

FCC PART 18 TEST REPORT

For

Guangdong Midea Kitchen Appliances Manufacturing Co.,Ltd

No.6, Yong An Road, Beijiao, Shunde, Foshan, Guangdong, China

FCC ID: VG8EM234AYYPV4PA

Report Type: Class II Permissive Change	Product Type: Microwave Oven
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Reviewed By: <u>Xiangguang Kong</u> <i>Xiangguang Kong</i>	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Guangdong Midea Kitchen Appliances Manufacturing Co.,Ltd*'s product, model number: *EM234A2CU-PVH(PAN)* (FCC ID: *VG8EM234AYYPV4PA*) or the "EUT" in this report is a *Microwave Oven*, which was measured approximately: 519 mm (W) x 315 mm (H) x 410 mm (D), the input power is AC 120V/60Hz. The highest operating frequency is 2450MHz.

Notes: This series products model: EM234A##-PVH(PAN), EM234A###-PVH(PAN), NN-SC6#9S and EM234A2CU-PVH(PAN) are electrically identical, model EM234A2CU-PVH(PAN) was selected for fully testing, the detailed information can be referred to the declaration which was stated and guaranteed by the applicant.

**All measurement and test data in this report was gathered from production sample serial number: 181225553 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2018-12-25.*

Objective

This report is prepared on behalf of *Guangdong Midea Kitchen Appliances Manufacturing Co.,Ltd* in accordance with Part 2-Subpart J, and Part 18-Subparts A, B and C of the Federal Communication Commissions rules and regulations.

The objective of the manufacturer is to determine compliance with FCC Part 18 limits.

This is a CIIPC application of the device, the difference between the original device and the current one are as follows:

- (1) The current device with new model *EM234A2CU-PVH(PAN)*, *EM234A##-PVH(PAN)*, *EM234A###-PVH(PAN)*, *NN-SC6#9S* add a humidity sensor based on the original one

Based on the change made to the device, the test item of "RADIATED EMISSIONS" was performed.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with MP-5, FCC Methods of Measurements of Radio Noise Emissions from ISM Equipment, February 1986. All measurements were performed at Bay Area Compliance Laboratory Corporation. The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty:

Item			Expanded Measurement uncertainty
AC Power Line Conducted Emissions			2.20 dB (k=2, 95% level of confidence)
Radiated emission	30MHz~200MHz	Horizontal	4.58 dB (k=2, 95% level of confidence)
		Vertical	4.59 dB (k=2, 95% level of confidence)
	200MHz~1 GHz	Horizontal	4.83 dB (k=2, 95% level of confidence)
		Vertical	5.85 dB (k=2, 95% level of confidence)
	1 GHz~6 GHz	Horizontal/Vertical	4.08 dB (k=2, 95% level of confidence)
	Above 6 GHz	Horizontal/Vertical	4.59 dB (k=2, 95% level of confidence)
Occupied Bandwidth			±0.5kHz
Temperature			±1.0℃

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

OPERATING CONDITION/TEST CONFIGURATION

Justification

The EUT was operated at maximum (continuous) RF output power. The loads consisted of water in a glass beaker in the amounts specified in the test procedure.

EUT Exercise Software

No exercise software was used.

Special Accessories

No special accessory was used.

Equipment Modifications

No modifications were made to the EUT tested.

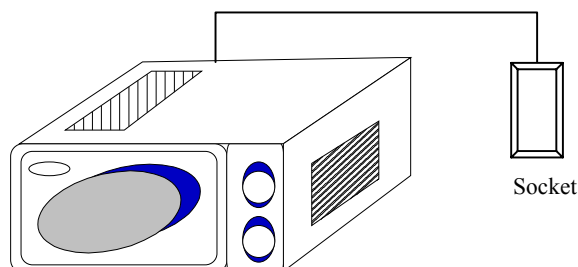
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
BULL	Socket	GN-415K	140217

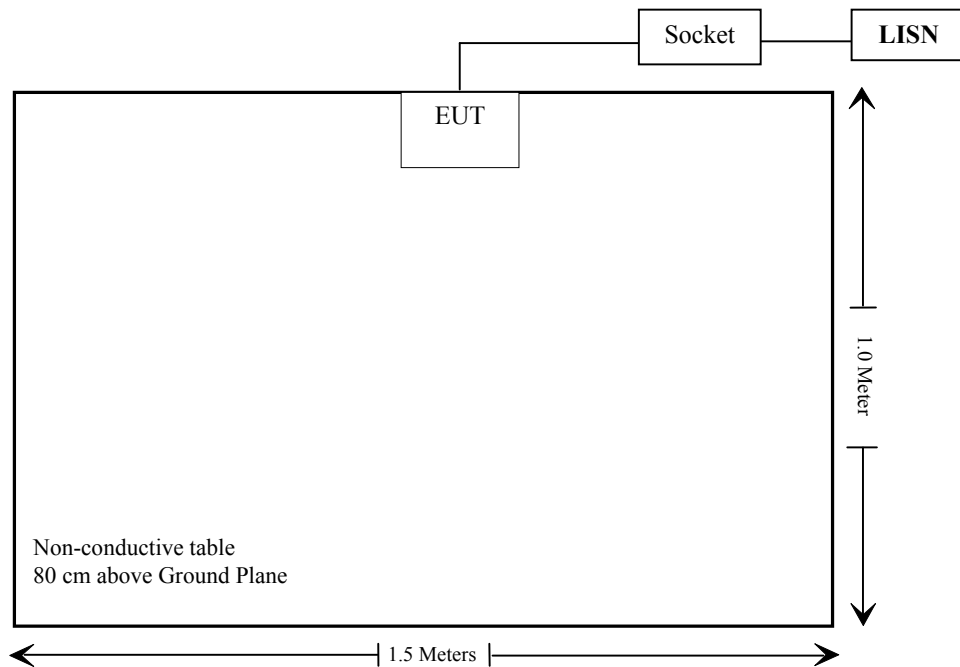
External Cable List and Details

Cable Description	Length (m)	From/Port	To
Un-shielding Un-detachable AC Cable	1.0	LISN	Socket
Un-shielding Un-detachable AC Cable	0.8	EUT	Socket

Configuration of Test Setup



Block Diagram of Test Setup



TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RADIATED EMISSIONS					
Sonoma Instrument	Amplifier	310N	186238	2018-11-12	2019-05-12
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2018-01-11	2019-01-11
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017-12-22	2020-12-21
A.H.System	Horn Antenna	SAS-200/571	135	2018-09-01	2021-08-31
Rohde & Schwarz	Signal Analyzer	FSEM	845987/005	2018-06-23	2019-06-23
COM-POWER	Pre-amplifier	PA-122	181919	2018-08-01	2019-02-01
TDK	Chamber	Chamber A	2#	2016-12-05	2019-12-05
TDK	Chamber	Chamber B	1#	2016-12-06	2019-12-06
R&S	Auto test Software	EMC32	V9.10	NCR	NCR
Agilent	Spectrum Analyzer	8564E	3943A01781	2018-01-04	2019-01-04
the electro-Mechanics Co.	Horn Antenna	3116	9510-2270	2018-10-14	2021-10-14
Heatsink Required	Amplifier	QLW-18405536-J0	15964001002	2018-08-01	2019-02-01
IW MICROWAVE	RF Cable	2PS-1401-2760-2ps	SN 03	2018-11-22	2019-05-22
Ducommun technologies	RF Cable	UFA210A-1-4724-30050U	MFR64369 223410-001	2018-11-12	2019-11-12
Ducommun technologies	RF Cable	104PEA	218124002	2018-11-12	2019-11-12

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

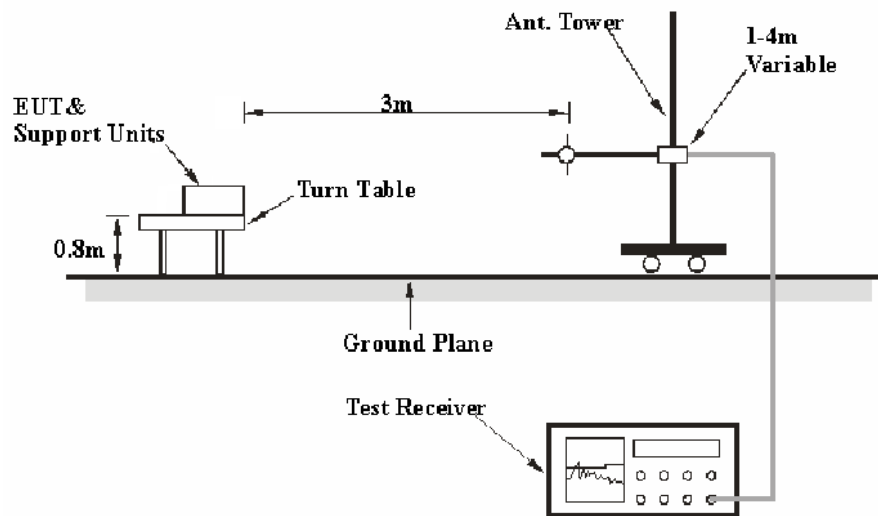
RADIATED EMISSIONS

Applicable Standard

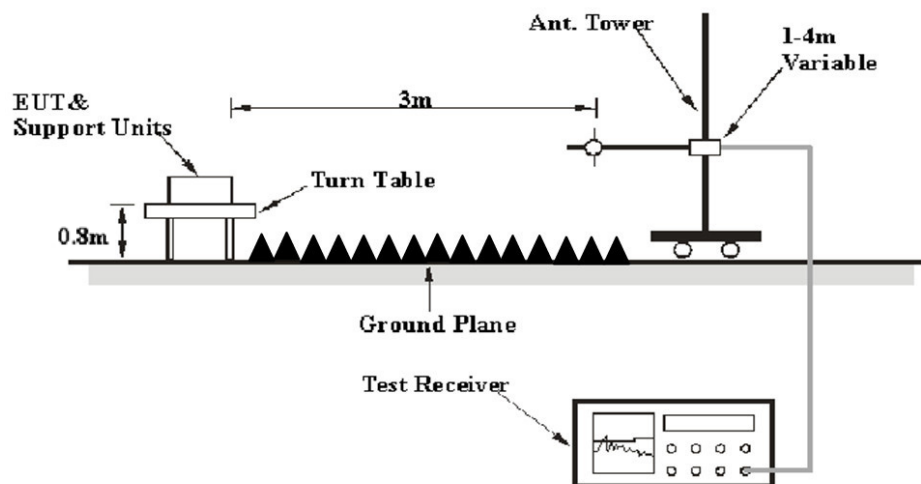
FCC §18.305 and FCC §18.309

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the FCC MP - 5. The specification used was the FCC part 18 limits.

The socket was connected to 120 VAC/60 Hz power source.

EMI Test Receiver Setup and Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver and Spectrum Analyzer were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30MHz – 1000 MHz	100 kHz	300 kHz	120kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK.
	1MHz	10 Hz	/	Ave.

Test Procedure

Maximizing procedure was performed on the six (6) highest emissions to ensure that the EUT complied with all installation combinations.

The EUT was in the normal (naïve) operating mode during the final qualification test to represent the worst results.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 18,

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(L_m)} \leq L_{\text{lim}} + U_{\text{cispr}}$$

In BACL., $U_{(L_m)}$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data and Plots

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52 %
ATM Pressure:	101.0 kPa

The testing was performed by Baston Chen & Leo Huang on 2018-12-29.

EUT Operation Mode: Boiling Water with MAX Power

30 MHz – 1 GHz:

Frequency (MHz)	Corrected Amplitude (dBμV/m)	PK/QP	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
44.290900	25.00	QP	109.0	V	157.0	-16.8	71.49	46.49
69.151425	33.24	QP	126.0	V	134.0	-20.6	71.49	38.25
70.993875	34.30	QP	104.0	V	147.0	-20.6	71.49	37.19
73.843175	31.41	QP	107.0	V	156.0	-20.4	71.49	40.08
327.912000	28.52	QP	207.0	V	0.0	-10.7	71.49	42.97
958.672200	31.94	QP	380.0	V	244.0	9.3	71.49	39.55

Above 1 GHz:

Frequency (MHz)	Measuerment		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	FCC Part 18	
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H / V)			Limit (dBμV/m)	Margin (dB)
4236.42	30.54	Ave.	196	1.6	H	5.80	36.34	71.49	35.15
4236.42	31.43	Ave.	102	1.3	V	5.80	37.23	71.49	34.26
4951.90	32.13	Ave.	179	1.9	H	9.07	41.20	71.49	30.29
4951.90	32.23	Ave.	200	1.3	V	9.07	41.30	71.49	30.19
8263.13	32.37	Ave.	97	2.1	H	18.00	50.37	71.49	21.12
8263.13	31.24	Ave.	24	1.2	V	18.00	49.24	71.49	22.25

Note:

- 1) Corrected Amplitude = Meter Reading + Correction Factor
- 2) Correction Factor = Antenna Factor + Cable Loss - Amplifier Gain
- 3) Margin = Limit – Corrected Amplitude
- 4) The data below 20dB to the limit was not recorded.

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