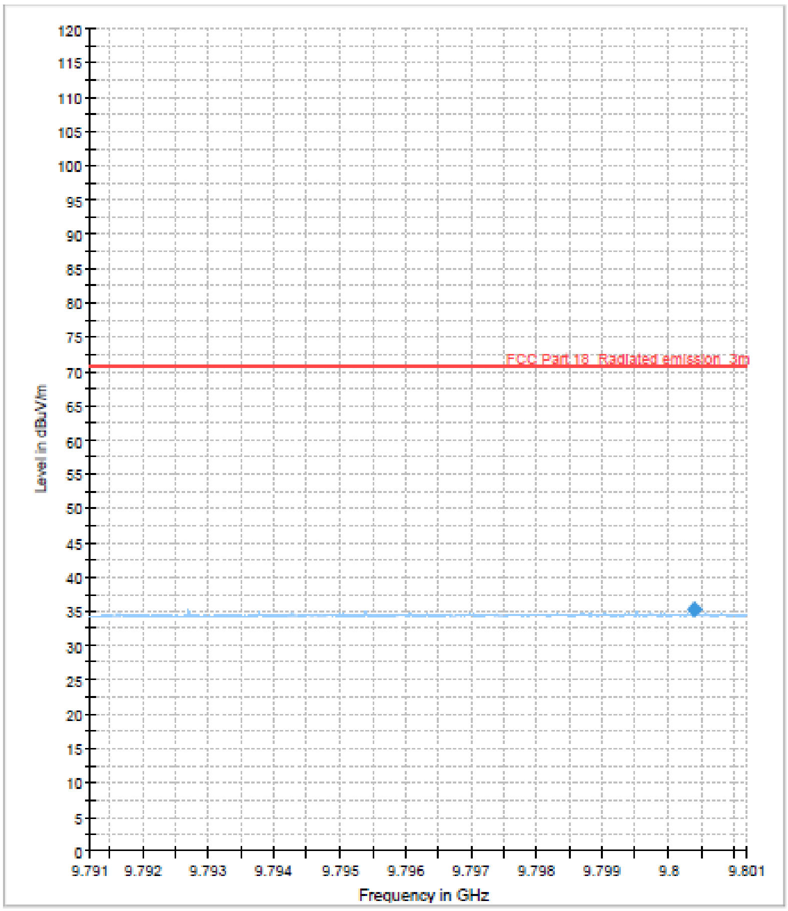
Test Report

Common Information

Test Description:	Radiated Emission(NK-24-E-0017)
Test Site:	10 m chamber (3m)
Test Standard:	FCC Part 18
Environment Conditions:	AC 120 V, 60 Hz
Operator Name:	SeungHyuk Yoo
Mode:	9796

Full Spectrum

Full Spectrum



9 800.38 MHz

PLOTS OF EMISSIONS

- ***Radiated Emissions (Above 1 GHz)***

1 / 2

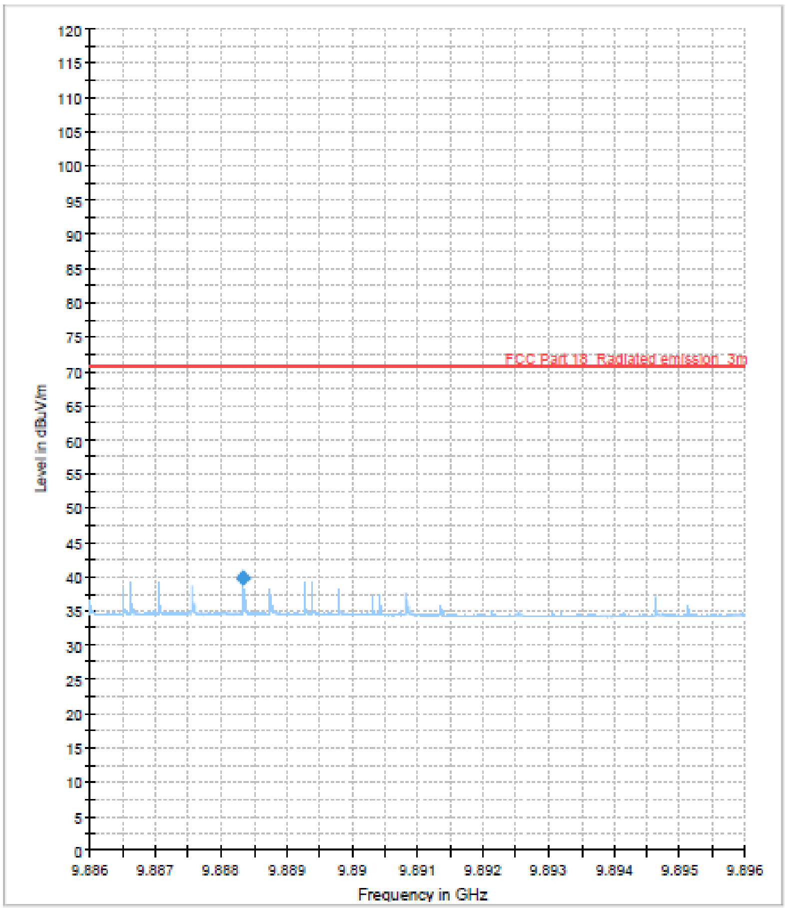
Test Report

Common Information

Test Description:	Radiated Emission(NK-24-E-0017)
Test Site:	10 m chamber (3m)
Test Standard:	FCC Part 18
Environment Conditions:	AC 120 V, 60 Hz
Operator Name:	SeungHyuk Yoo
Mode:	9891

Full Spectrum

Full Spectrum



1/21/2024 9:33:25 PM

9 888.34 MHz

PLOTS OF EMISSIONS

- ***Radiated Emissions (Above 1 GHz)***

1 / 2

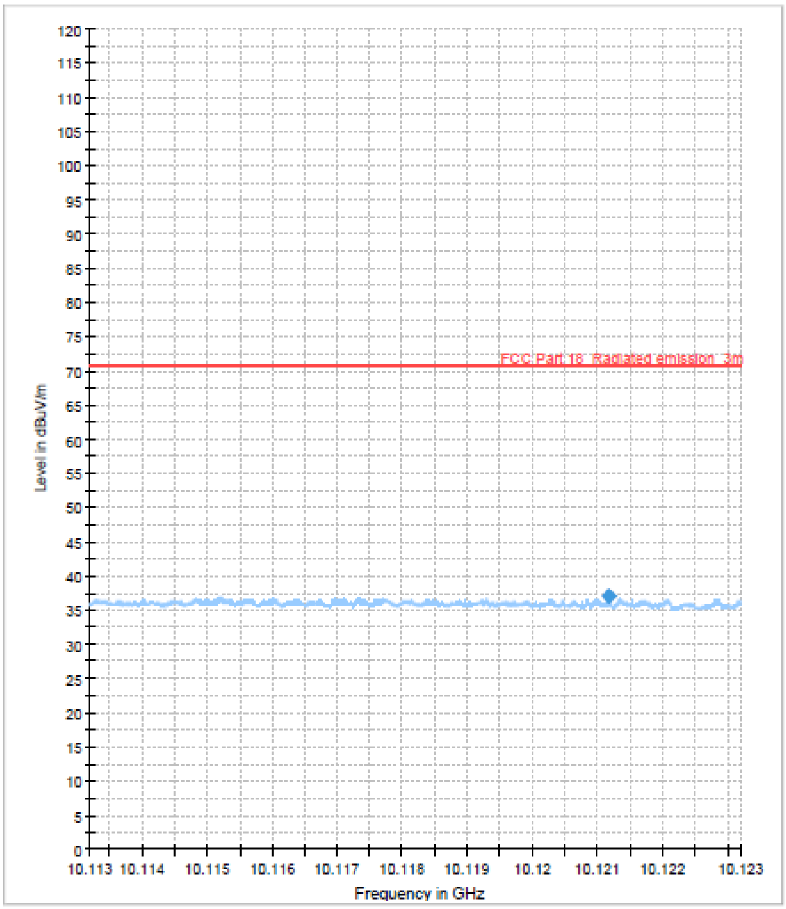
Test Report

Common Information

Test Description:	Radiated Emission(NK-24-E-0017)
Test Site:	10 m chamber (3m)
Test Standard:	FCC Part 18
Environment Conditions:	AC 120 V, 60 Hz
Operator Name:	SeungHyuk Yoo
Mode:	10118

Full Spectrum

Full Spectrum



1/21/2024 9:39:19 PM

10 121.17 MHz

PLOTS OF EMISSIONS

- ***Radiated Emissions (Above 1 GHz)***

1 / 2

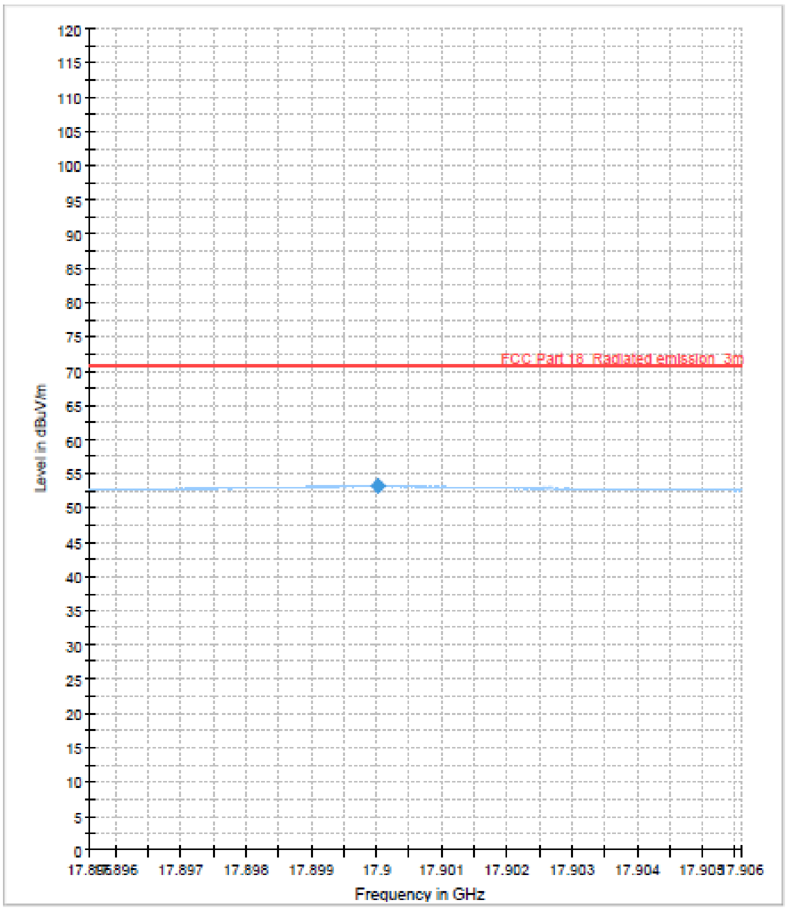
Test Report

Common Information

Test Description:	Radiated Emission(NK-24-E-0017)
Test Site:	10 m chamber (3m)
Test Standard:	FCC Part 18
Environment Conditions:	AC 120 V, 60 Hz
Operator Name:	SeungHyuk Yoo
Mode:	17900

Full Spectrum

Full Spectrum



1/21/2024 9:44:16 PM

17 900.01 MHz

ACCURACY OF MEASUREMENT

The Measurement Uncertainties stated were calculated in accordance with the requirements of measurement uncertainty contained in CISPR 16-4-2 with the confidence level of 95 %

1. Conducted Uncertainty Calculation

Source of Uncertainty	X_i	Uncertainty of X_i		Coverage factor k	$u(X_i)$ (dB)	C_i	$C_i\,u(X_i)$ (dB)
		Value (dB)	Probability Distribution				
Receiver reading	Ri	± 0.01	normal 1	1.00	0.01	1	0.01
AMN Voltage division factor	LAMN	± 0.16	normal 2	2.00	0.08	1	0.08
Sine wave voltage	dVSW	± 0.18	normal 2	2.00	0.09	1	0.09
Pulse amplitude response	dVPA	± 0.70	normal 2	2.00	0.35	1	0.35
Pulse repetition rate response	dVPR	± 0.70	normal 2	2.00	0.35	1	0.35
Noise floor proximity	dVNF	± 0.00	rectangular	$\sqrt{3}$	0.00	1	0.00
AMN VDF frequency interpolation	dVFI	± 0.10	rectangular	$\sqrt{3}$	0.06	1	0.06
AMN Impedance	dZ	+ 2.60 - 2.70	Triangular	$\sqrt{6}$	1.10	1	1.10
Mismatch : AMN-Receiver	M	± 0.07	U-Shaped	$\sqrt{2}$	0.05	1	0.05
Combined Standard Uncertainty	Normal			u_c = 1.22 dB			
Expended Uncertainty U	Normal (k = 2)			U = 2.44 dB (CL is approx. 95 %)			

2. Radiation Uncertainty Calculation (Below 1 ㎓)

Source of Uncertainty	X_i	Uncertainty of X_i		Coverage factor k	$u(X_i)$ (dB)	C_i	$C_i\ u(X_i)$ (dB)
		Value (dB)	Probability Distribution				
Receiver reading	R_i	± 0.08	normal 1	1.00	0.08	1	0.08
Sine wave voltage	dV_{sw}	± 0.18	normal 2	2.00	0.09	1	0.09
Pulse amplitude response	dV_{pa}	± 0.58	normal 2	2.00	0.29	1	0.29
Pulse repetition rate response	dV_{pr}	± 0.35	normal 2	2.00	0.18	1	0.18
Noise floor proximity	dV_{nf}	± 0.50	normal 2	2.00	0.29	1	0.29
Antenna Factor Calibration	A_F	± 1.30	normal 2	2.00	0.65	1	0.65
Antenna Directivity	A_D	± 0.50	rectangular	$\sqrt{3}$	0.29	1	0.29
Antenna Factor Height Dependence	A_H	± 1.00	rectangular	$\sqrt{3}$	0.58	1	0.58
Antenna Phase Centre Variation	A_P	± 0.06	rectangular	$\sqrt{3}$	0.03	1	0.03
Antenna Factor Frequency Interpolation	A_i	± 0.30	rectangular	$\sqrt{3}$	0.17	1	0.17
Site Imperfections	S_i	± 4.00	triangular	$\sqrt{6}$	1.63	1	1.63
Measurement Distance Variation	D_V	± 0.10	rectangular	$\sqrt{3}$	0.06	1	0.06
Antenna Balance	D_{bal}	± 0.90	rectangular	$\sqrt{3}$	0.52	1	0.52
Cross Polarisation	D_{Cross}	± 0.90	rectangular	$\sqrt{3}$	0.52	1	0.52
Mismatch	M	+ 0.89 - 1.00	U-Shaped	$\sqrt{2}$	0.70	1	0.70
Combined Standard Uncertainty	Normal			u_c = 2.19 ㏈			
Expended Uncertainty U	Normal (k = 2)			U = 4.38 ㏈ (CL is approx. 95 %)			

3. Radiation Uncertainty Calculation (Above 1 ㎓)

Source of Uncertainty	X_i	Uncertainty of X_i Value (dB)	Uncertainty of X_i Probability Distribution	Coverage factor k	$u(X_i)$ (dB)	C_i	$C_i\,u(X_i)$ (dB)
Receiver Reading	Ri	± 0.26	normal 1	1	0.26	1	0.26
Preamplifier gain	Gp	± 0.23	normal 2	2	0.12	1	0.12
Receiver Sine Wave	dVsw	± 0.27	normal 2	2	0.14	1	0.14
Instability of preamp gain	dGpw	± 1.2	rectangular	$\sqrt{3}$	0.70	1	0.70
Noise Floor Proximity	dVnf	± 0.70	rectangular	$\sqrt{3}$	0.40	1	0.40
Antenna Factor Calibration	AF	± 1.40	normal 2	2	0.70	1	0.70
Directivity difference	AD	± 3.00	rectangular	$\sqrt{3}$	0.87	1	0.87
Phase Centre location	AP	± 0.30	rectangular	$\sqrt{3}$	0.17	1	0.17
Antenna Factor Frequency Interpolation	Ai	± 0.30	rectangular	$\sqrt{3}$	0.17	1	0.17
Site Imperfections	Si	± 3.00	triangular	$\sqrt{6}$	1.22	1	1.22
Effect of setup table material	dANT	± 1.50	rectangular	$\sqrt{3}$	0.87	1	0.87
Separation distance	dD	± 0.30	rectangular	$\sqrt{3}$	0.17	1	0.17
Cross Polarization	DCross	± 0.90	rectangular	$\sqrt{3}$	0.52	1	0.52
Mismatch (antenna-Preamplifier)	M	+ 0.89 − 1.00	U-Shaped	$\sqrt{2}$	0.70	1	0.70
Mismatch (preamplifier-receiver)	M	+ 1.32 − 1.56	U-Shaped	$\sqrt{2}$	1.10	1	1.10
Combined Standard Uncertainty	Normal			u_c = 2.51 dB			
Expended Uncertainty U	Normal (k = 2)			U = 5.02 dB (CL is approx. 95 %)			

LIST OF TEST EQUIPMENT

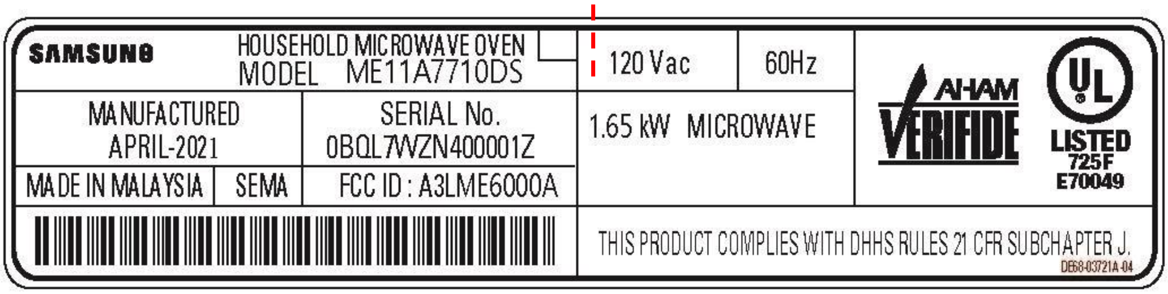
No.	Instrument	Manufacturer	Model	Serial No.	Calibration Due Date	Calibration Interval
1	EMI TEST RECEIVER	Rohde & Schwarz	ESR3	102930	2024.07.03	1 year
2	Software	Rohde & Schwarz	EMC32	Version 11.50	-	-
3	TWO-LINE V-NETWORK	Rohde & Schwarz	ENV216	102829	2024.07.04	1 year
4	EMI TEST RECEIVER	Rohde & Schwarz	ESW44	103221	2025.01.09	1 year
5	Software	Rohde & Schwarz	EMC32	Version 11.50	-	-
6	TRILOG Broadband Test Antenna	SCHWARZBECK	VULB 9163	01432	2025.06.16	2 years
7	ATTENUATOR	FAIRVIEW	SA3N5W-06	N/A	2025.01.09	1 year
8	AMPLIFIER	Sonoma Instrument	315	420127	2024.07.03	1 year
9	Open Switch and Control Unit	Rohde & Schwarz	OSP230	101830	-	
10	TILT ANTENNA MAST	innco systems GmbH	MA4640/800-XP-EP	N/A	-	-
11	Turntable	innco systems GmbH	DT3000-3t	N/A	-	-
12	CONTROLLER	innco systems GmbH	CO3000	CO3000/1373/52220621/P	-	-
13	LOOP ANTENNA	Rohde & Schwarz	HFH2-Z2	100279	2024.03.21	1 year
14	WiFi Filter Bank	Rohde & Schwarz	U080	N/A	-	-
15	DOUBLE RIDGED HORN ANTENNA	Rohde & Schwarz	HF907	102585	2024.03.30	1 year
16	Signal Conditioning Unit	Rohde & Schwarz	SCU 18	180025	2024.03.30	1 year
17	Horn Antenna	Q-par Angus	QSH20S20	8179	2024.07.07	1 year
18	Signal Conditioning Unit	ROHDE & SCHWARZ	SCU 26	10011	2024.07.05	1 year
19	Multimeter	FLUKE Corporation	FLUKE-101	58980136WS	2025.01.09	1 year

APPENDIX A – SAMPLE LABEL

Labeling Requirements

The sample label shown shall be *permanently affixed* at a conspicuous location on the device and be readily visible to the user at the time of purchase.

- **FCC ID Location of EUT**

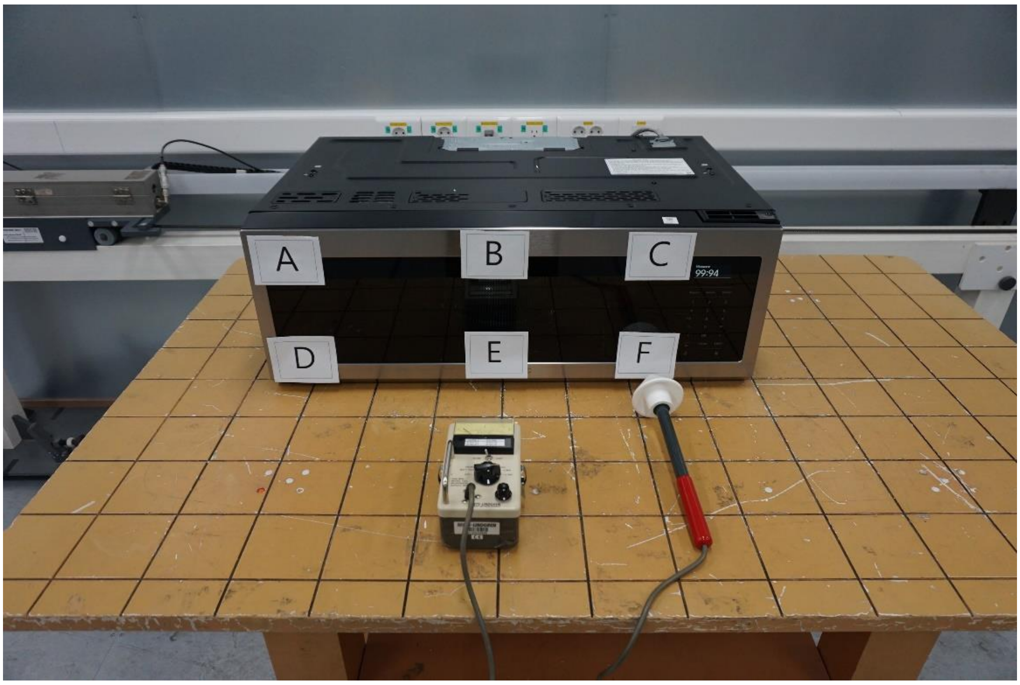


Contains Transmitter Module FCC ID : A3LCWAP210M, IC : 6649E-CWAP210M
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.
DG68-00785A-00

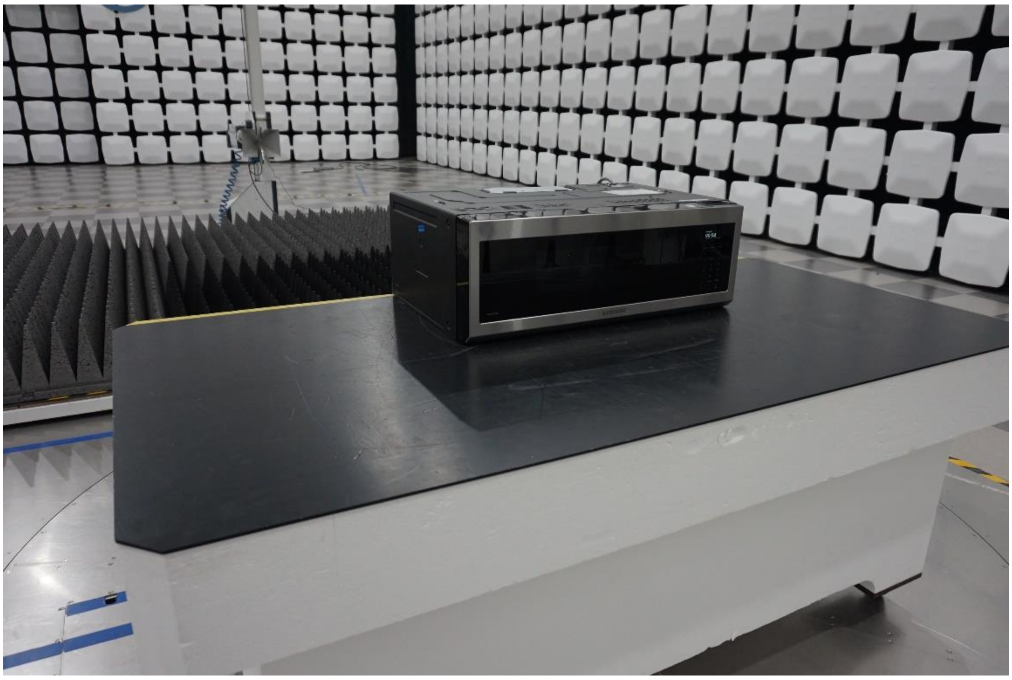
APPENDIX B – PHOTOGRAPHS OF TEST SET-UP

The **Conducted Test Picture** and **Radiated Test Picture** and show the worst-case configuration and cable placement.

- **Radiation hazard Test Picture**

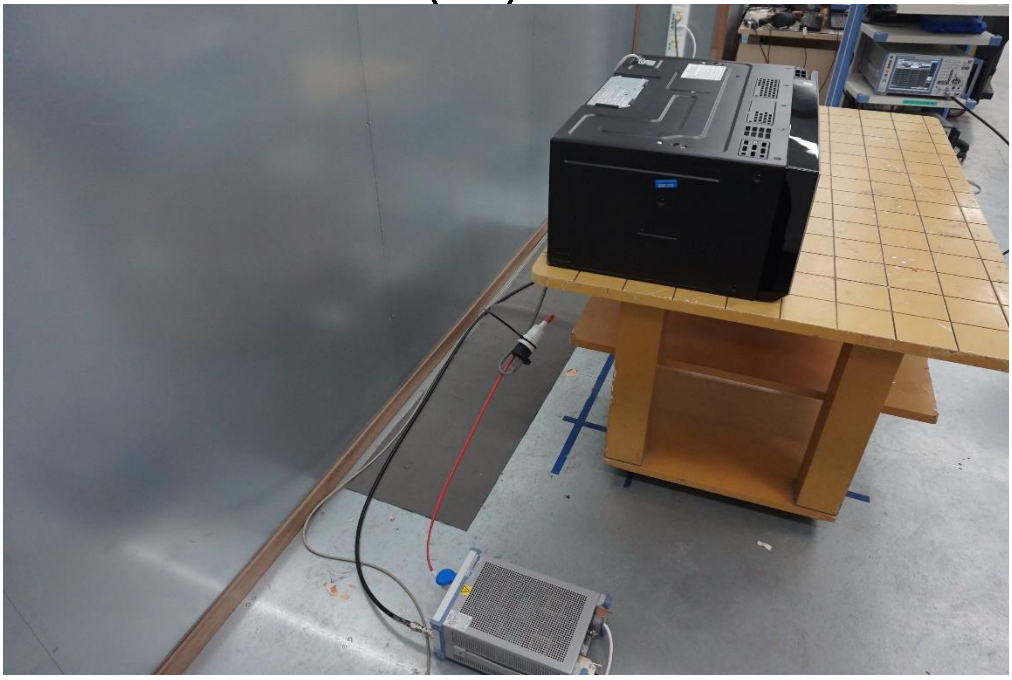


- **Frequency measurement Test Picture**

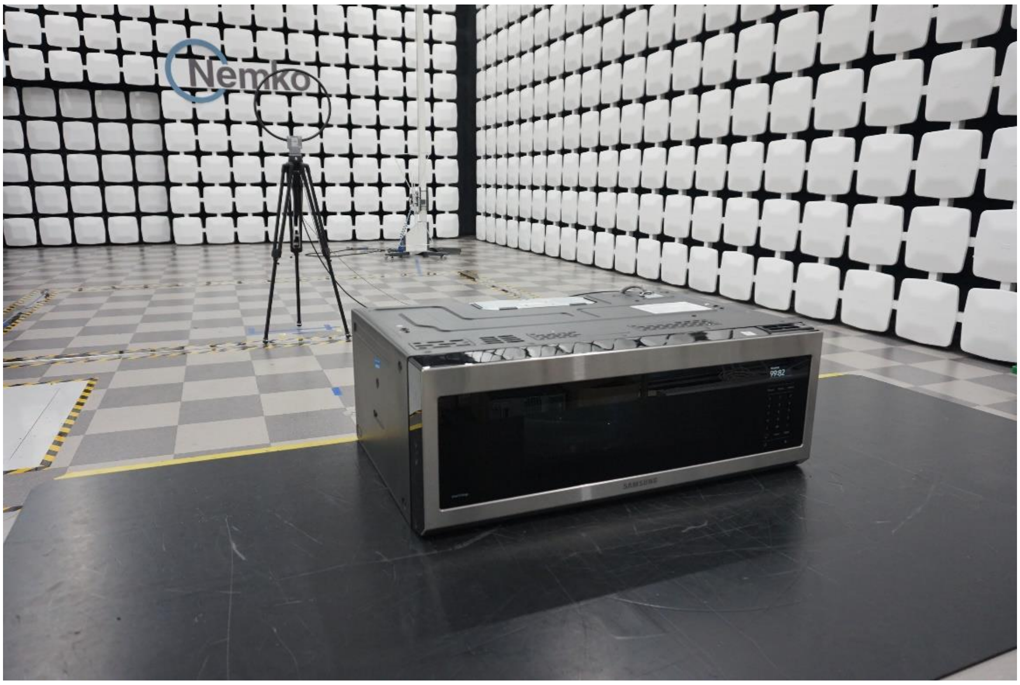


- **Conducted Test Picture (Front)**

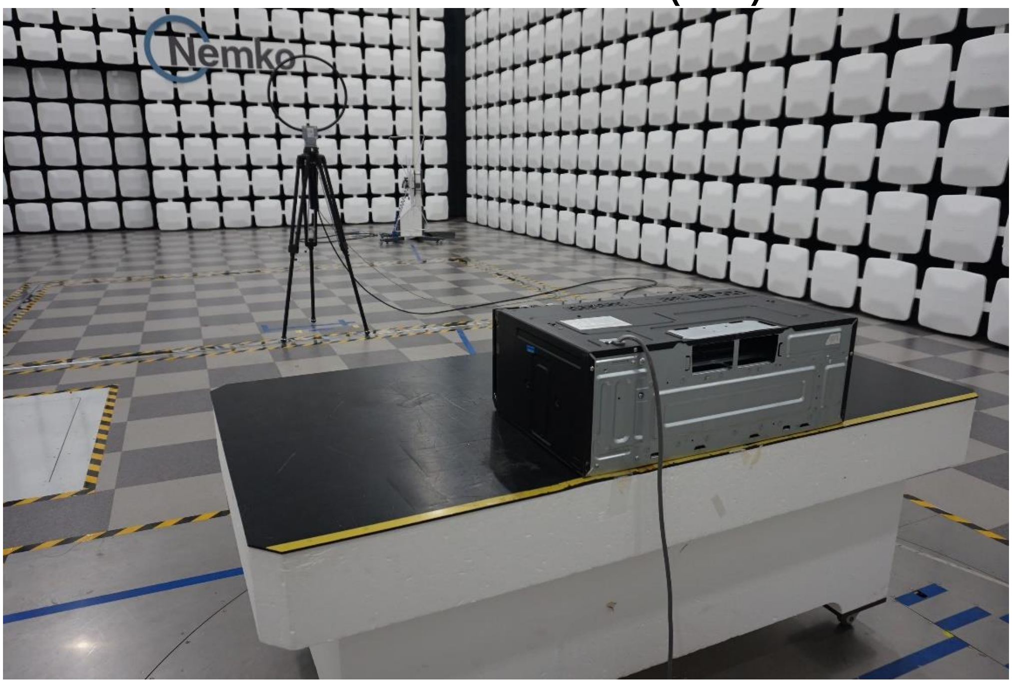
- **Conducted Test Picture (Side)**



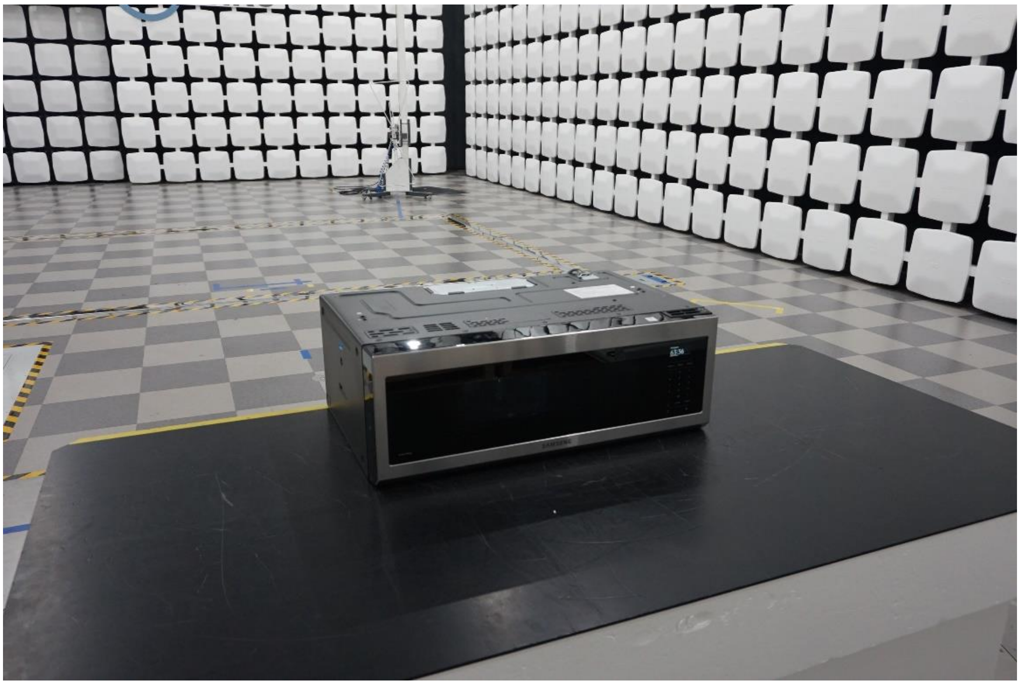
- **Radiated Test Picture : 0.15 ㎒ ~ 30 ㎒ (Front)**



- **Radiated Test Picture : 0.15 ㎒ ~ 30 ㎒ (Rear)**

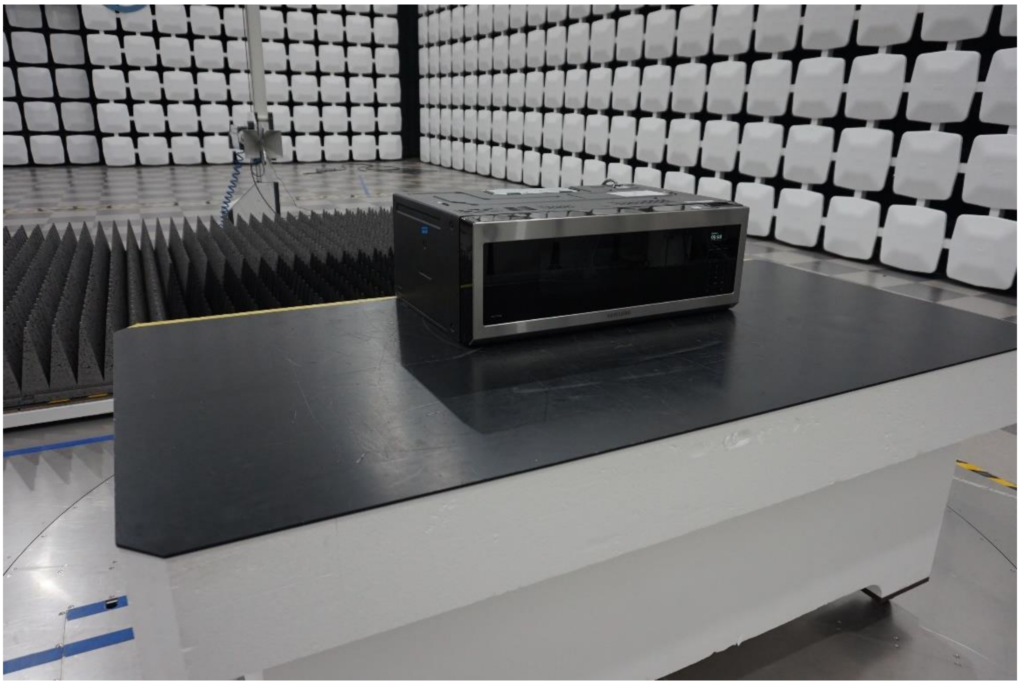


- **Radiated Test Picture : 30 ㎒ ~ 1 ㎓ (Front)**

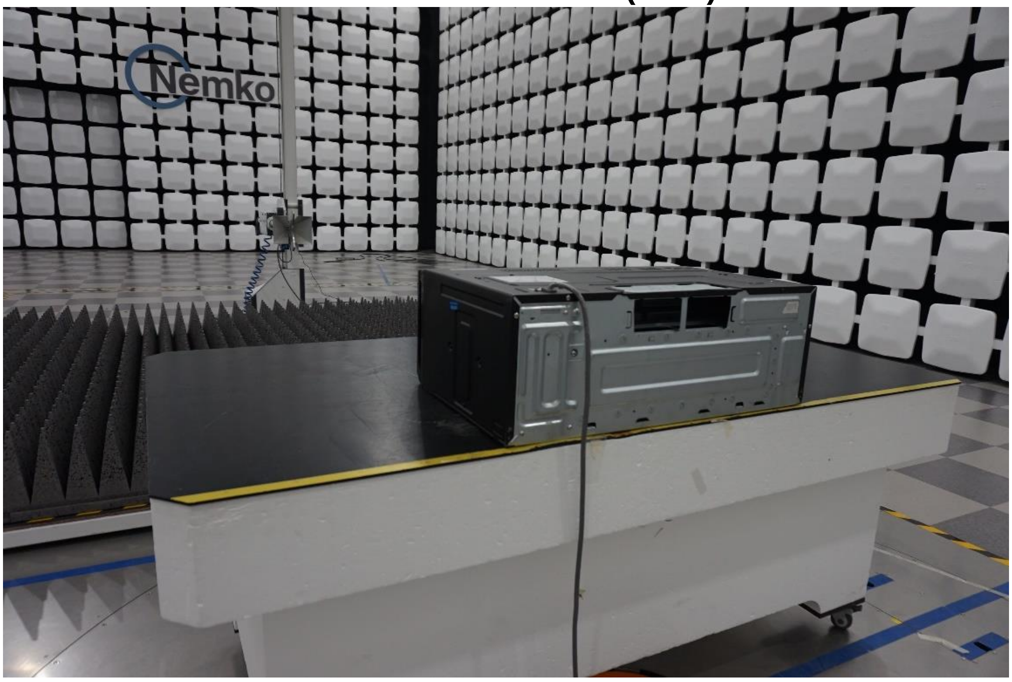


- **Radiated Test Picture : 30 ㎒ ~ 1 ㎓ (Rear)**

- **Radiated Test Picture : 1 ㎓ ~ 18 ㎓ (Front)**

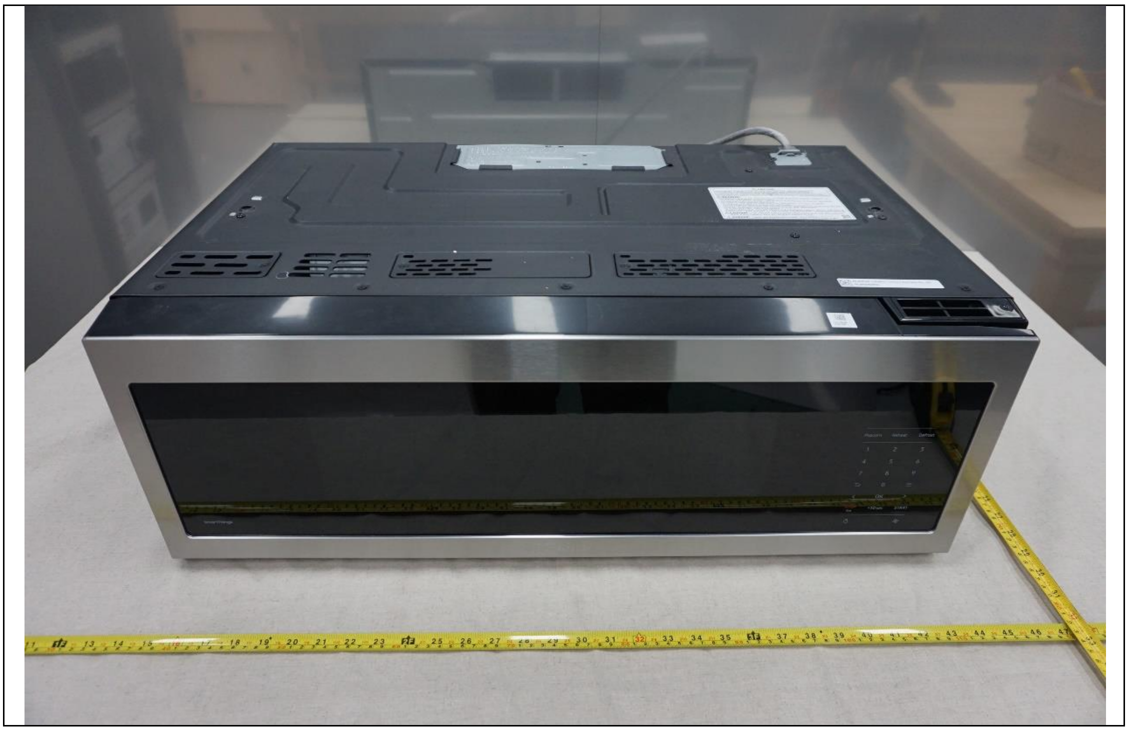


- **Radiated Test Picture : 1 ㎓ ~ 18 ㎓ (Rear)**



APPENDIX C – EUT PHOTOGRAPHS

Front View of EUT 1



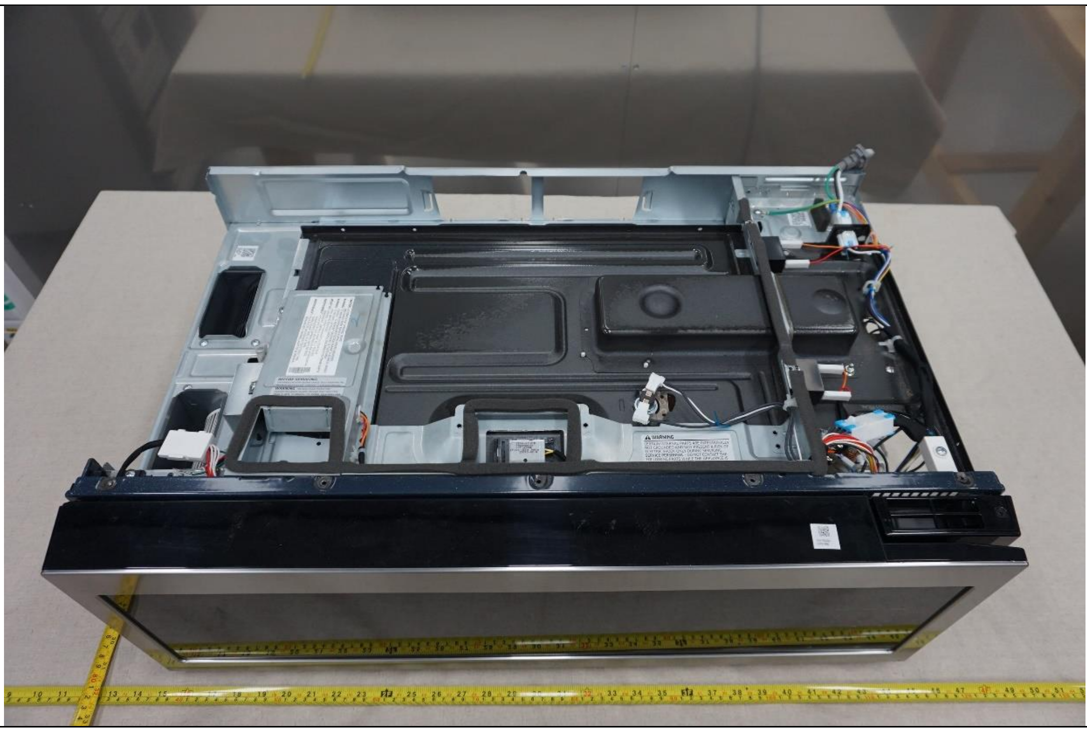
Front View of EUT 2

Rear View of EUT

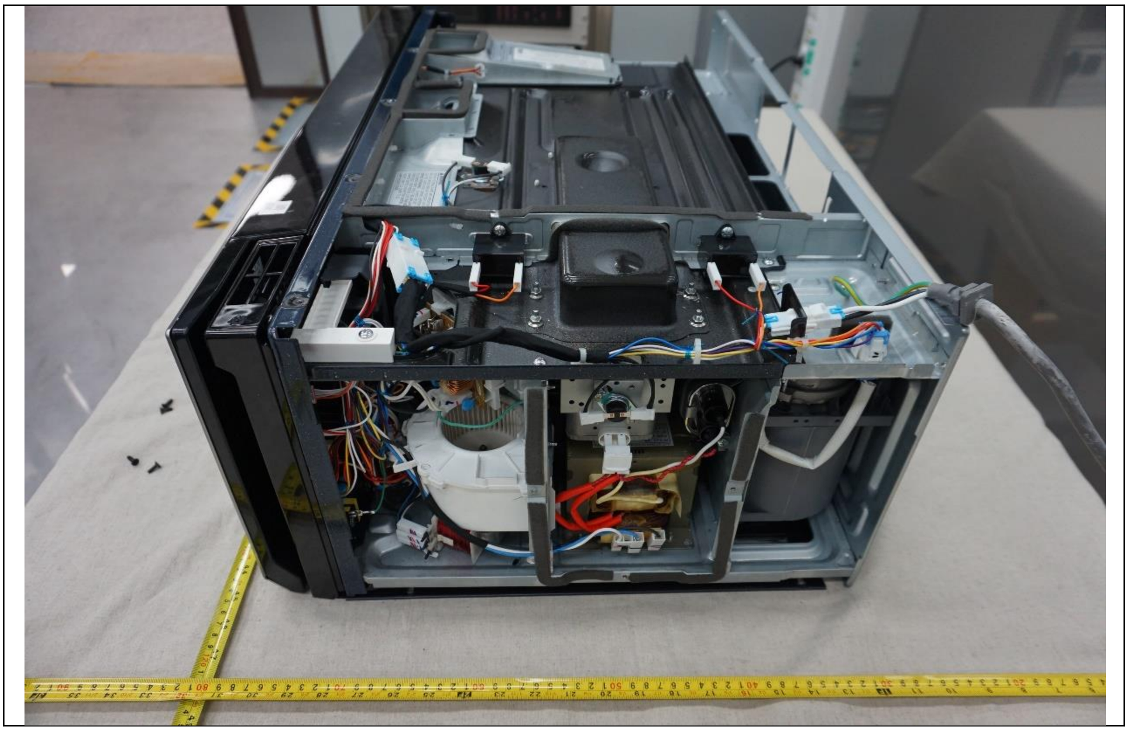
Left View of EUT

Right View of EUT

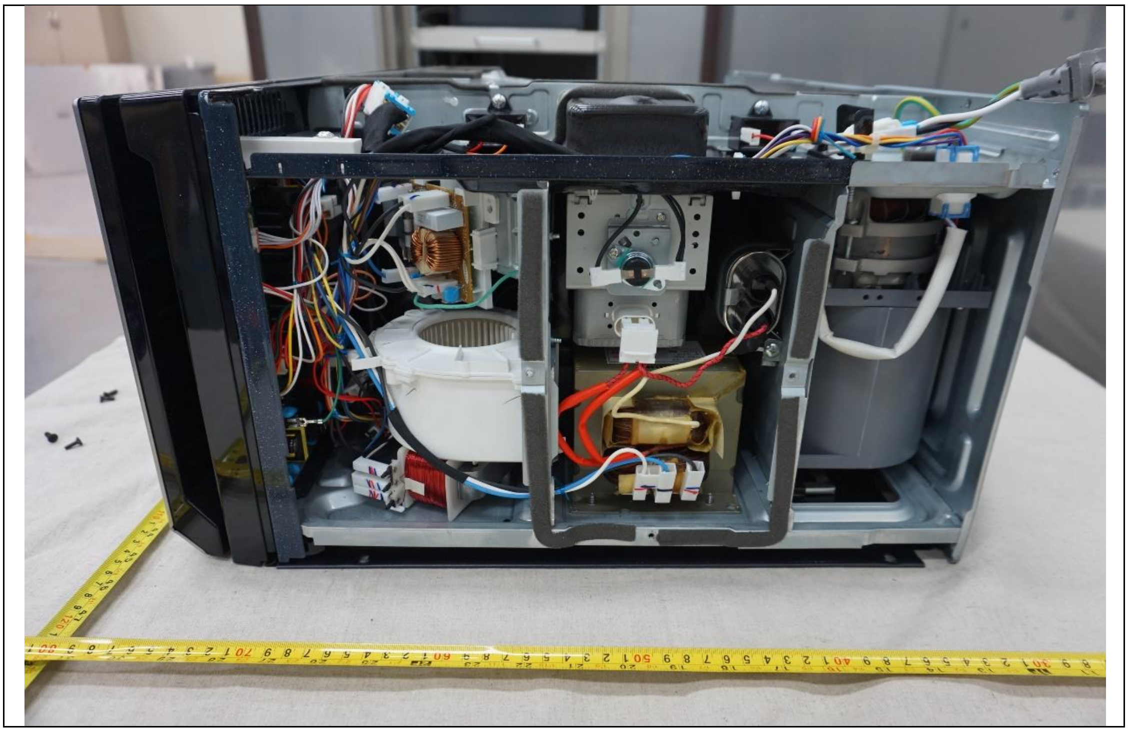
Inside View of EUT 1



Inside View of EUT 2

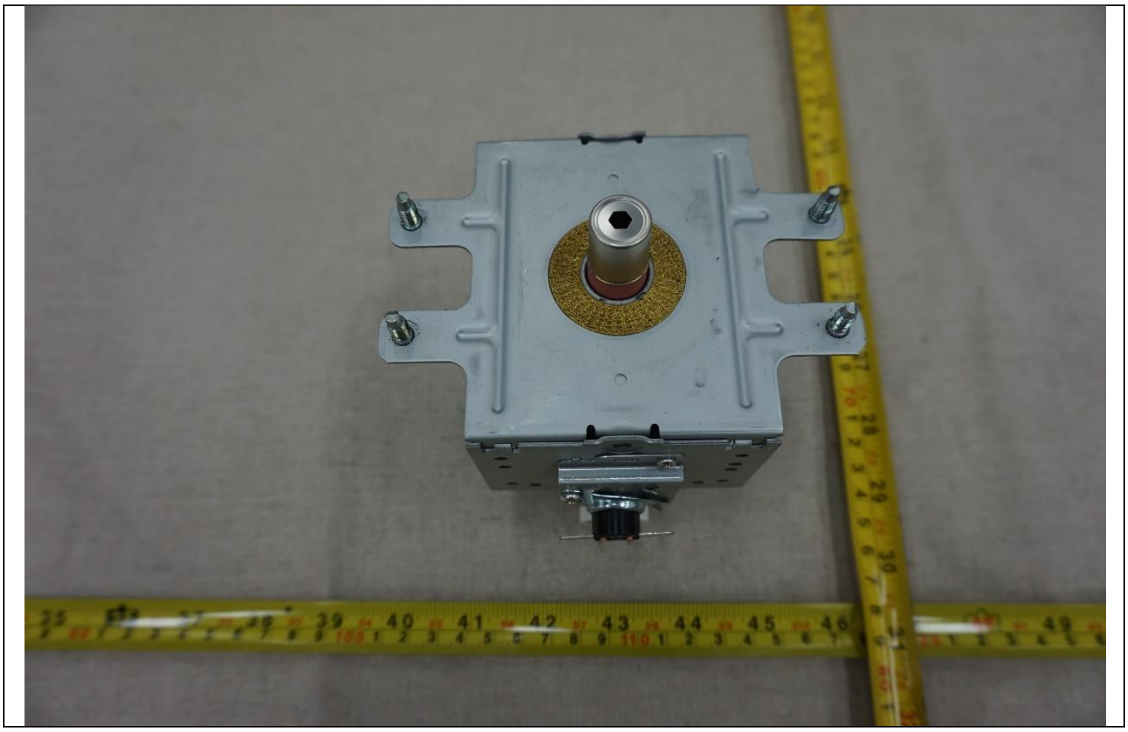


Inside View of EUT 3

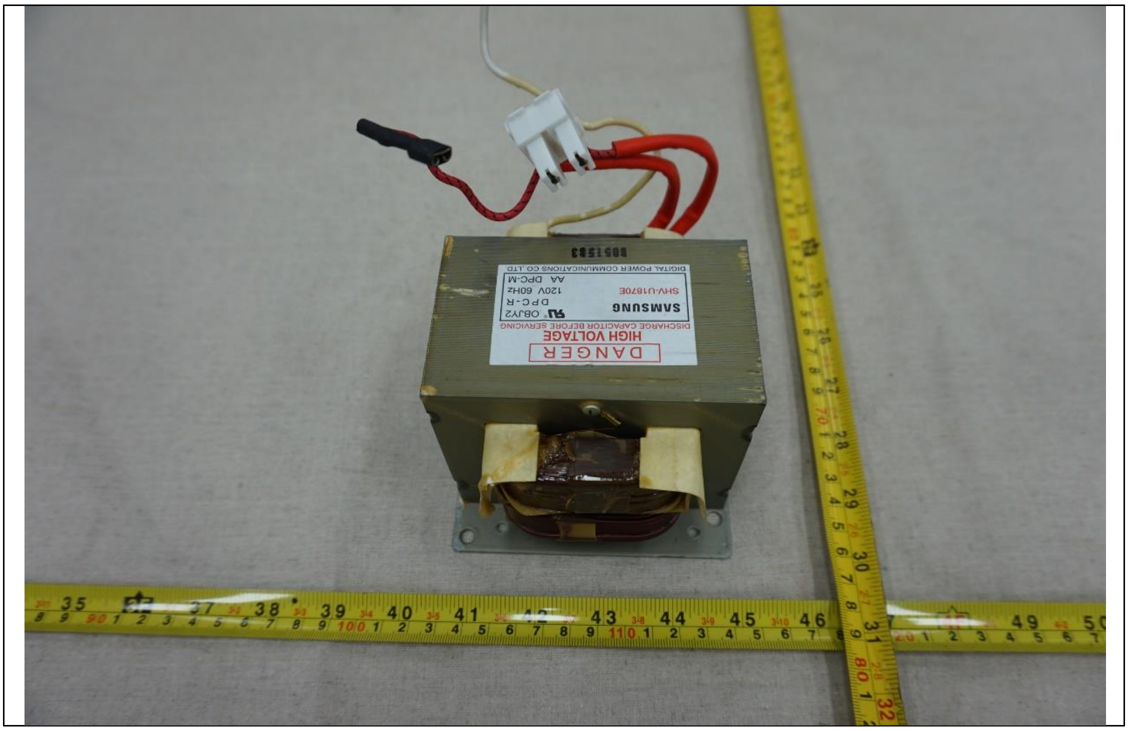


Front View of MAGNETRON

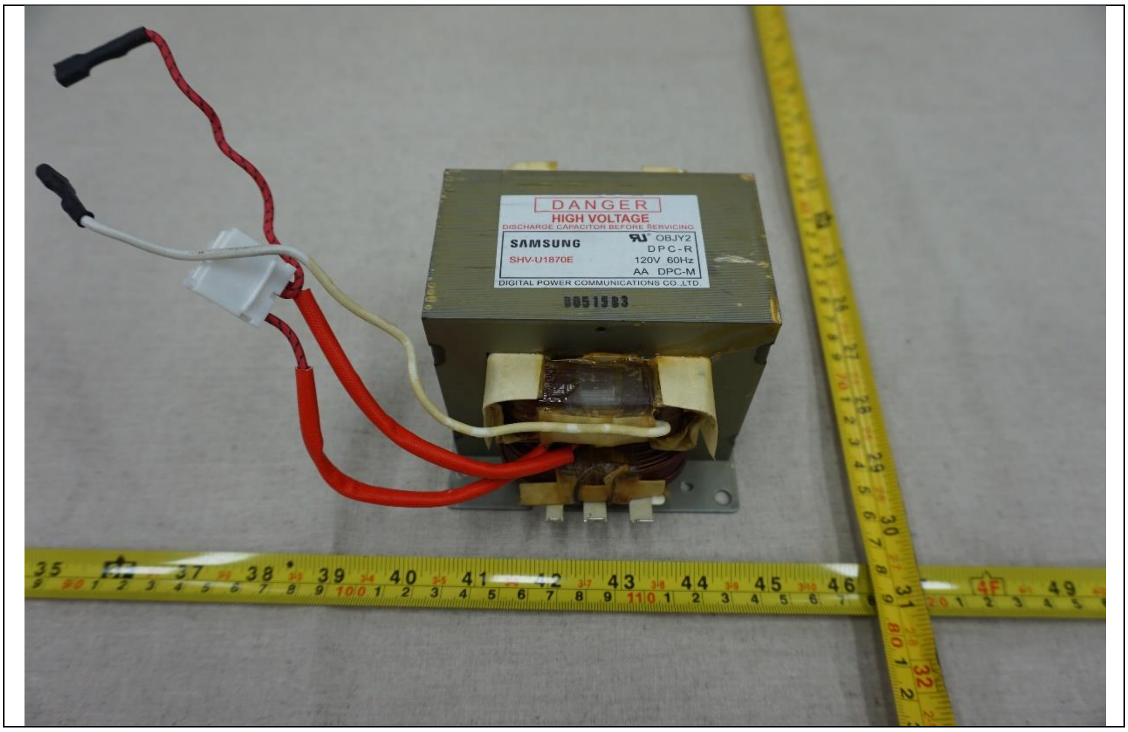
Rear View of MAGNETRON



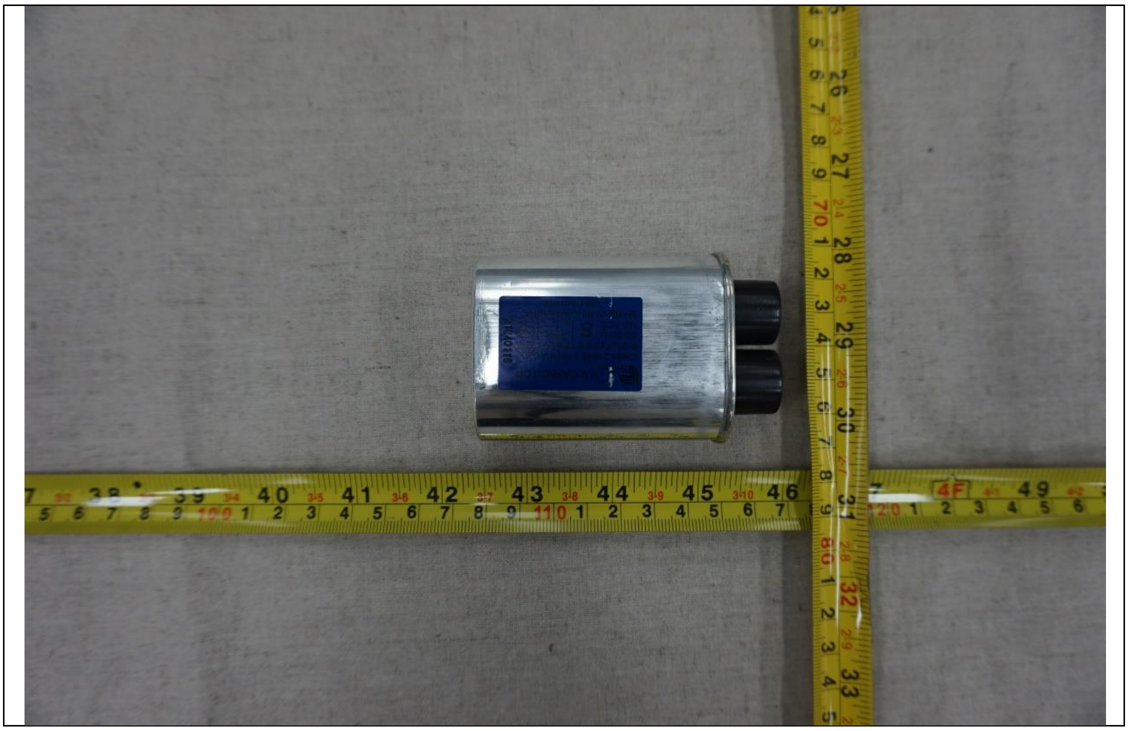
Front View of H.V TRANS



Rear View of H.V TRANS

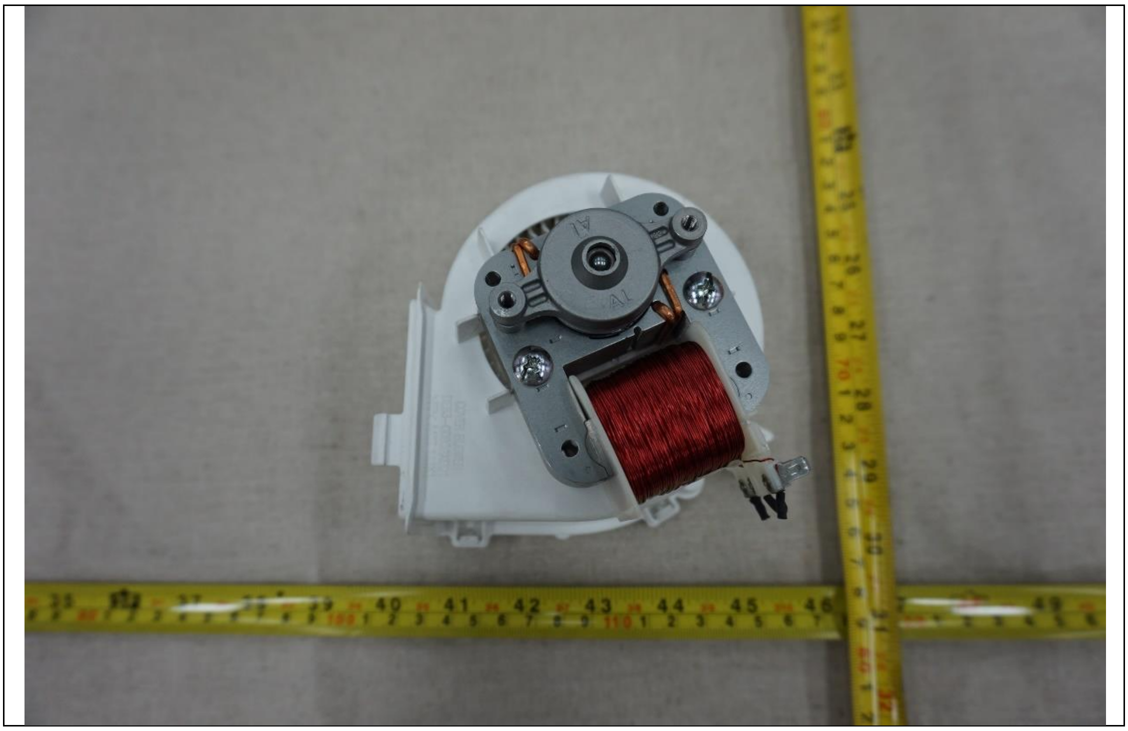


Front View of H.V CAPACITOR

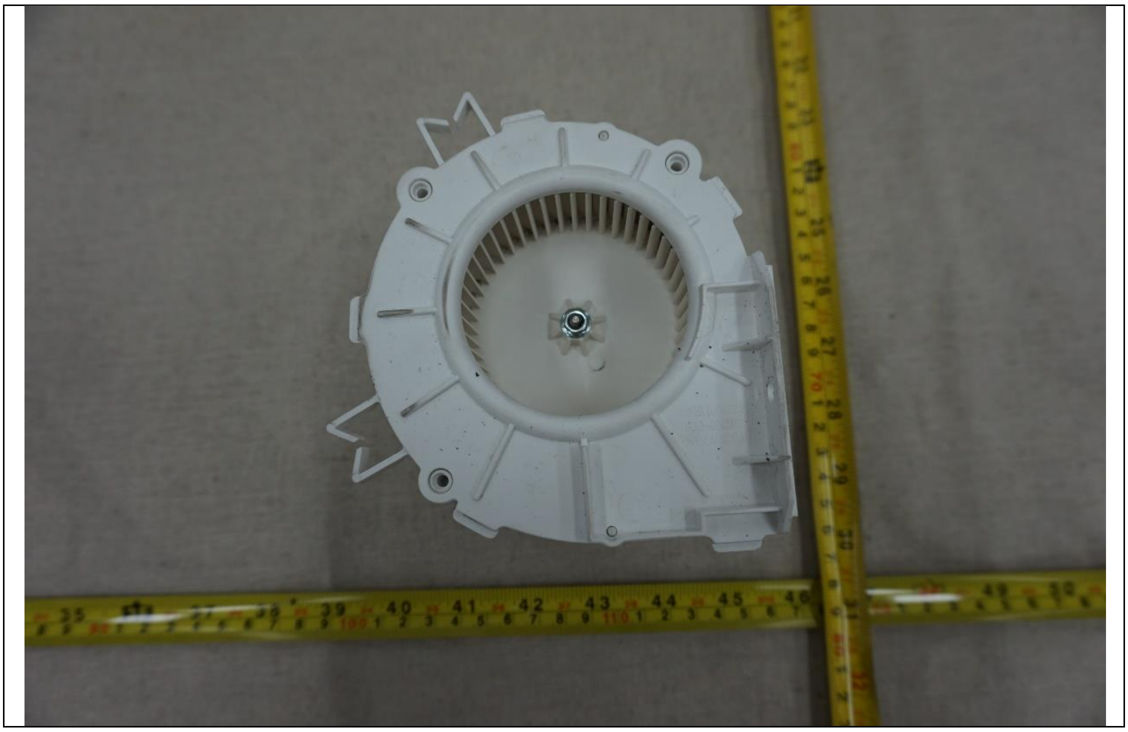


Rear View of H.V CAPACITOR

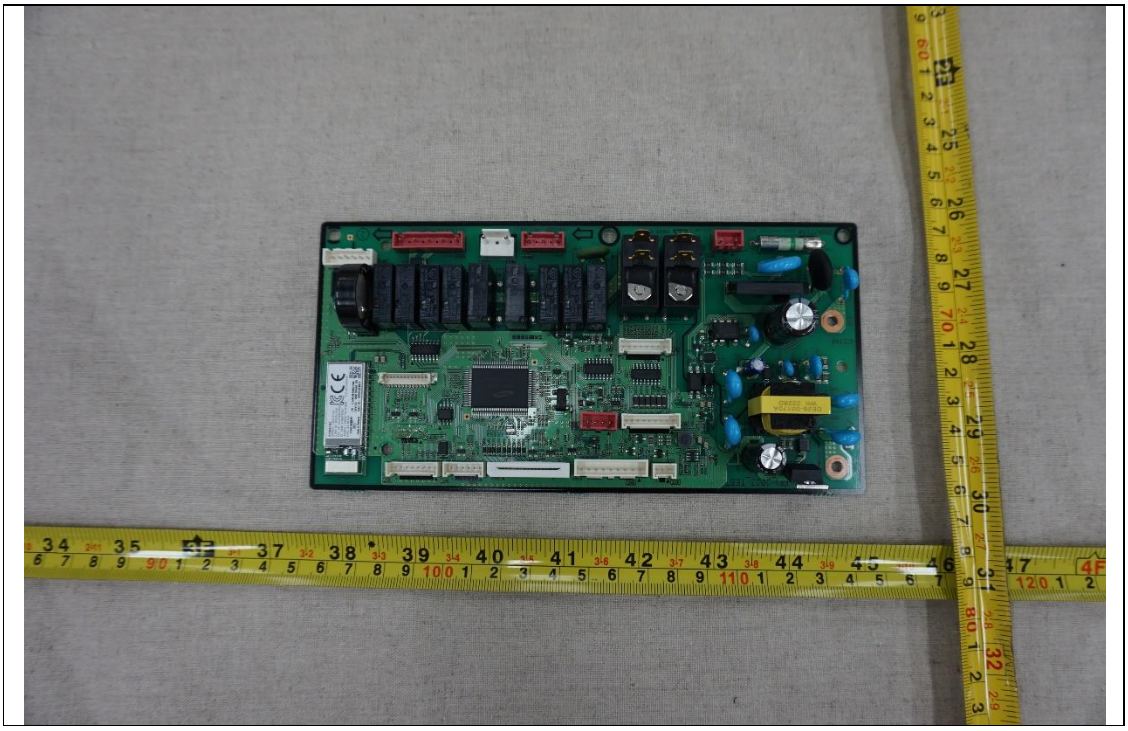
Front View of FAN MOTOR



Rear View of FAN MOTOR



Front View of Control



Rear View of Control

- END -