FCC TEST REPORT

For

Smart Microwave Oven

Model Number: DW221

FCC ID: 2BB9RDW221

Report Number : WT238001354

Test Laboratory	:	Shenzhen Academy of Metrology and Quality Inspection
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Revision History

No	Date	Remark
V1.0	2023.08.14	Initial issue

TEST REPORT DECLARATION

Applicant	:	Shenzhen Shuying Technology Co., Ltd
Address	:	Room 01, 13th Floor, No. 9988 Shennan District, Shenzhen, China
Manufacturer	:	Shenzhen Shuying Technology Co., Ltd
Address	:	Room 01, 13th Floor, No. 9988 Shennan District, Shenzhen, China
EUT Description	:	Smart Microwave Oven
Model No	:	DW221
Trade mark	:	WANDECHU 万得厨
FCC ID	:	2BB9RDW221

Test Standards:

FCC Part 2.1091

The EUT described above is tested by Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory to determine the maximum emissions from the EUT. Shenzhen Academy of Metrology and Quality Inspection EMC Laboratory is assumed full responsibility for the accuracy of the test results.
The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

Project Engineer:	(Zeng Wei 曾伟)	Date:	Aug.14, 2023
Checked by:	(Wan Xiaojing 万晓婧)	Date:	Aug.14, 2023
Approved by:	(Lin Yixiang 林奕翔)	Date:	Aug.14, 2023

TABLE OF CONTENTS

1. TEST RESULTS SUMMARY

Test Results Summary

Test Items	Test Results
RF Exposure	Pass

Remark: “N/A” means “Not applicable.”

2. GENERAL INFORMATION

2.1. Report Information

This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that SMQ approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that SMQ in any way guarantees the later performance of the product/equipment.

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The lab will not be liable for any loss or damage resulting for false, inaccurate, inappropriate or incomplete product information provided by the applicant/manufacturer.

2.2. Laboratory Accreditation and Relationship to Customer

The testing report were performed by the Shenzhen Academy of Metrology and quality Inspection EMC Laboratory (Guangdong EMC compliance testing center), in their facilities located at NETC Building, No.4 Tongfa Rd., Xili, Nanshan, Shenzhen, China. At the time of testing, Laboratory is accredited by the following organizations:
China National Accreditation Service for Conformity Assessment (CNAS) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is CNAS L0579.
The Laboratory is Accredited Testing Laboratory of FCC with Designation number CN1165 and Site registration number 582918.
The Laboratory is registered to perform emission tests with Innovation, Science and Economic Development (ISED), and the registration number is 11177A.
The Laboratory is registered to perform emission tests with VCCI, and the registration number are C-20048, G20076, R-20077, R-20078 and T-20047.
The Laboratory is Accredited Testing Laboratory of American Association for Laboratory Accreditation (A2LA) and certificate number is 3292.01.

3. PRODUCT DESCRIPTION

3.1. EUT Description

Specification of the Equipment under Test

Product Type:	Smart Microwave Oven
Hardware Revision:	1.0
Software Revision:	1.3.6
FCC ID:	2BB9RDW221
Frequency:	LTE Band 5: TX 824 ~ 849 MHz RX 869 ~ 894 MHz LTE Band 38: TX 2570 ~ 2620 MHz RX 2570 ~ 2620 MHz LTE Band 41: TX 2496 ~ 2690 MHz RX: 2496 ~ 2690 MHz 802.11b/g/n(HT20/HT40)/ac(VHT20/VHT40): 2412 ~ 2462 MHz 802.11a/n(HT20/HT40)/ac(VHT20/VHT40/VHT80): 5150 ~ 5250 MHz 5250 ~ 5350 MHz 5470 ~ 5725 MHz 5725 ~ 5850 MHz Bluetooth: 2402 ~ 2480 MHz
Antenna Type:	FPC antenna
Antenna Gain:	LTE Antenna: 824~849 MHz: -5.08 dBi 2570~2620 MHz: 1.72 dBi 2496~2690 MHz: 1.69 dBi 2.4G WiFi / 5G WiFi / Bluetooth Antenna: 2402~2480 MHz: -0.82 dBi 5150~5250 MHz: -2.05 dBi 5250~5350 MHz: -2.96 dBi 5470~5725 MHz: 1.2 dBi 5725~5825 MHz: 1.0 dBi

Remark: --.

4. RF EXPOSURE

4.1. Limit For Maximum Permissible Exposure (MPE)

This product can be classified as mobile device, so the 20cm separation distance warning is required. In this section, the power density at 20cm location is calculated to examine if it is lower than the limit.

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f^2)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

4.2. MPE Calculation Method

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:
S = Power Density
P = Output Power at Antenna Terminals
G = Gain of Transmit Antenna (linear gain)
R = Distance from Transmitting Antenna

4.3. Calculator Result

Standalone Power Density Calculation

General Note:
Max Power and EIRP data refer to the report WT238001355, WT23800001350, WT23800001351, WT23800001352 and WT23800001356.

Test Mode	Max EIRP (dBm)	Max EIRP (mW)	Power Density (mW/cm²)	Limit (mW/cm²)	Power Density/Limit	Verdict
LTE Band 5	16.20	41.687	0.008	0.55	0.0151	Pass
LTE Band 38	24.57	286.418	0.057	1	0.0570	Pass
LTE Band 41	26.09	406.443	0.081	1	0.0809	Pass

Test Mode	Max EIRP (dBm)	Max EIRP (mW)	Power Density (mW/cm²)	Limit (mW/cm²)	Power Density/Limit	Verdict
BT	2.97	1.982	0.0004	1	0.0004	Pass
2.4G WIFI	17.26	53.211	0.0106	1	0.0106	Pass
5G WIFI U-NII-1	17.80	60.256	0.0120	1	0.0120	Pass
5G WIFI U-NII-2A	16.39	43.551	0.0087	1	0.0087	Pass
5G WIFI U-NII-2C	21.12	129.420	0.0257	1	0.0257	Pass
5G WIFI U-NII-3	21.33	135.831	0.0270	1	0.0270	Pass

The analysis concludes that this product when transmitting in standalone is compliant with the RF exposure requirements in mobile exposure condition, provided the conducted power and antenna gains do not exceed the limits for each given frequency band per wireless technology.

Collocated Power Density Calculation

General Note:

1. For colocation analysis, **LTE Band 41** is chosen for summation due to the highest (power density/limit) among all WWAN wireless modes.
2. Σ(Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WWAN + WLAN + Bluetooth.
3. Considering the WWAN module collocation with the other transmitters of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 3 collocated transmitters is compliant.

Max WWAN Power Density / Limit	Max WLAN Power Density / Limit	Max Bluetooth Power Density / Limit	Σ(Power Density / Limit)	Limit	Verdict
0.0809	0.0270	0.004	0.1119	1	Pass

Conclusion:

Therefore the worst-case situation is, which is less than “1”, this confirmed that the device comply with MPE limit.

END OF REPORT