

EVALUATION REPORT

for Certification of Conformity

Applicant: LG Electronics USA.**111 Sylvan Avenue,****Englewood Cliffs New Jersey United States 07632,****Attn: Kyung-Su Han / Director****Date of Issue: Jun. 03, 2020****Order Number: GETEC-C1-20-016****Test Report Number: GETEC-E3-20-001****Test Site: GUMI UNIVERSITY EMC CENTER****CAB Designation Number: KR0033****FCC ID. : BEJS47423E****Applicant : LG Electronics USA.**

Rule Part(s)	: FCC Part 18
Test Method	: FCC/OET MP-5
EUT Type	: HOUSEHOLD ELECTRIC RANGE
Equipment Class	: Part 18 Consumer Device(8CC)
Type of Authority	: Certification
Model Name	: LSIS3018SS
Trade Mark	: LG

This equipment has been shown to be in compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in FCC/OET MP-5 (1986)

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the vest 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.

Tested by,

Sang Hyun Park, Associate Engineer
GUMI UNIVERSITY EMC CENTER

Reviewed by,

Hyoung Seop Kim, Technical Manager
GUMI UNIVERSITY EMC CENTER



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

1. General Information

Applicant: LG Electronics USA.

Applicant Address: 111 Sylvan Avenue,
Englewood Cliffs New Jersey United States 07632

Manufacturer: LG Electronics Inc.

Manufacturer Address: 170, Sungsanpaechong-ro, Seongsan-gu, Changwon-si,
Gyeongsangnam-do, 51533, Korea

Contact Person: Kwang-Mu, Son / Chief Research Engineer

Telephone Number: +82-55-260-3966

● FCC ID.	BEJS47423E
● EUT Type	HOUSEHOLD ELECTRIC RANGE
● Model Name	LSIS3018SS
● Rule Part(s)	FCC Part 18
● Test Method	FCC/OET MP-5
● Type of Authority	Certification
● Test Procedure(s)	FCC/OET MP-5
● Dates of Test	May 18, 2020
● Place of Test	GUMI UNIVERSITY EMC CENTER (FCC Test Firm Registration Number: 269701) 37 Yaeun-ro, Gumi-si, Gyeongsangbuk-do, 39213, Republic of Korea.
● Test Report Number	GETEC-E3-20-001
● Dates of Issue	Jun. 03, 2020



2. Introduction

The measurement procedure described in American National Standard for Methods of Measurement of Radio-Nose Emissions From Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (ANSI C63.4-2014) was used in determining radiated and conducted emissions emanating from **LG Electronics USA. HOUSEHOLD ELECTRIC RANGE (Model name: LSIS3018SS)**.

These measurement tests were conducted at **GUMI UNIVERSITY EMC CENTER**.

The site address is 37 Yaeun-ro, Gumi-si, Gyeongsangbuk-do, 39213, Gyeongnam 39213, Korea

This test site is one of the highest point of GUMI UNIVERSITY at about 200 kilometers away from Seoul city and 40 kilometers away from Daegu city. It is located in the valley surrounded by mountains in all directions where ambient radio signal conditions are quiet and a favorable area to measure the radio frequency interference on open field test site for the computing and ISM devices manufactures. The detailed description of the measurement facility was found to be in compliance with the requirements of §2.948 according to ANSI C63.4 (2014)

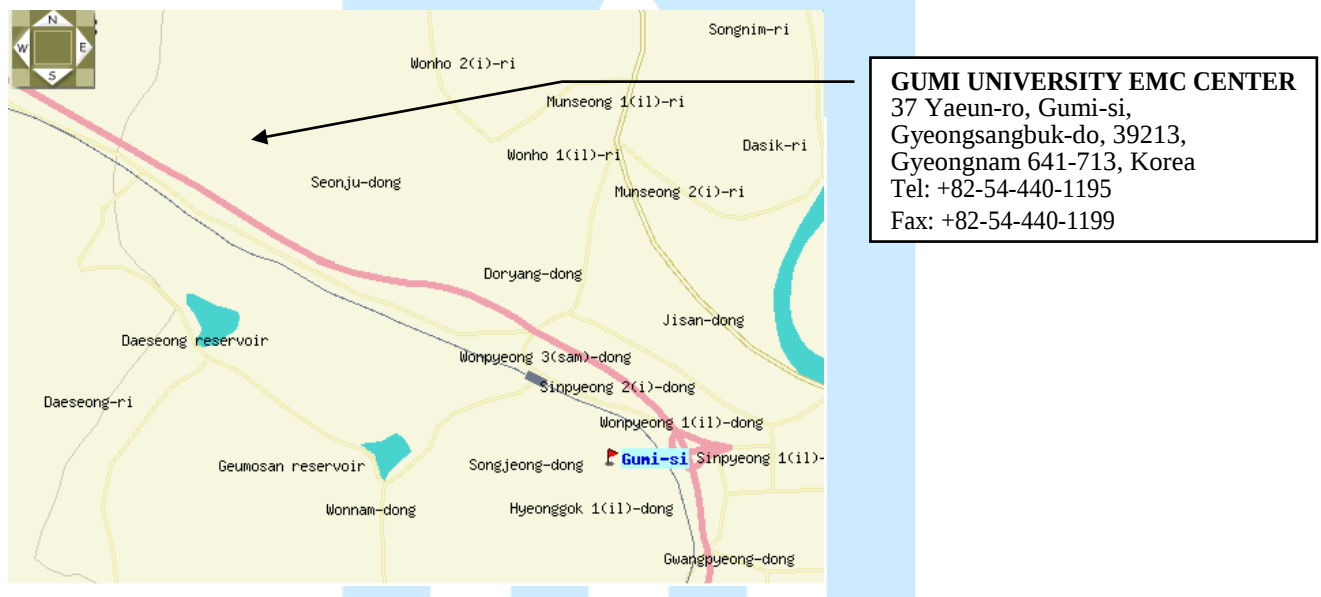


Fig 1. The map above shows the GUMI UNIVERSITY in vicinity area.



3. Product Information

3.1 Description of EUT

The Equipment under Test (EUT) is the **LG Electronics USA.**
HOUSEHOLD ELECTRIC RANGE (Model Name: LSIS3018SS)
FCC ID.: BEJS47423E.

Oven Range Models	LSIS3018SS
Description	Electric Induction Slide In Oven Range
Electrical requirements	12.1 kW 120/240 VAC or 10.2 kW 120/208 VAC
Exterior Dimensions	29 7/8" (W) x 37 7/8" (H) x 26 1/2" (D) (D with door closed) 75.7 cm (W) x 96 cm (H) x 67.3 cm (D) (D with door closed)
Height to cooking surface	36" (91.4 cm)
Net weight	198.4 lb (90.0 kg)
Total capacity	Total cap.: 6.3 cu. ft.

Wireless LAN Module (LCW-004) Specifications	
Frequency Range	2412~2462 MHz
Output Power (max.)	< 30 dBm

Induction heating mode

	Low frequency (Maximum power)	High frequency (Minimum power)
Large Hob	20 kHz	80 kHz
Medium Hob	35 kHz	80 kHz
Small Hob #1	36 kHz	80 kHz
Small Hob #2	36 kHz	80 kHz

3.2 Definition of models

Factory model name: FS1748US



3.3 Support Equipment / Cables used

3.3.1 Used Support Equipment

Description	Manufacturer	Model Name	S/N & FCC ID.
None	-	-	S/N: - FCC ID.: -

See “Appendix E – Test Setup Photographs” for actual system test set-up

3.3.2 System configuration

Description	Manufacturer	Model Name	S/N & FCC ID.
WLAN module	LG Electronics	LCW-004	S/N: -. FCC ID.: BEJ-LCW004

3.3.3 Used Cable(s)

Cable Name	Condition	Description
Power cable	Connected to the EUT and AC power	1.50 m Unshielded.

3.4 Modification Item(s)

-. None



4. Description of tests

4.1 Test Condition

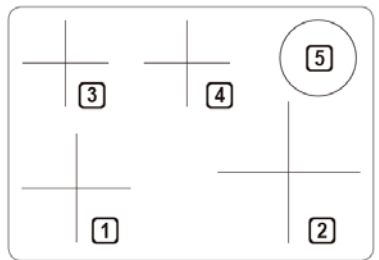
The EUT was installed, arranged and operated in a manner that is most representative of equipment as typically used.

The measurements were carried out while varying operating modes and cable positions within typically arrangement to determine maximum emission level.

The representative and worst test mode(s) were noted in the test report.

- Test Voltage / Frequency: AC 208V / 240 V, 60 Hz
- Operating condition during the test(s) :
This device has been tested in the configurations of Induction mode with WLAN module operating.
Induction mode: This device has been operated (boost mode) with an enameled steel vessel filled with tap water up to 80 % of its maximum capacity.

Cooking element “1”= left front , “2”=right front, “3”=left rear, “4”=center rear



Front

Cooking vessels

“1” = 210 mm

“2” = 300 mm

“3”, “4” = 180 mm

4.2 General Test Procedures

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 (2014) Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which Fixed at 2 m above the ground plane to find out the highest emission.

And also, each emission was to be maximized by the table was turned from 0 degrees to 360 degrees. In order to find out the max emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements in Section 13.1.4.1 of ANSI C63.4 (2014).



5. Summary of Test Results

FCC Part Section(s)	Test Description	Test Result
§18.305	Radiated Emission	Pass
§18.307	Conducted Emission	Pass

6. Conducted Emission

-Test Description

The Line conducted emission test facility is inside a 4 m × 8 m × 2.5 m shielded enclosure.

(FCC Test Firm Registration No.: 269701)

The EUT was placed on a non-conducting 1.0 m by 1.5 m table, which is 0.8 m in height and 0.4 m away from the vertical wall of the shielded enclosure.

The EUT is powered from the Rohde & Schwarz LISN (ENV216) and the support equipment is powered from the Rohde & Schwarz LISN (ENV216). Powers to the LISN are filtered by high-current high insertion loss power line filter.

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 EMI test receiver (Rohde & Schwarz, ESCI).

Exploratory measurements were conducted to identify the highest emission by operating the EUT in a range of typical modes of operation, cable positions, system configuration and arrangement.

Based on exploratory measurements, the final measurements were conducted at the worst test conditions.

Exploratory measurements were scanned using Peak mode of EMI Test receiver from 150 kHz to 30 MHz with 20 ms sweep time. The final measurements were measured with Quasi-Peak and Average mode.

The bandwidth of EMI Test Receiver was set to 9 kHz. Interface cables were connected to the available interface ports of the test unit. Excess cable lengths were bundled at center with 30 cm ~ 40 cm.

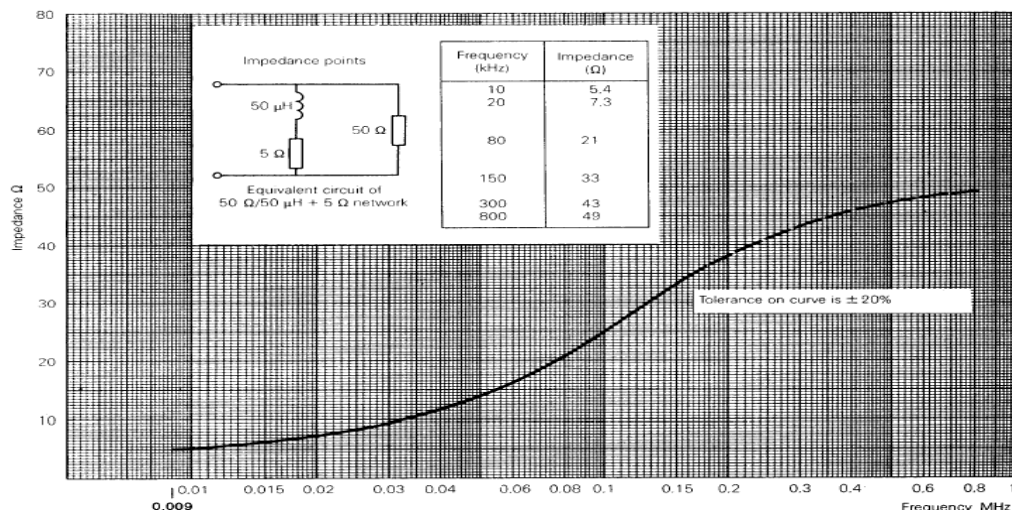


Fig 2. Impedance of LISN



6.1 Operating Environment

Temperature : 26.3 °C
Relative Humidity : 31.7 % R.H.
Air Pressure : 101.3 kPa

6.2 Test Set-up

The conducted emission measurements were performed in the shielded room.

The EUT was placed on wooden table, 0.8 m heights above the floor, 0.4 m from the reference ground plane (GRP) wall and 0.8 m from AMN & ISN.

AMN is bonded on horizontal reference ground plane.

The ground plane, which was electrically bonded to the shield room, ground system and all power lines entering the shield room, were filtered.

6.3 Measurement Uncertainty

The measurement uncertainty was calculated in accordance with ISO "Guide to the expression of uncertainty in measurement."

The measurement uncertainty was given with a confidence of 95 %.

Test Items	Uncertainty	Remark
Conducted emission (9 kHz ~ 150 kHz)	3.78 dB	Confidence level of approximately 95 % ($k = 2$)
Conducted emission (150 kHz ~ 30 MHz)	3.31 dB	Confidence level of approximately 95 % ($k = 2$)

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

The listed uncertainties are the worst case uncertainty for the entire range of measurement. please note that the uncertainty values are provided for informational purposes only are not used in determining the PASS/FAIL results



6.4 Limit

RFI Conducted	FCC Limit(dBμV/m)	
Freq. Range	Quasi-Peak	Average
0.009 MHz ~ 0.05 MHz	110	-
0.05 MHz ~ 0.15 MHz	90 ~ 80*	-
0.15 MHz ~ 0.5 MHz	66 ~ 56*	56 ~ 46*
0.5 MHz ~ 5 MHz	56	46
5 MHz ~ 30 MHz	60	50
*Limits decreases linearly with the logarithm of frequency.		

6.5 Test Equipment used

Model Name	Manufacturer	Description	Serial Number	Calibration Date
■ - ESCI	Rohde & Schwarz	EMI Test Receiver	100237	Apr. 08, 2020
□ - ENV216	Rohde & Schwarz	LISN	100173	Apr. 07, 2020
□ - ENV216	Rohde & Schwarz	LISN	100172	Apr. 07, 2020
■ - ESH2-Z5	Rohde & Schwarz	LISN	829991/009	Apr. 07, 2020
■ - VTSD 9561-D	SCHWARZBECK	Pulse Limiter	32	Apr. 07, 2020
■ - EMC 32	Rohde & Schwarz	Software	Ver.8.53	N/A

6.6 Test data for Conducted Emission

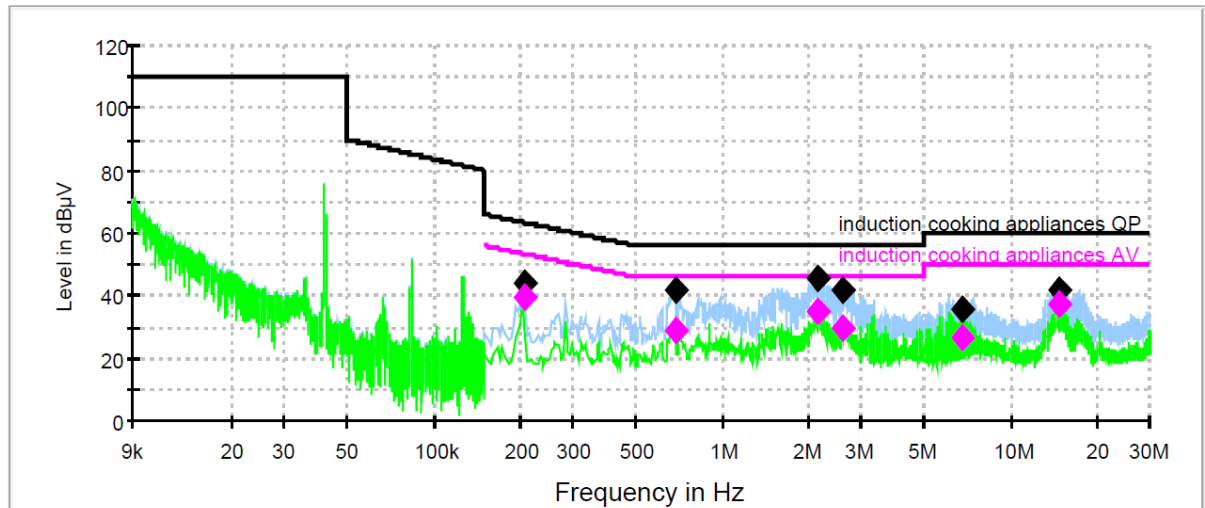
- Test Date	: May 18, 2020
- Resolution Bandwidth	: 200 Hz (9 kHz ~ 0.15 MHz) / 9 kHz (0.15 MHz ~ 30 MHz)
- Frequency Range	: 9 kHz ~ 30 MHz
- Line	: L1: Live, N: Neutral
- Comment	: None



▪ Operating condition: Induction mode with WLAN

AC 208 V / 60 Hz

Cooking element #1



— 55014-1 induction cooking appliances QP — 55014-1 induction cooking appliances AV
— Preview Result 1-PK+ — Preview Result 2-AVG
◆ Final Result 1-QPK ◆ Final Result 2-CAV

Final Result 1

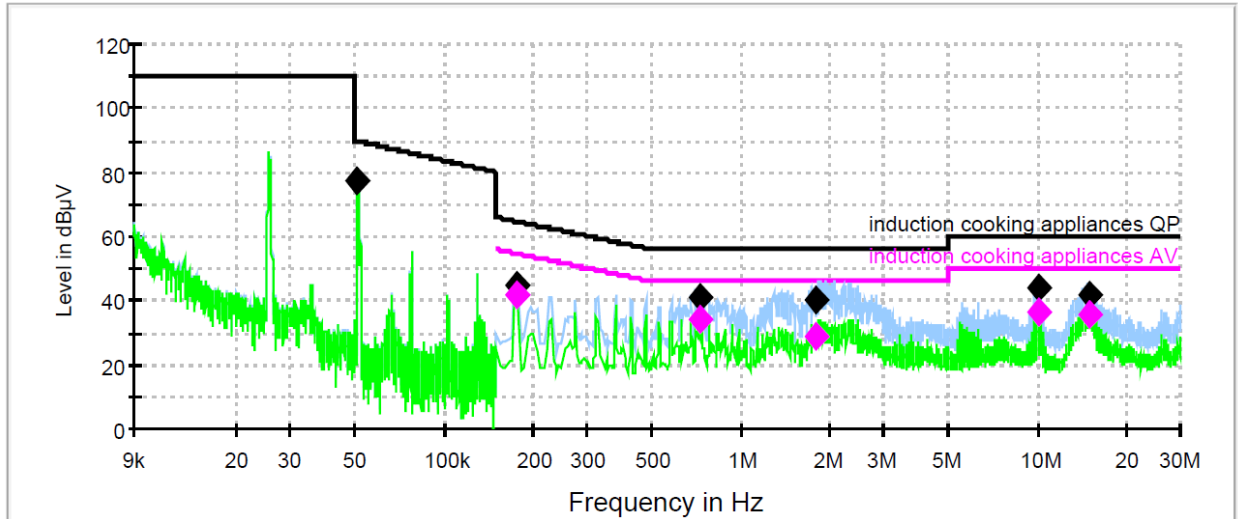
Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.205238	44.4	1000.0	9.000	GND	N	20.5	19.0	63.4	
0.683644	41.6	1000.0	9.000	GND	L1	20.6	14.4	56.0	
2.131638	45.8	1000.0	9.000	GND	L1	20.6	10.2	56.0	
2.607088	41.9	1000.0	9.000	GND	N	20.6	14.1	56.0	
6.799700	35.5	1000.0	9.000	GND	N	20.8	24.5	60.0	
14.550550	41.4	1000.0	9.000	GND	N	21.0	18.6	60.0	

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.205238	39.7	1000.0	9.000	GND	N	20.5	13.7	53.4	
0.683644	28.9	1000.0	9.000	GND	L1	20.6	17.1	46.0	
2.131638	35.0	1000.0	9.000	GND	L1	20.6	11.0	46.0	
2.607088	29.7	1000.0	9.000	GND	N	20.6	16.3	46.0	
6.799700	26.3	1000.0	9.000	GND	N	20.8	23.7	50.0	
14.550550	37.1	1000.0	9.000	GND	N	21.0	12.9	50.0	



Cooking element #2



— 55014-1 induction cooking appliances QP — 55014-1 induction cooking appliances AV
— Preview Result 1-PK+ — Preview Result 2-AVG
◆ Final Result 1-QPK ◆ Final Result 2-CAV

Final Result 1

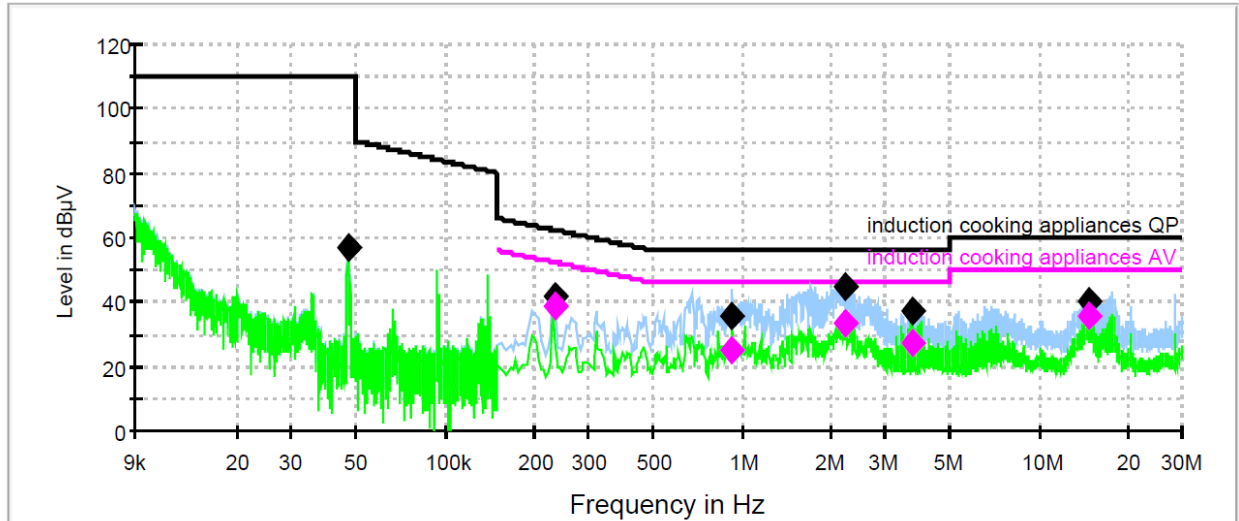
Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.051036	77.2	1000.0	0.200	GND	L1	20.5	12.8	90.0	
0.174000	44.8	1000.0	9.000	GND	L1	20.5	20.0	64.8	
0.723344	40.9	1000.0	9.000	GND	N	20.6	15.1	56.0	
1.791525	39.9	1000.0	9.000	GND	N	20.6	16.1	56.0	
9.936844	43.7	1000.0	9.000	GND	L1	20.9	16.3	60.0	
14.933019	41.4	1000.0	9.000	GND	N	21.0	18.6	60.0	

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.174000	41.8	1000.0	9.000	GND	L1	20.5	13.0	54.8	
0.723344	34.2	1000.0	9.000	GND	N	20.6	11.8	46.0	
1.791525	28.6	1000.0	9.000	GND	N	20.6	17.4	46.0	
9.936844	36.2	1000.0	9.000	GND	L1	20.9	13.8	50.0	
14.933019	35.9	1000.0	9.000	GND	N	21.0	14.1	50.0	



Cooking element #3



— 55014-1 induction cooking appliances QP — 55014-1 induction cooking appliances AV
— Preview Result 1-PK+ — Preview Result 2-AVG
◆ Final Result 1-QPK ◆ Final Result 2-CAV

Final Result 1

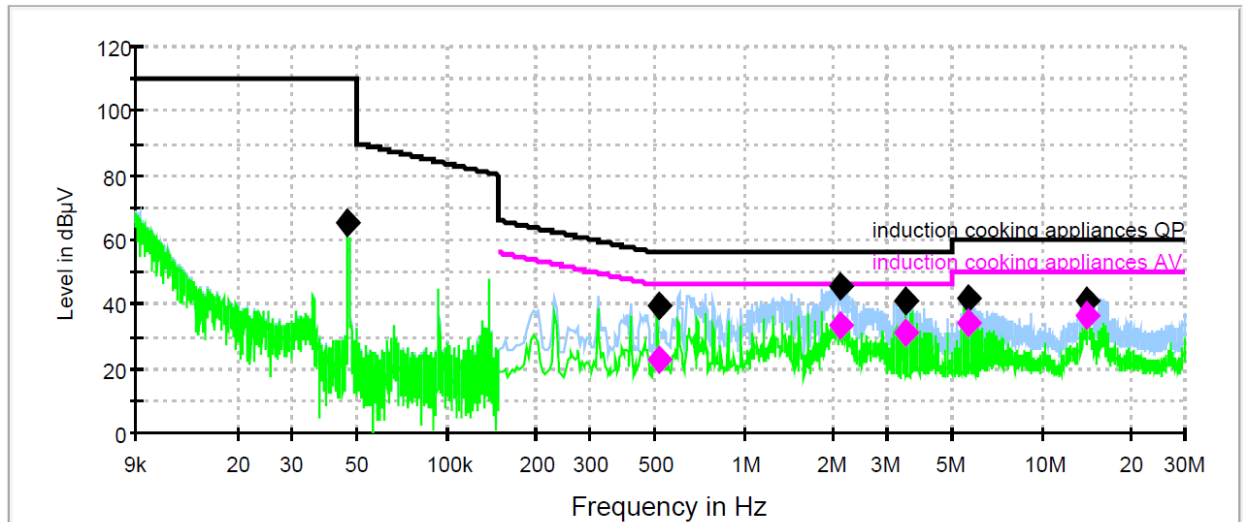
Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.046700	57.2	1000.0	0.200	GND	N	20.5	52.8	110.0	
0.231356	42.1	1000.0	9.000	GND	N	20.5	20.3	62.4	
0.921638	36.0	1000.0	9.000	GND	N	20.6	20.0	56.0	
2.195875	44.6	1000.0	9.000	GND	N	20.6	11.4	56.0	
3.731000	37.4	1000.0	9.000	GND	L1	20.7	18.6	56.0	
14.670488	40.6	1000.0	9.000	GND	N	21.0	19.4	60.0	

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.231356	38.5	1000.0	9.000	GND	N	20.5	13.9	52.4	
0.921638	25.0	1000.0	9.000	GND	N	20.6	21.0	46.0	
2.195875	33.4	1000.0	9.000	GND	N	20.6	12.6	46.0	
3.731000	27.1	1000.0	9.000	GND	L1	20.7	18.9	46.0	
14.670488	35.9	1000.0	9.000	GND	N	21.0	14.1	50.0	



Cooking element #4



— 55014-1 induction cooking appliances QP — 55014-1 induction cooking appliances AV
— Preview Result 1-PK+ — Preview Result 2-AVG
◆ Final Result 1-QPK ◆ Final Result 2-CAV

Final Result 1

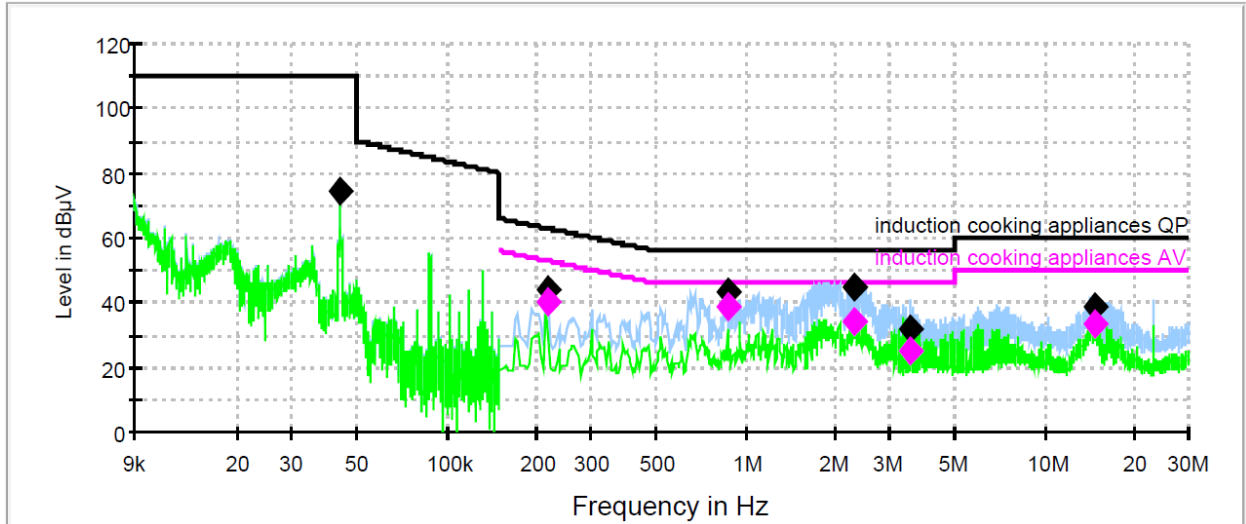
Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.046541	65.1	1000.0	0.200	GND	N	20.5	44.9	110.0	
0.511200	39.1	1000.0	9.000	GND	N	20.6	16.9	56.0	
2.095906	45.2	1000.0	9.000	GND	N	20.6	10.8	56.0	
3.478081	40.7	1000.0	9.000	GND	L1	20.7	15.3	56.0	
5.627788	41.9	1000.0	9.000	GND	L1	20.8	18.1	60.0	
14.021519	40.7	1000.0	9.000	GND	N	21.0	19.3	60.0	

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.511200	22.7	1000.0	9.000	GND	N	20.6	23.3	46.0	
2.095906	33.7	1000.0	9.000	GND	N	20.6	12.3	46.0	
3.478081	31.1	1000.0	9.000	GND	L1	20.7	14.9	46.0	
5.627788	34.5	1000.0	9.000	GND	L1	20.8	15.5	50.0	
14.021519	36.2	1000.0	9.000	GND	N	21.0	13.8	50.0	



AC 240 V / 60 Hz
Cooking element #1



— 55014-1 induction cooking appliances QP — 55014-1 induction cooking appliances AV
— Preview Result 1-PK+ — Preview Result 2-AVG
◆ Final Result 1-QPK ◆ Final Result 2-CAV

Final Result 1

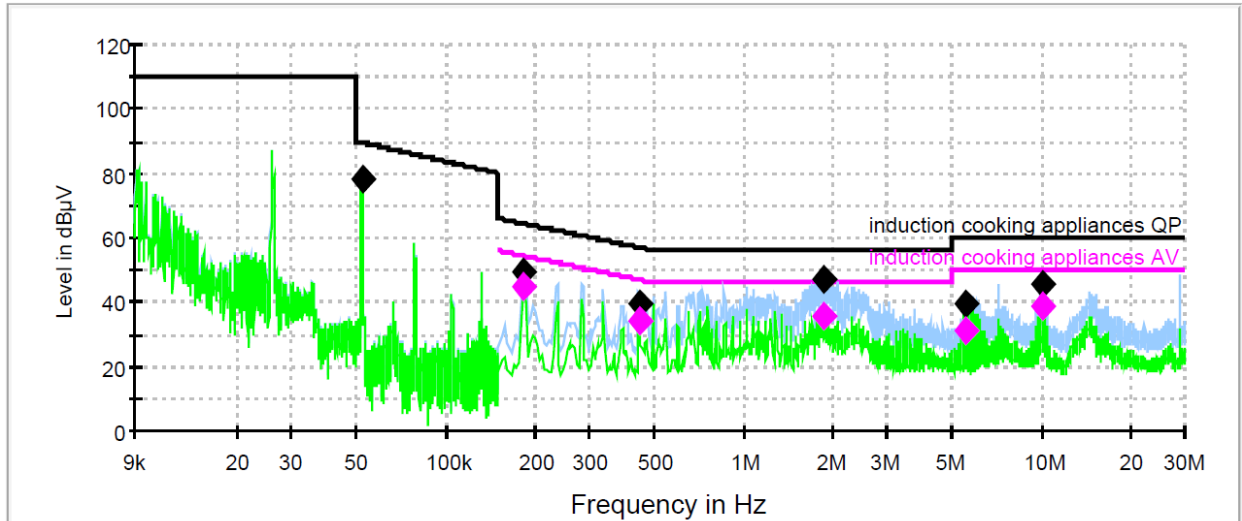
Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.043633	74.4	1000.0	0.200	GND	L1	20.5	35.6	110.0	
0.216431	44.2	1000.0	9.000	GND	N	20.5	18.8	63.0	
0.865669	42.9	1000.0	9.000	GND	N	20.6	13.1	56.0	
2.292588	44.5	1000.0	9.000	GND	N	20.6	11.5	56.0	
3.546319	32.3	1000.0	9.000	GND	N	20.7	23.7	56.0	
14.636400	39.1	1000.0	9.000	GND	N	21.0	20.9	60.0	

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.216431	40.2	1000.0	9.000	GND	N	20.5	12.8	53.0	
0.865669	39.0	1000.0	9.000	GND	N	20.6	7.0	46.0	
2.292588	34.2	1000.0	9.000	GND	N	20.6	11.8	46.0	
3.546319	24.8	1000.0	9.000	GND	N	20.7	21.2	46.0	
14.636400	33.6	1000.0	9.000	GND	N	21.0	16.4	50.0	



Cooking element #2



— 55014-1 induction cooking appliances QP — 55014-1 induction cooking appliances AV
— Preview Result 1-PK+ — Preview Result 2-AVG
◆ Final Result 1-QPK ◆ Final Result 2-CAV

Final Result 1

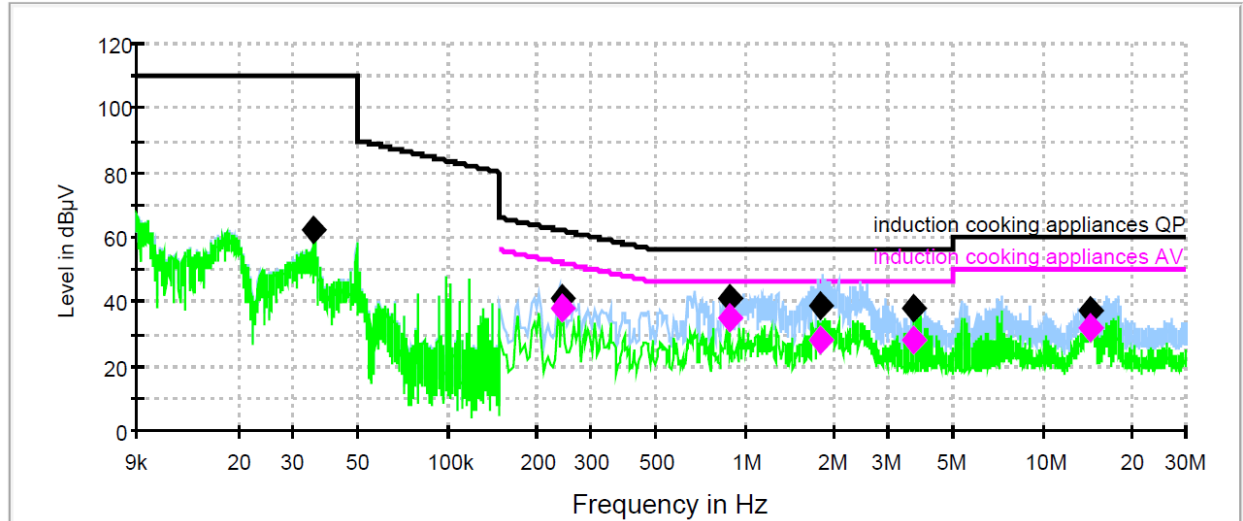
Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.052199	78.5	1000.0	0.200	GND	N	20.5	11.3	89.8	
0.182000	49.3	1000.0	9.000	GND	L1	20.5	15.1	64.4	
0.448275	39.7	1000.0	9.000	GND	L1	20.5	17.2	56.9	
1.859525	47.1	1000.0	9.000	GND	L1	20.6	8.9	56.0	
5.564925	39.4	1000.0	9.000	GND	L1	20.8	20.6	60.0	
10.093319	45.3	1000.0	9.000	GND	L1	20.9	14.7	60.0	

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.182000	44.9	1000.0	9.000	GND	L1	20.5	9.5	54.4	
0.448275	34.3	1000.0	9.000	GND	L1	20.5	12.6	46.9	
1.859525	36.1	1000.0	9.000	GND	L1	20.6	9.9	46.0	
5.564925	31.4	1000.0	9.000	GND	L1	20.8	18.6	50.0	
10.093319	38.4	1000.0	9.000	GND	L1	20.9	11.6	50.0	



Cooking element #3



— 55014-1 induction cooking appliances QP — 55014-1 induction cooking appliances AV
— Preview Result 1-PK+ — Preview Result 2-AVG
◆ Final Result 1-QPK ◆ Final Result 2-CAV

Final Result 1

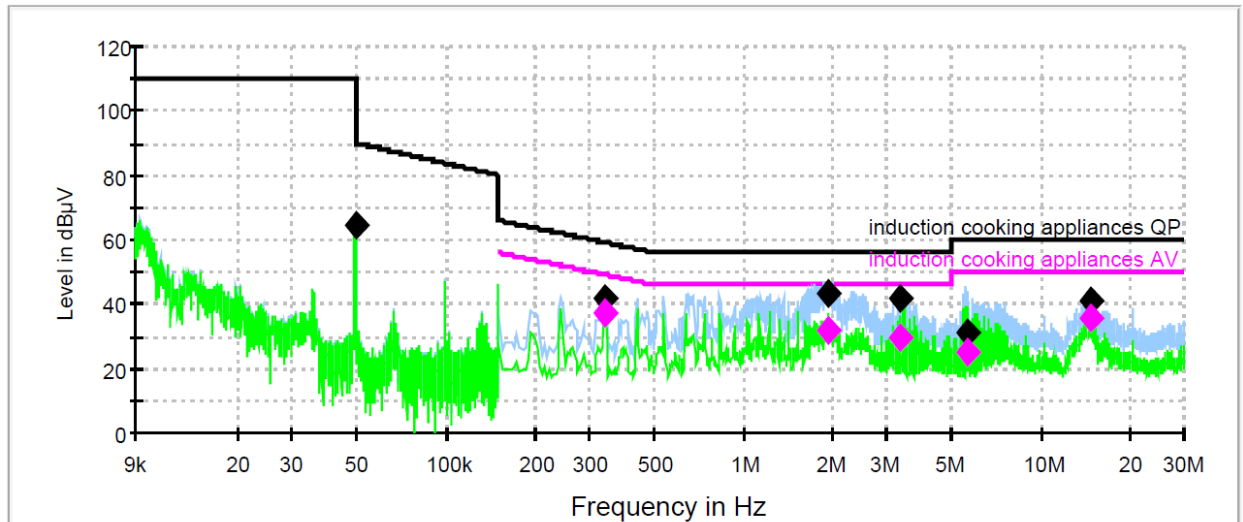
Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.035578	62.0	1000.0	0.200	GND	L1	20.5	48.0	110.0	
0.242819	41.3	1000.0	9.000	GND	N	20.5	20.7	62.0	
0.880594	40.8	1000.0	9.000	GND	L1	20.6	15.2	56.0	
1.788600	39.1	1000.0	9.000	GND	N	20.6	16.9	56.0	
3.671838	38.3	1000.0	9.000	GND	N	20.7	17.7	56.0	
14.375181	37.1	1000.0	9.000	GND	N	21.0	22.9	60.0	

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.242819	37.7	1000.0	9.000	GND	N	20.5	14.3	52.0	
0.880594	34.8	1000.0	9.000	GND	L1	20.6	11.2	46.0	
1.788600	28.3	1000.0	9.000	GND	N	20.6	17.7	46.0	
3.671838	27.9	1000.0	9.000	GND	N	20.7	18.1	46.0	
14.375181	32.0	1000.0	9.000	GND	N	21.0	18.0	50.0	



Cooking element #4



— 55014-1 induction cooking appliances QP — 55014-1 induction cooking appliances AV
— Preview Result 1-PK+ — Preview Result 2-AVG
◆ Final Result 1-QPK ◆ Final Result 2-CAV

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.049291	64.7	1000.0	0.200	GND	N	20.5	45.3	110.0	
0.339294	41.8	1000.0	9.000	GND	L1	20.5	17.4	59.2	
1.918688	43.4	1000.0	9.000	GND	N	20.6	12.6	56.0	
3.359994	41.8	1000.0	9.000	GND	L1	20.7	14.2	56.0	
5.621969	30.8	1000.0	9.000	GND	L1	20.8	29.2	60.0	
14.640100	40.8	1000.0	9.000	GND	N	21.0	19.2	60.0	

Final Result 2

Frequency (MHz)	CAverage (dBμV)	Meas. Time (ms)	Bandwidth (kHz)	PE	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.339294	37.1	1000.0	9.000	GND	L1	20.5	12.1	49.2	
1.918688	31.6	1000.0	9.000	GND	N	20.6	14.4	46.0	
3.359994	29.9	1000.0	9.000	GND	L1	20.7	16.1	46.0	
5.621969	24.7	1000.0	9.000	GND	L1	20.8	25.3	50.0	
14.640100	35.6	1000.0	9.000	GND	N	21.0	14.4	50.0	



7. Radiated Emission

7.1 Operating Environment

Temperature : 21.8 °C
Relative Humidity : 50.7 % R.H.
Air Pressure : 101.3 kPa

7.2 Test Set-up

The Radiated emission measurements were conducted at the worst test conditions.

The measurements of below 1 GHz were made at 3 m Semi Anechoic Chamber or 10 m Semi Anechoic Chamber (FCC Test Firm Registration No.: 269701) that complies with CISPR 16/ANSI C63.4.

The frequency range of 9 kHz to 30 MHz, The EUT was placed on a non-conductive turntable approximately 0.8 m above the ground plane. The turntable with EUT was rotated 360° and the receive antenna was fixed 2.0 m on the ground plane.

The frequency range of 30 MHz to 1 000 MHz, The EUT was placed on a non-conductive turntable approximately 0.8 m above the ground plane. The turntable with EUT was rotated 360° and adjusting the receive antenna height from 1.0 m to 4.0 m. All frequencies were investigated in both horizontal and vertical antenna polarity.

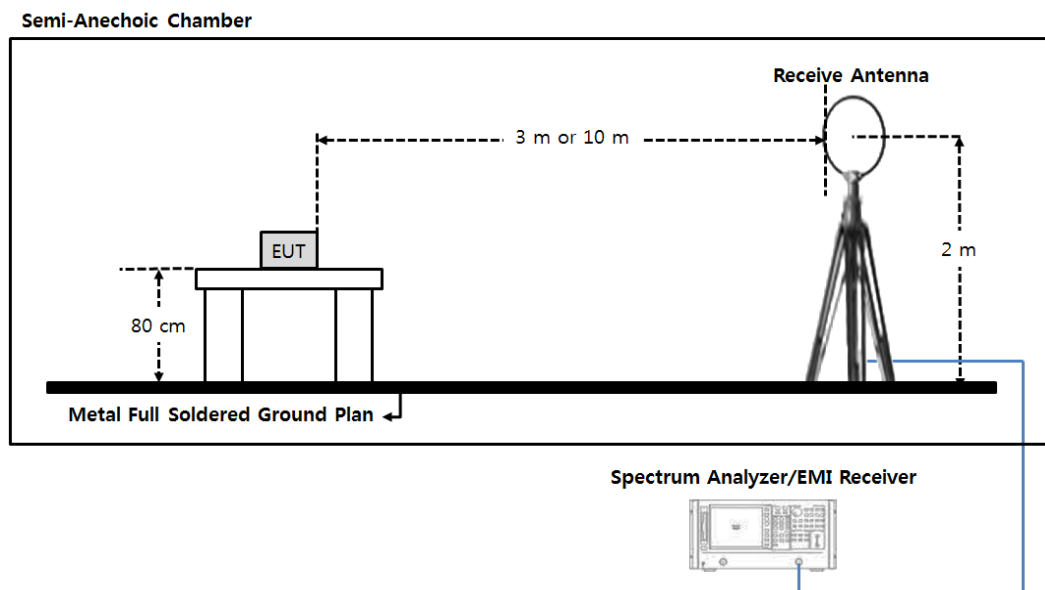


Fig 3. Configurations of Radiated emission test (9 kHz to 30 MHz)

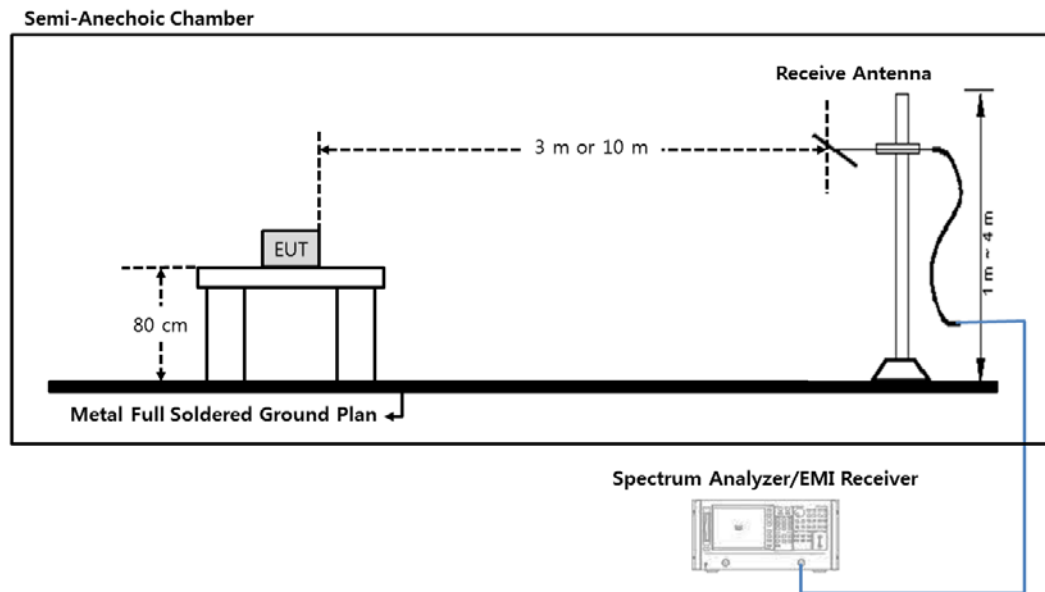


Fig 4. Configurations of Radiated emission test (30 MHz to 1 000 MHz)



7.3 Measurement Uncertainty

The measurement uncertainty was calculated in accordance with ISO “Guide to the expression of uncertainty in measurement”.

The measurement uncertainty was given with a confidence of 95 %.

Test Items(Anechoic Chamber)	Uncertainty	Remark
Radiated emission (30 MHz ~ 300 MHz, 3 m, Vertical)	4.72 dB	Confidence level of approximately 95 % ($k = 2$)
Radiated emission (30 MHz ~ 300 MHz, 3 m, Horizontal)	4.72 dB	Confidence level of approximately 95 % ($k = 2$)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Vertical)	4.79 dB	Confidence level of approximately 95 % ($k = 2$)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Horizontal)	4.79 dB	Confidence level of approximately 95 % ($k = 2$)
Radiated emission (1 000 MHz ~ 6 000 MHz, 3 m)	5.16 dB	Confidence level of approximately 95 % ($k = 2$)
Test items (3 m Anechoic Chamber)	Uncertainty	Remark
Radiated emission (30 MHz ~ 300 MHz, 3 m, Vertical)	5.14 dB	Confidence level of approximately 95 % ($k = 2$)
Radiated emission (30 MHz ~ 300 MHz, 3 m, Horizontal)	5.10 dB	Confidence level of approximately 95 % ($k = 2$)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Vertical)	6.05 dB	Confidence level of approximately 95 % ($k = 2$)
Radiated emission (300 MHz ~ 1 000 MHz, 3 m, Horizontal)	5.19 dB	Confidence level of approximately 95 % ($k = 2$)
Radiated emission (1 GHz ~ 6 GHz, 3 m)	5.20 dB	Confidence level of approximately 95 % ($k = 2$)
Radiated emission (6 GHz ~ 18 GHz, 3 m)	5.20 dB	Confidence level of approximately 95 % ($k = 2$)
Radiated emission (18 GHz ~ 26 GHz, 3 m)	5.53 dB	Confidence level of approximately 95 % ($k = 2$)

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

The listed uncertainties are the worst case uncertainty for the entire range of measurement. please note that the uncertainty values are provided for informational purposes only are not used in determining the PASS/FAIL results



7.4 Limit

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 500 500 or more	25 $25 \times \text{SQRT}(\text{power}/500)$	300 ¹ 300
	Any non-ISM frequency	Below 500 500 or more	15 $15 \times \text{SQRT}(\text{power}/500)$	300 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 500 500 or more	$2,400/\text{F}(\text{kHz})$ $2,400/\text{F}(\text{kHz}) \times \text{SQRT}(\text{power}/500)$	300 ³ 300
	490 to 1,600 kHz Above 1,600 kHz	Any Any	$24,000/\text{F}(\text{kHz})$ 15	30 30
Induction cooking ranges	Below 90 kHz On or above 90 kHz	Any Any	1,500 300	⁴30 ⁴ 30

Note.

- 1) Field strength may not exceed 10 $\mu\text{V}/\text{m}$ 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 $\mu\text{V}/\text{m}$ 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.

7.5 Test Equipment used

Model Name	Manufacturer	Description	Serial Number	Calibration date
■ - ESR7	Rohde & Schwarz	EMI Test Receiver	101382	Apr. 10, 2020
■ - HFH2-Z2	Rohde & Schwarz	Loop ANT	100041	Dec. 20, 2019
■ - CO3000	Innco system GmbH	Position Controller	CO3000/779/330 50314/L	N/A
■ - DT3000	Innco system GmbH	Turntable	1280314	N/A
□ - MA4000-EP	Innco system GmbH	Antenna Mast	4420314	N/A
□ - MA4640-XP-ET	Innco system GmbH	Antenna Mast	MA4640/558	N/A
■ - EMC 32	Rohde & Schwarz	Software	Ver.10.40.10	N/A

All test equipment used is calibrated on a regular basis.



7.6 Test data for Radiated Emission

- Test Date : May 18, 2020
- Measurement Distance : 10 m
- Note : frequency range to be scanned up to 30 MHz, because the frequency band in which the EUT operates less than 1.705 MHz

-. Measurement setting

Frequency range	9 kHz ~ 150 kHz	0.15 MHz ~ 30 MHz
Detector mode	Average	Average
Resolution bandwidth	200 Hz	9 kHz

-. Measurement Data: Induction mode with WLAN [208V, 60 Hz]

Cooking Element #1

Note.2	Frequency [MHz]	Detector mode	ANT Pol	Reading [dBuV] at 10 m	D.C.F	Field Strength [dBuV/m] at 30 m	Limits [dBuV/m]		Margin [dB]
							10 m	30 m	
S	0.019	Average	H	48.36	19.08	29.28	82.6	63.52	34.24
F	0.041	Average	H	72.36	19.08	53.28			10.24
S	0.083	Average	H	49.51	19.08	30.43			33.09
S	0.125	Average	H	46.11	19.08	27.03			36.49
S	0.215	Average	H	40.84	19.08	21.76			41.76
S	0.301	Average	H	36.65	19.08	17.57			45.95

Cooking Element #2

Note.2	Frequency [MHz]	Detector mode	ANT Pol	Reading [dBuV] At 10 m	D.C.F	Field Strength [dBuV/m] At 30 m	Limits [dBuV/m]		Margin [dB]
							10 m	30 m	
F	0.025	Average	H	77.06	19.08	57.98	82.6	63.52	5.54
S	0.050	Average	H	58.60	19.08	39.52			24.00
S	0.076	Average	H	51.49	19.08	32.41			31.11
S	0.126	Average	V1	39.67	19.08	20.59			42.93
S	0.172	Average	H	40.04	19.08	20.96			42.56
S	0.301	Average	H	34.47	19.08	15.39			48.13



Cooking Element #3

Note.2	Frequency [MHz]	Detector mode	ANT Pol	Reading [dBuV] At 10 m	D.C.F	Field Strength [dBuV/m] At 30 m	Limits [dBuV/m]		Margin [dB]
							10 m	30 m	
F	0.046	Average	H	78.15	19.08	59.07	82.6	63.52	4.45
S	0.066	Average	H	34.34	19.08	15.26			48.26
S	0.093	Average	H	44.99	19.08	25.91			37.61
S	0.139	Average	H	51.49	19.08	32.41			31.11
S	0.215	Average	H	43.52	19.08	24.44			39.08
S	0.258	Average	H	35.80	19.08	16.72			46.80

Cooking Element #4

Note.2	Frequency [MHz]	Detector mode	ANT Pol	Reading [dBuV] At 10 m	D.C.F	Field Strength [dBuV/m] At 30 m	Limits [dBuV/m]		Margin [dB]
							10 m	30 m	
S	0.019	Average	H	47.94	19.08	28.86	82.6	63.52	34.66
F	0.046	Average	V1	70.60	19.08	51.52			12.00
S	0.092	Average	V1	44.89	19.08	25.81			37.71
S	0.138	Average	H	45.11	19.08	26.03			37.49
S	0.215	Average	V1	38.51	19.08	19.43			44.09
S	0.258	Average	V1	34.16	19.08	15.08			48.44



[240V , 60 Hz]

Cooking Element #1

Note.2	Frequency [MHz]	Detector mode	ANT Pol	Reading [dBuV] at 10 m	D.C.F	Field Strength [dBuV/m] at 30 m	Limits [dBuV/m]		Margin [dB]
							10 m	30 m	
S	0.019	Average	V1	48.57	19.08	29.49	82.6	63.52	34.03
F	0.043	Average	H	73.78	19.08	54.70			8.82
S	0.086	Average	V1	50.83	19.08	31.75			31.77
S	0.130	Average	H	50.57	19.08	31.49			32.03
S	0.215	Average	H	45.08	19.08	26.00			37.52
S	0.301	Average	V1	38.60	19.08	19.52			44.00

Cooking Element #2

Note.2	Frequency [MHz]	Detector mode	ANT Pol	Reading [dBuV] at 10 m	D.C.F	Field Strength [dBuV/m] at 30 m	Limits [dBuV/m]		Margin [dB]
							10 m	30 m	
F	0.026	Average	H	77.27	19.08	58.19	82.6	63.52	5.33
S	0.053	Average	H	58.58	19.08	39.50			24.02
S	0.079	Average	V1	54.22	19.08	35.14			28.38
S	0.132	Average	H	44.55	19.08	25.47			38.05
S	0.172	Average	H	45.82	19.08	26.74			36.78
S	0.215	Average	H	38.87	19.08	19.79			43.73

Cooking Element #3

Note.2	Frequency [MHz]	Detector mode	ANT Pol	Reading [dBuV] At 10 m	D.C.F	Field Strength [dBuV/m] At 30 m	Limits [dBuV/m]		Margin [dB]
							10 m	30 m	
F	0.048	Average	H	77.41	19.08	58.33	82.6	63.52	5.19
S	0.066	Average	H	34.05	19.08	14.97			48.55
S	0.097	Average	H	45.13	19.08	26.05			37.47
S	0.145	Average	H	46.01	19.08	26.93			36.59
S	0.172	Average	V1	38.03	19.08	18.95			44.57
S	0.258	Average	V1	37.26	19.08	18.18			45.34



Cooking Element #4

Note.2	Frequency [MHz]	Detector mode	ANT Pol	Reading [dBuV] At 10 m	D.C.F	Field Strength [dBuV/m] At 30 m	Limits [dBuV/m]		Margin [dB]
							10 m	30 m	
F	0.049	Average	H	69.79	19.08	50.71	82.6	63.52	12.81
S	0.066	Average	H	34.32	19.08	15.24			48.28
S	0.098	Average	H	44.08	19.08	25.00			38.52
S	0.147	Average	V1	42.44	19.08	23.36			40.16
S	0.215	Average	H	41.72	19.08	22.64			40.88
S	0.301	Average	H	36.19	19.08	17.11			46.41

Note.1 The worst case data were reported

And no other spurious and harmonic emissions were reported greater than listed emission above table

Note.2 “F”=Fundamental / “S”=Spurious / “*” = Noise Floor

Note.3 All measurements were recorded using a spectrum analyzer employing a Average detector for below 30 MHz

Note.4 Distance Correction Factor (D.C.F.)

For 30 m: $40\log(30/10) = 19.08$ dB

Note.5 Sample calculation

Field Strength = Reading – D.C.F

Margin = Limit – Field Strength

Where, D.C.F = Distance Correction Factor

Note.6 “V1”= Vertical and perpendicular to the centerline / “V2”=vertical and parallel to the centerline

“H” = horizontal (parallel to the ground)

Note.7 Cooking element “1”= left front , “2”=right front, “3”=left rear, “4”=center rear



8. Sample Calculations

$$\begin{aligned} \text{dB}\mu\text{V} &= 20 \text{ Log}_{10}(\mu\text{V}/\text{m}) \\ \text{dB}\mu\text{V} &= \text{dBm} + 107 \\ \mu\text{V} &= 10^{(\text{dB}\mu\text{V}/20)} \end{aligned}$$

8.1 Example 1 :

■ 20.3 MHz

Class B Limit	= 250 μV = 48 dB μV
Reading	= 39.2 dB μV
$10^{(39.2\text{dB}\mu\text{V}/20)}$	= 91.2 μV
Margin	= 48 dB μV - 39.2 dB μV
	= 8.8 dB

8.2 Example 2 :

■ 66.7 MHz

Class B Limit	= 100 $\mu\text{V}/\text{m}$ = 40.0 dB $\mu\text{V}/\text{m}$
Reading	= 31.0 dB μV
Antenna Factor + Cable Loss	= 5.8 dB
Total	= 36.8 dB $\mu\text{V}/\text{m}$
Margin	= 40.0 dB $\mu\text{V}/\text{m}$ - 36.8 dB $\mu\text{V}/\text{m}$
	= 3.2 dB

9. Recommendation & Conclusion

The data collected shows that the **LG Electronics USA. HOUSEHOLD ELECTRIC RANGE (Model Name: LSIS3018SS)** complies with §18.305 and 18.307 of the FCC Rules.

- The end -