

**Date: 1998-11-30**  
**No.: HM1500B/504**

## **TEST REPORT**

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**APPLICANT:** (Code: 019506)

Whirlpool SMC Microwave Product Development Limited.  
2/F., Shell Industrial Building, 12 Lee Chung St.,  
Chai Wan, Hong Kong.

**DATE SAMPLE(S) RECEIVED:**

1998-11-18

**TEST DURATION:**

1998-11-19 to 1998-11-30

**DESCRIPTION OF SAMPLE(S):**

A sample of product said to be

Product: Microwave Hood Combination  
Manufacturer: Shunde Whirlpool SMC Microwave Products Co., Ltd.  
Brand Name: Kenmore  
Magnetrons: Panasonic type 2M167B-M14  
Model Number: 68640-1  
Rating: 120V a.c. 60Hz 1800W 15A  
Origin: China

**INVESTIGATIONS REQUESTED:**

Perform relevant tests for F.C.C. part 18 certification.

**RESULT/REMARK:**

Please see attached sheet(s).

Please see report no.: HM1500/504 for measurement of performed in accordance with F.C.C. part 15.

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Testing Engineer

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Verify by

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Patrick Wong  
for Managing Director

**1.1.1.1.1 Conditions in issuance of Test Report**

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### **APPENDICES:**

- Appendix A - Test Facility
- Appendix B - Test Equipment
- Appendix C - Photos
- Appendix D - Additional Models
- Appendix E - Graphical Data

### **CONCLUSION:**

From the measurement data obtained, the tested sample was considered to have COMPLIED with the requirements for the relevant clauses of Part 18 of the Federal Communication Commission Rules for Microwave Oven.

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### **SUMMARY:**

<b>TEST CONDITION</b>	<b>TEST REQUIREMENT</b>	<b>TEST METHOD</b>	<b>STATUS</b>
Radiated Emission, 100MHz to 18GHz	FCC Part 18 Subpart C	FCC / OST MP-5	Pass
Input Power Measurement	FCC Part 18 Subpart C	FCC / OST MP-5	Pass
Output Power Measurement	FCC Part 18 Subpart C	FCC / OST MP-5	Pass
Measurement of Output Frequency	FCC Part 18 Subpart C	FCC / OST MP-5	Pass
Output Frequency Stability	FCC Part 18 Subpart C	FCC / OST MP-5	Pass

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### **TEST RESULTS:**

#### **1. Test:**

Test Requirement: FCC Part 18 Subpart C  
Test Method: FCC / OST MP-5  
Test Date(s): 1998-11-29

#### **Radiated Emissions (100MHz to 18GHz)**

#### **Test Method:**

Measurements were in accordance with F.C.C. Part 18 requirement and F.C.C. / OST MP-5. Please see Appendix A for details of measuring procedure.

The following measurement bandwidths were used:-

Frequency Range (GHz)	Resolution Bandwidth (MHz)	Video Bandwidth (Hz)
0.1 to 1	0.12	1200
1 to 18	1.0	1

#### **Result:**

In the frequency range 100MHz to 18GHz, no emissions were detected above the noise floor of the test instrumentation. The noise floor of the test instrumentation are less than 20dB $\mu$ V/m in the frequency range 100MHz to 18GHz.

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**2. Test:**

Test Requirement: FCC Part 18 Subpart C  
Test Method: FCC / OST MP-5  
Test Date(s): 1998-11-19

**Test Method:**

Input power was measured using a Wattmeter. A 1000ml water load was located at the center of the oven. The oven was operated at full output power.

**Result:**

Input Measurement			Manufacturer's Rating	
Voltage (Vac)	Current (A)	Input Power (W)	Current (A)	Input Power (W)
120	15.9	1810.0	15.0	1800.0

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### 3. Test:

Test Requirement: FCC Part 18 Subpart C  
Test Method: FCC / OST MP-5  
Test Date(s): 1998-11-19

### Output Power Measurement

#### Test Method:

The output power was measured by the calorimetric method, using 1000ml load and evaluate the power output from the observed temperature rise of the load over a period of time.

The test method was based on clause 8 of IEC 705, Edition 3, 1996, Household Microwave Ovens - Methods for Measuring Performance.

#### Result:

Initial Temp (°C)	Final Temp. (°C)	Observed Period (s)	Output Power (W)
10.0	21.2	51.0	919.5

Remark:

$$\text{Power (W)} = \frac{4.187(\text{joules / cal}) \times \text{Volume(ml)} \times \Delta T}{51}$$

$$\text{Power (W)} = \frac{4.187 \times 1000 \times 11.2}{51} = 919.5(W)$$

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**4. Test: Measurement of Output Frequency**

Test Requirement: FCC Part 18 Subpart C  
Test Method: FCC / OST MP-5  
Test Date(s): 1998-11-26

**Test Method:**

The fundamental frequency was measured using a spectrum analyser with precision frequency reference, with 1000ml load at the center of the oven.

**Results:**

Measured Frequency (MHz)	Manufacturer's Rated Frequency (MHz)
2471	2450

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**5. Test:**

Test Requirement: FCC Part 18 Subpart C  
Test Method: Based on FCC / OST MP-5  
Test Date(s): 1998-11-27

**Output Frequency Stability**

**Frequency variation with time:**

**Test Method:**

A spectrum analyser was used to measure the frequency variation with time, with a 1000ml load located at the center of the oven with maximum power. The test was performed until the volume was reduced by evaporation to approximately 20% of the original quantity.

During the test, the spectrum analyser trace was put on maximum hold in order to obtain a bandwidth plot showing the sideband edges.

Measurements were performed with the antenna in both horizontal and vertical polarities.

**Results:**

Load		Maximum sideband edge		Minimum sideband edge (GHz)	
Initial Volume (ml)	Final Volume (ml)	Measured	Limit	Measured	Limit
1000	200	2.482	2.500	2.410	2.400

**Spectrum analyser Settings**

Resolution bandwidth: 1MH Frequency span: 12MHz/div  
Video bandwidth: 1MHz Sweep Time: 200msec

**Remark:**

Please see appendix E for graphical data.

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### **Frequency variation with line voltage:**

#### **Test Method:**

A spectrum analyser was used to measure the frequency variation for line voltage variation from 80% to 125% of normal voltage, with a 1000ml load located at the center of the oven with maximum power.

During the test, the spectrum analyser trace was put on maximum hold in order to obtain a bandwidth plot showing the sideband edges.

Measurements were performed with the antenna in both horizontal and vertical polarities.

#### **Results:**

Voltage (Vac)	Maximum sideband edge		Voltage (Vac)	Minimum sideband edge	
	Measured (GHz)	Limit (GHz)		Measured (GHz)	Limit (GHz)
96	2.485	2.500	96	2.407	2.500

#### Spectrum analyser settings

Resolution bandwidth: 1MHz Frequency span: 12MHz/div  
Video bandwidth: 1MHz Sweep Time: 200msec

#### Remark:

Please see appendix E for graphical data.

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