EMC Test Report

Test report file No. : S16069-F **Date of issue:** 11 October, 2016

Type :	Commercial Induction Cooktop
Model :	KY-MK3500
Serial No. :	P3 00009
EUT received :	4 October, 2016
Applicant :	Panasonic Appliances Company of America Kitchen Appliances Certification Liaison
Address :	1701 Golf Road Suite 3-106 Rolling Meadows, IL 60008
Manufacturer :	Panasonic Corporation Appliances Company Kitchen Appliances Business Division
Address :	1-5-1 Takatsukadai, Nishi-ku, Kobe City 651-2271, Japan

Test results according to the standard(s) at page 3 : ☒ **Compliance** ☐ **Non-compliance**

This test report with appendix consists of 20 pages.
This test result only responds to the tested sample.
It is not allowed to copy this test report even partly without the allowance of the test laboratory.

	Title	Signer
Tested by :	Test engineer	Masaki Yamanaka
Reviewed :	Manager, Quality System Representative and Responsible engineer	Satoshi Arita
Approved by :	Laboratory Director, EMC Test Laboratory	Tsutomu Inada

A) DOCUMENTATION

DIRECTORY

TEST STANDARD(S)

The tests were performed according to the following standard(s) :

☒ - FCC Rules and Regulations Part18 Subpart C - Technical Standards

☒ - FCC / OST MP-5 (1986) - Test Procedure.

Deviations from, additions to the test method from the standard: No deviation

TEST LABORATORY

Laboratory Name	: EMC Test Laboratory, Product Analysis Center, Panasonic Corporation
Corporation	: Panasonic Corporation
JAB Code	: RTL02730
Sasayama Site	
Address	: 231-1 Yashiro, Sasayama City, Hyogo 669-2356, Japan
TEL	: +81(79) 552-5681
FAX	: +81(79) 552-5682
E-mail	: inada.tsutomu@jp.panasonic.com

ENVIRONMENTAL CONDITIONS

Temperature, Humidity and Atmospheric pressure : refer to Test Conditions and Result

POWER SUPPLY SYSTEM UTILIZED

Power supply system : AC 208 V / 60 Hz / 1 phase
: AC 240 V / 60 Hz / 1 phase

STATEMENT OF TRACEABILITY AND MEASUREMENT UNCERTAINTY

The data and results referenced in this document are true and accurate. The test results are traceable to the national or international standards. The reader is cautioned that there may be measurement uncertainty within the calibration limits of the equipment and facilities that can account for a nominal measurement uncertainty of each test remarks. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

SHORT DESCRIPTION OF THE EQUIPMENT UNDERTEST (EUT)

This product is a commercial cooking appliances.
It is equipped with an induction heater for heating the pan was placed on top.

DEVIATION FROM THE STANDARDS

Deviations from or additions to the test method: No deviation or addition

DEFINITIONS FOR SYMBOLS USED IN THIS TEST REPORT

☒ - Check box indicates that the listed condition, standard or equipment was applicable for this test report.

☐ - Blank box indicates that the listed condition, standard or equipment was not applicable for this test report.

B) TEST CONDITIONS AND RESULTS

Conducted Emissions (Mains Port)

The measurement of the conducted emissions (interference voltage) at the mains ports in the frequency range of **9** **kHz-** **30** **MHz** were performed.

☒ - Test applicable

Test terminals :
☒ - Mains terminals
☐ - Discontinuous disturbance

Site location :
☒ - Sasayama EMC Site

Test location :
☒ - EMI Shielded Room

Test mains port :
☒ - AC
☐ - DC

Used test instruments and test accessories are shown in appendix B

All used test-instruments as well as the test-accessories are calibrated regularly.

Result :

The requirements are: MET ☒ ***NOT MET*** ☐

Min. limit margin	5.3	dB	at 10.840	MHz
Max. limit exceeding		dB	at	MHz

Remarks : -Temperature: 24 ℃, Humidity: 64 %, Atmospheric pressure: 984 hPa (5 October, 2016)
-Results of the mains port tests are shown in appendix A.
-The minimum margin was found with Ave. detector receiver on VA Phase (Neutral Phase) at 208 V 60 Hz.
-Measurement uncertainty = 3.43 dB

Radiated Emissions (Below 1 GHz : Magnetic Field)

The measurement of the radiated emissions (magnetic field)
in the frequency range of **9** **kHz-** **30** **MHz** were performed in horizontal and vertical antenna polarization.

☒ - Test applicable

Site location :
☒ - Sasayama EMC Site

Test location :
☒ - Reference Open Area Test Site

Test distance :
☐ - 3 meters
☐ - 10 meters
☒ - 30 meters

Used test instruments and test accessories are shown in appendix B

All used test-instruments as well as the test-accessories are calibrated regularly.

Result :

The requirements are: MET ☒ ***NOT MET*** ☐

Min. limit margin	17.0	dB	at	0.024	MHz
Max. limit exceeding		dB	at		MHz

Remarks :
-Temperature: 24 ℃, Humidity: 68 %, Atmospheric pressure: 986 hPa (4 October, 2016)
-Results of the radiated emission tests are shown in appendix A.
-The minimum margin was found with X axis antenna polarization at 240 V 60 Hz.
-Measurement uncertainty = 2.38 dB

EQUIPMENT UNDER TEST

Operation - mode of the EUT :

The equipment under test was operated during the measurement under following conditions:

☒ Power mode

Modification of the EUT : The test laboratory did not modify the EUT during the test.

Following peripheral devices and interface cables were connected during the measurement:

< EUT >

No.	Device	Model	Serial No.	Manufacturer	Date of manufacture	EUT condition
A	Commercial Induction Cooktop	KY-MK3500	P3 00009	Panasonic	September, 2016	Pre

[Pre] = Pre Production, [Pro] = Production

No.	Device	Equipment authorization	FCC ID
A	Commercial Induction Cooktop	Certification	ACLAPZC93

< Details of ports >

No.	Name of port	Connection	Status of lines	Analog / Digital	Remarks
①	AC IN	EUT / AC	Passive	Analog	-

Note :
-The status of lines shows direction of signals on the EUT; "active" is "OUT" and "passive" is "IN".

< AC Power Cable >

No.	Name of cable / Manufacturer / Type	Cable type	Pin	Length (m)	Shielded	Ferrite quantity	Ground line
1	POWER CORD / TA HSING Electric Wire & Cable Co.,Ltd / ZN01AC93	e	3	1.80	Unshielded	None	Yes

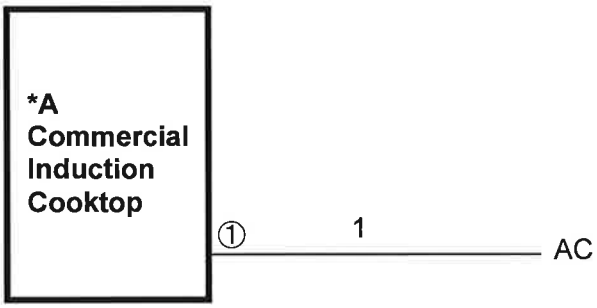
Note :
-Explanation of the abbreviations of the cable type and ferrite is shown in the table titled "characters of the cable type and ferrite".

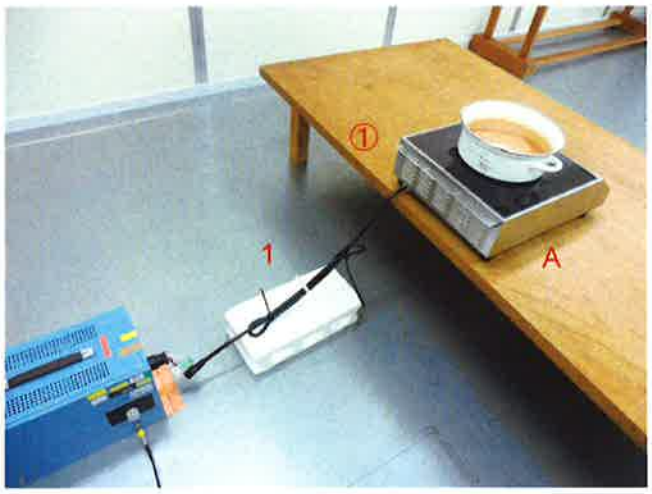
Characters of the cable type and ferrite :

Character	Cable type and Ferrite
a	Enclosed cable
b	Available accessory (exclusive cable)
c	Commercially available cable (with no designation)
d	Commercially available cable. (The selection and mounting procedure of the cable is designated in the instruction manual.)
e	Fixed cable
f	Enclosed ferrite (Setting up method of the ferrite is designated in the instruction manual.)
g	Commercially available ferrite. (The selection and setting up method of the ferrite is designated in the instruction manual.)
h	Fixed ferrite (Already fixed)

BLOCK DIAGRAM OF THE EQUIPMENT UNDER TEST (EUT)

*: EUT





SUMMARY

General remarks :

Emission tests were all good results.

Final judgment :

The requirements according to the technical standard(s) and tested operation modes are

☒ **MET**

☐ **NOT MET**

The equipment under test

☒ **Fulfills** the general approval requirements cited on page 3.

☐ **Does not fulfill** the general approval requirements cited on page 3.

Testing Start Date : 4 October, 2016

Testing End Date : 5 October, 2016

CONSTRUCTIONAL DATAFORM FOR EMC-TESTING

Applicant : Panasonic Appliances Company of America
Kitchen Appliances Certification Liaison

Address : 1701 Golf Road Suite 3-106 Rolling Meadows, IL 60008

Manufacturer : Panasonic Corporation
Appliances Company Kitchen Appliances Business Division

Address : 1-5-1 Takatsukadai, Nishi-ku, Kobe City 651-2271, Japan

Factory : Panasonic Corporation
Appliances Company Kitchen Appliances Business Division

Address : 1-5-1 Takatsukadai, Nishi-ku, Kobe City 651-2271, Japan

Type	: Commercial Induction Cooktop	**Rated voltage**	: 208 V / 60Hz 230V – 240 V / 60Hz
Model	: KY-MK3500	**Rated input power**	: 3000 W / 208 V 3500 W / 230V – 240 V
Serial No	: P3 00009	**Protection class**	: Class I

Configuration of equipment:

Commercial Induction Cooktop	:	KY-MK3500

Source of interference & internal frequencies:

Source		frequency
Micro computer	:	40 MHz / 32 MHz
PFC	:	70 kHz
Inveter for Induction heating	:	23 kHz - 85 kHz
	:	

Noise suppression components:
None.

Measures for electromagnetic shielding:
None.

Place of issue : Hyogo Japan **Date :** 3 October, 2016

Seal and signature of applicant : Keiko Isoda
Keiko Isoda

Section of the signer : IH CookTop Engineering Department

C) Appendix

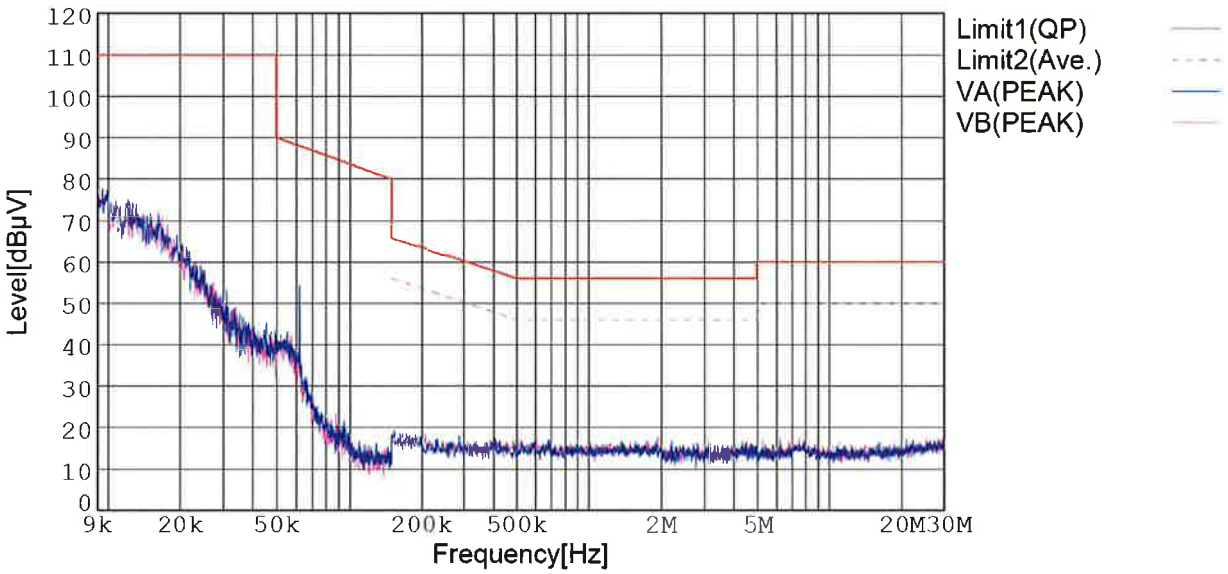
Appendix A : Test Data

Conducted Emissions (Mains Port)

Conducted Emissions

Model Name	:		Temp.	:	24deg.C
Model No.	:		Humi.	:	64%
Serial No.	:		Pressure	:	984hPa
Operator	:	M.Yamanaka	Date	:	2016/10/5 9:18
Bands	:	9	Test Equip.	:	ESCI-3
Detector	:	PEAK	Comment	:	Floor Noise

Limit1: [FCC Part 18] cooking/ultrasonic (QP)
Limit2: [FCC Part 18] cooking/ultrasonic (Ave.)

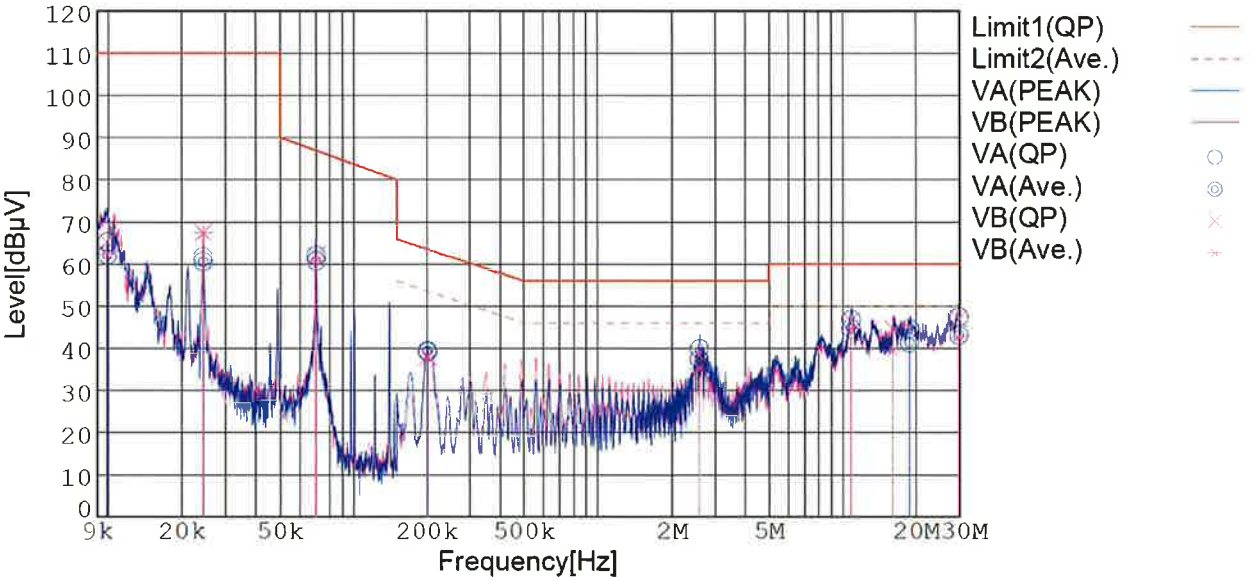


*VA = Neutral Phase, VB = Line Phase

Conducted Emissions

Model Name	:	Commercial Induction Cooktop	Temp.	:	24deg.C
Model No.	:	KY-MK3500	Humi.	:	64%
Serial No.	:	P3 00009	Pressure	:	984hPa
Operator	:	M.Yamanaka	Date	:	2016/10/5 10:29
Points	:	16	Test Equip.	:	ESCI-3
Detector	:	PEAK	Comment	:	208V 60Hz

Limit1: [FCC Part 18] cooking/ultrasonic (QP)
Limit2: [FCC Part 18] cooking/ultrasonic (Ave.)



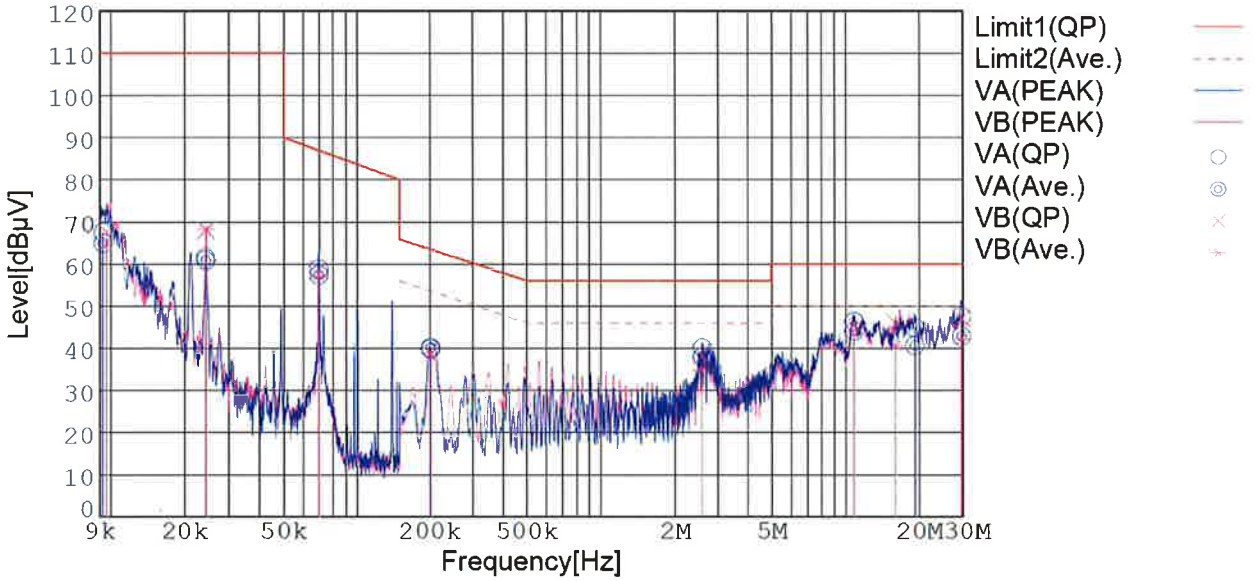
Frequency [MHz]	Meter Reading (QP) [dBµV]	Meter Reading (Ave.) [dBµV]	Factor [dB]	Level (QP) [dBµV]	Level (Ave.) [dBµV]	Line	Limit (QP) [dBµV]	Limit (Ave.) [dBµV]	Margin (QP)[dB]	Margin (Ave.) [dB]
0.0099	49.8	46.7	15.5	65.3	62.2	VA	110.0	-	44.7	-
0.0244	50.8	49.7	10.9	61.7	60.6	VA	110.0	-	48.3	-
0.0700	51.9	50.7	10.1	62.0	60.8	VA	86.9	-	24.9	-
0.2012	29.1	29.3	10.1	39.2	39.4	VA	63.6	53.6	24.4	14.2
2.5860	29.9	27.3	10.1	40.0	37.4	VA	56.0	46.0	16.0	8.6
10.8400	36.4	34.3	10.4	46.8	44.7	VA	60.0	50.0	13.2	5.3
18.8500	34.0	30.7	10.7	44.7	41.4	VA	60.0	50.0	15.3	8.6
29.9370	36.3	31.9	11.2	47.5	43.1	VA	60.0	50.0	12.5	6.9
0.0098	49.8	46.8	15.5	65.3	62.3	VB	110.0	-	44.7	-
0.0244	56.5	56.5	10.9	67.4	67.4	VB	110.0	-	42.6	-
0.0700	51.9	50.7	10.1	62.0	60.8	VB	86.9	-	24.9	-
0.2010	27.8	28.1	10.1	37.9	38.2	VB	63.6	53.6	25.7	15.4
2.5890	28.4	25.0	10.2	38.6	35.2	VB	56.0	46.0	17.4	10.8
10.8400	36.2	34.2	10.4	46.6	44.6	VB	60.0	50.0	13.4	5.4
16.0900	34.1	28.9	10.6	44.7	39.5	VB	60.0	50.0	15.3	10.5
29.8900	35.9	31.5	11.2	47.1	42.7	VB	60.0	50.0	12.9	7.3

*VA = Neutral Phase, VB = Line Phase

Conducted Emissions

Model Name	:	Commercial Induction Cooktop	Temp.	:	24deg.C
Model No.	:	KY-MK3500	Humi.	:	64%
Serial No.	:	P3 00009	Pressure	:	984hPa
Operator	:	M.Yamanaka	Date	:	2016/10/5 9:27
Points	:	16	Test Equip.	:	ESCI-3
Detector	:	PEAK	Comment	:	240V 60Hz

Limit1: [FCC Part 18] cooking/ultrasonic (QP)
Limit2: [FCC Part 18] cooking/ultrasonic (Ave.)



Frequency [MHz]	Meter Reading (QP) [dBµV]	Meter Reading (Ave.) [dBµV]	Factor [dB]	Level (QP) [dBµV]	Level (Ave.) [dBµV]	Line	Limit (QP) [dBµV]	Limit (Ave.) [dBµV]	Margin (QP)[dB]	Margin (Ave.) [dB]
0.0093	51.7	49.2	15.8	67.5	65.0	VA	110.0	-	42.5	-
0.0244	50.6	50.0	10.9	61.5	60.9	VA	110.0	-	48.5	-
0.0699	48.7	47.3	10.1	58.8	57.4	VA	87.0	-	28.2	-
0.2015	29.8	30.0	10.1	39.9	40.1	VA	63.6	53.6	23.7	13.5
2.5880	30.2	27.9	10.1	40.3	38.0	VA	56.0	46.0	15.7	8.0
10.8400	36.0	33.7	10.4	46.4	44.1	VA	60.0	50.0	13.6	5.9
19.2400	34.1	29.9	10.8	44.9	40.7	VA	60.0	50.0	15.1	9.3
29.8600	36.5	31.6	11.2	47.7	42.8	VA	60.0	50.0	12.3	7.2
0.0096	52.0	49.2	15.6	67.6	64.8	VB	110.0	-	42.4	-
0.0244	57.1	57.3	10.9	68.0	68.2	VB	110.0	-	42.0	-
0.0700	48.5	47.1	10.1	58.6	57.2	VB	86.9	-	28.3	-
0.2010	28.5	28.8	10.1	38.6	38.9	VB	63.6	53.6	25.0	14.7
2.5890	28.1	24.7	10.2	38.3	34.9	VB	56.0	46.0	17.7	11.1
10.8400	35.3	33.1	10.4	45.7	43.5	VB	60.0	50.0	14.3	6.5
16.0900	35.3	30.0	10.6	45.9	40.6	VB	60.0	50.0	14.1	9.4
29.8380	35.9	31.0	11.2	47.1	42.2	VB	60.0	50.0	12.9	7.8

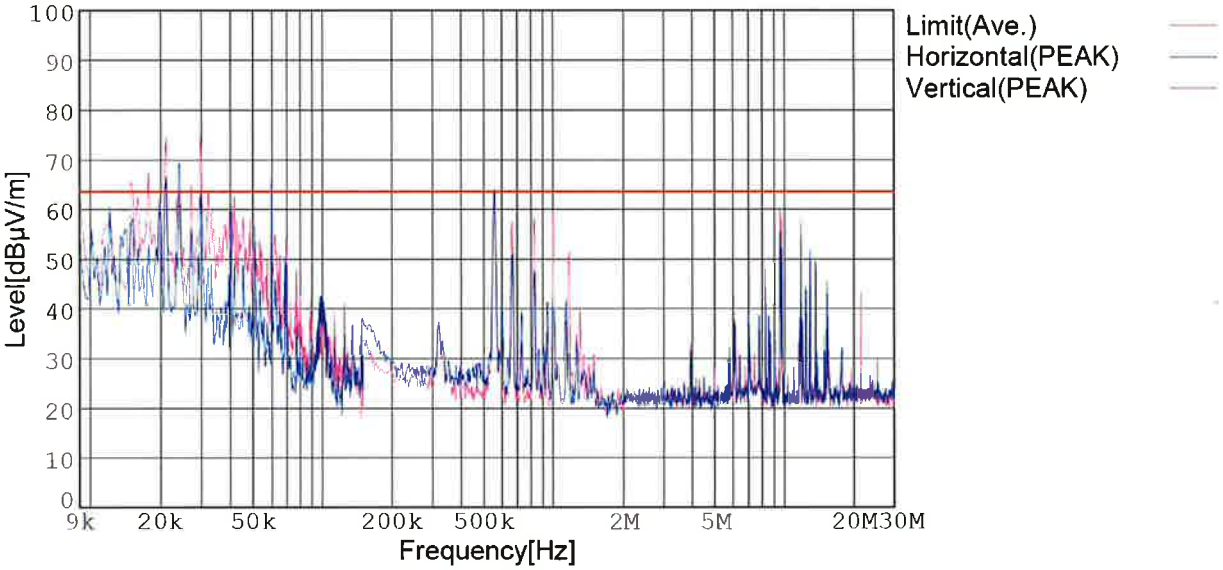
*VA = Neutral Phase, VB = Line Phase

Radiated Emissions (Below 1 GHz : Magnetic Field)

Radiated Emissions

Model Name	:		Temp.	:	24deg.C
Model No.	:		Humi.	:	68%
Serial No.	:		Date	:	2016/10/4 11:42
Operator	:	M.Yamanaka	Test Equip.	:	ESI 26
Bands	:	5	Comment	:	986hPa
Detector	:	PEAK	Floor Noise		
Polarization	:	Hori. & Vert.			

Limit: [FCC Part18] AV (<90k)<30m>

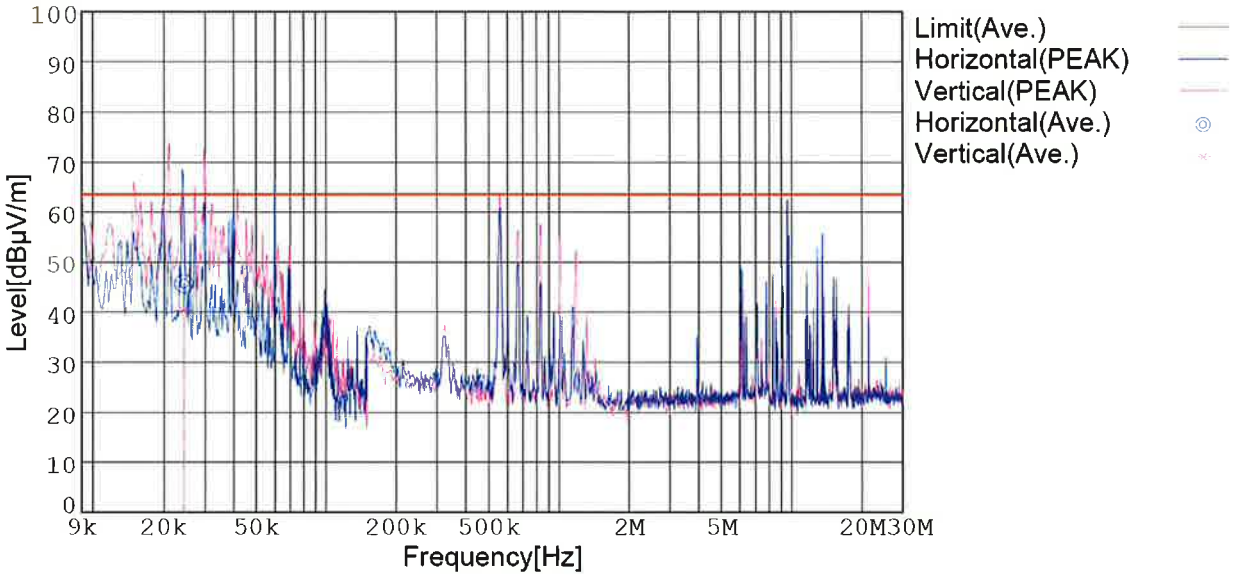


*Hori. = X Axis, Vert. = Y Axis

Radiated Emissions

Model Name	:	Commercial Induction Cooktop	Temp.	:	24 deg.C
Model No.	:	KY-MK3500	Humi.	:	68 %
Serial No.	:	P3 00009	Date	:	2016/10/4 13:36
Operator	:	M.Yamanaka	Test Equip.	:	ESI 26
Points	:	2	Comment	:	986 hPa
Detector	:	PEAK	208V 60Hz		
Polarization	:	Hori. & Vert.			

Limit: [FCC Part18] AV (<90k)<30m>



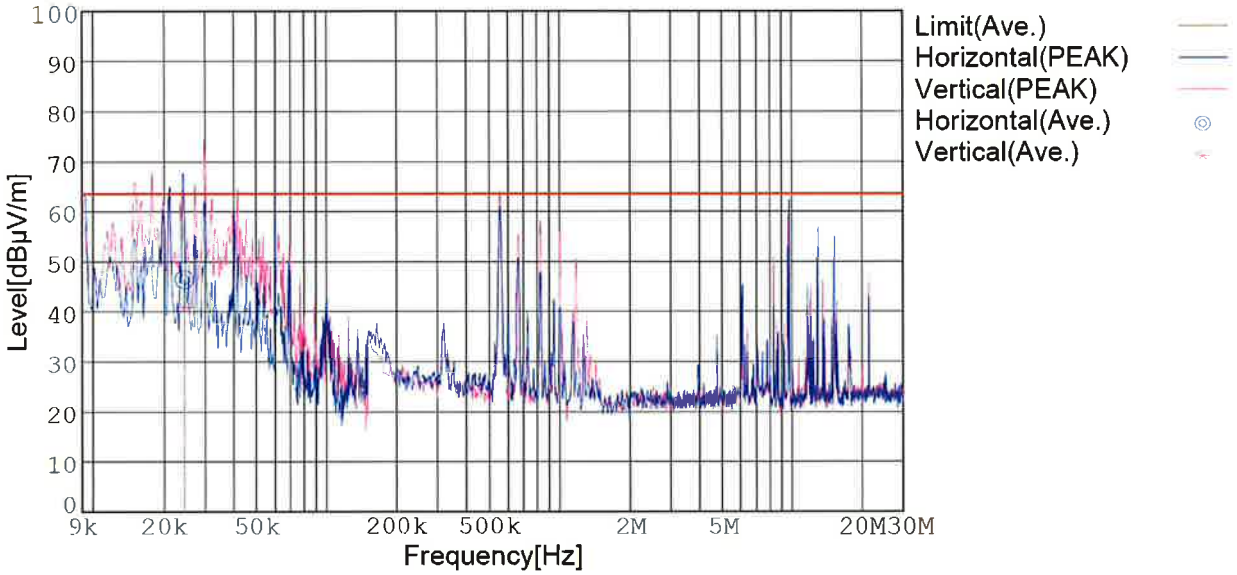
Frequency[MHz]	Meter Reading (Ave.) [dBµV]	Factor[dB]	Level(Ave.) [dBµV/m]	Angle[°]	Height [cm]	Polar.	Limit [dBµV/m]	Margin[dB]
0.024	24.7	21.0	45.7	28	200	Hori.	63.5	17.8
0.024	19.3	21.0	40.3	75	200	Vert.	63.5	23.2

*Hori. = X Axis, Vert. = Y Axis

Radiated Emissions

Model Name	:	Commercial Induction Cooktop	Temp.	:	24 deg.C
Model No.	:	KY-MK3500	Humi.	:	68 %
Serial No.	:	P3 00009	Date	:	2016/10/4 13:07
Operator	:	M.Yamanaka	Test Equip.	:	ESI 26
Points	:	2	Comment	:	986 hPa
Detector	:	PEAK	240V 60Hz		
Polarization	:	Hori. & Vert.			

Limit: [FCC Part18] AV (<90k)<30m>



Frequency[MHz]	Meter Reading (Ave.) [dBµV]	Factor[dB]	Level(Ave.) [dBµV/m]	Angle[°]	Height [cm]	Polar.	Limit [dBµV/m]	Margin[dB]
0.024	25.5	21.0	46.5	25	200	Hori.	63.5	17.0
0.024	19.8	21.0	40.8	57	200	Vert.	63.5	22.7

*Hori. = X Axis, Vert. = Y Axis

Appendix B : Test Equipment List

Conducted Emissions (AC Power Port)

Test equipment list used to perform the conducted emissions (AC Power Port).

Device	Model No.	Serial. No.	Reg. No.	Frequency range	Last Cal.	Next Cal.
EMI test receiver	Rohde & Schwarz ESCI	100048	RCV0770	9 kHz – 3 GHz	23 March, 2016	31 March, 2017
Line impedance stabilization network	Kyoritsu Technology KNW-242C	8-1312-5	AMN0426	9 kHz – 30 MHz	26 January, 2016	31 January, 2017

Device	Model No.	Version	Reg. No.
Software	VITEC Co., Ltd. EMI96	E26	S-SW006-1

Radiated Emissions (Magnetic Field)

Test equipment list used to perform the radiated emissions (magnetic field 9 kHz – 30 MHz).

Device	Model No.	Serial. No.	Reg. No.	Frequency range	Last Cal.	Next Cal.
EMI test receiver	Rohde & Schwarz ESI26	835336/006	RCV0526	9 kHz – 26.5 GHz	20 February, 2016	28 February, 2017
Loop antenna	Rohde & Schwarz HFH2-Z2	871398/33	ANT0851	9 kHz – 30 MHz	10 September, 2016	30 September, 2017

Device	Model No.	Version	Reg. No.
Software	VITEC Co., Ltd. EMI96	E26	S-SW001-1