

Jiangsu Midea Cleaning Appliances Co., Ltd.

MPE ASSESSMENT REPORT

Report Type:
FCC MPE assessment report

Model:
NER700, NER700V, V8

REPORT NUMBER:
200502363SHA-003

ISSUE DATE:
Sep 22, 2020

DOCUMENT CONTROL NUMBER:
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Applicant: Jiangsu Midea Cleaning Appliances Co., Ltd.
No.39 Caohu Avenue, Xiangcheng Economic Development Zone,
Suzhou, Jiangsu, China

Manufacturer: Jiangsu Midea Cleaning Appliances Co., Ltd.
No.39 Caohu Avenue, Xiangcheng Economic Development Zone,
Suzhou, Jiangsu, China

Manufacturing site: 1)Jiangsu Midea Cleaning Appliances Co., Ltd.
No.39 Caohu Avenue, Xiangcheng Economic Development Zone,
Suzhou, Jiangsu, China
2) Cape EMS Manufacturing (M) Sdn Bhd
PLO 227A, Jalan Cyber 1A, Kawasan Perindustrian Senai III, 81400,
Senai, Johor, Malaysia

FCC ID: 2AWUS-MD001

SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:

KDB447498 D01 General RF Exposure Guidance v06
FCC Part2.1091, FCC Part2.1093 FCC Part1.1307(b)

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Revision History

| Report No. | Version | Description | Issued Date |
|------------------|---------|-------------------------|--------------|
| 200502363SHA-003 | Rev. 01 | Initial issue of report | Sep 22, 2020 |
| | | | |
| | | | |

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

| | |
|-----------------------|--|
| Product name: | Robot vacuum cleaner |
| Type/Model: | NER700, NER700V, V8 |
| Description of EUT: | The EUT is automatically battery-powered cleaner and dry pick up for household indoor use only. NER700V is same as NER700 except for the figure, the color and the model name. V8 is same as NER700V except for the model name and the brand name. NER700 was tested as representative. NER700-DS, V8-DS are same except for the model name and the brand name. The EUT contains WIFI mode and BLE mode. |
| Rating: | DC 14.4V Charger: NER700-DS, V8-DS Input: 100-240V AC, 50-60Hz Output: DC 16.9V, 2A |
| Category of EUT: | Class B |
| EUT type: | <input type="checkbox"/> Table top <input checked="" type="checkbox"/> Floor standing |
| Software Version: | / |
| Hardware Version: | / |
| Sample received date: | May 27, 2020 |
| Date of test: | May 27~Jun 10, 2020 |

1.2 Technical Specification

WIFI

| | |
|----------------------|---|
| Frequency Range: | 2412MHz ~ 2462MHz |
| Support Standards: | IEEE 802.11b, IEEE 802.11g, IEEE 802.11n-HT20 |
| Type of Modulation: | IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11n-HT20: OFDM (64-QAM, 16-QAM, QPSK, BPSK) |
| Channel Number: | 11 Channels for 802.11b, 802.11g and 802.11n(HT20) |
| Data Rate: | IEEE 802.11b: Up to 11 Mbps IEEE 802.11g: Up to 54 Mbps IEEE 802.11n-HT20: Up to MCS7 |
| Channel Separation: | 5 MHz |
| Antenna Information: | 3dBi, PIFA antenna |

BLE

| | |
|--------------------|------------------|
| Frequency Range: | 2402-2480MHz |
| Support Standards: | Bluetooth LE 4.2 |

TEST REPORT

| | |
|----------------------|--------------------|
| Type of Modulation: | GFSK |
| Channel Number: | 40 |
| Data Rate: | 1Mbps |
| Channel Separation: | 2MHz |
| Antenna Information: | 3dBi, PIFA antenna |

1.3 Description of Test Facility

| | |
|------------|--|
| Name: | Intertek Testing Services Shanghai |
| Address: | Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China |
| Telephone: | 86 21 61278200 |
| Telefax: | 86 21 54262353 |

| | |
|---|---|
| The test facility is recognized, certified, or accredited by these organizations: | CNAS Accreditation Lab Registration No. CNAS L0139 |
| | FCC Accredited Lab Designation Number: CN1175 |
| | IC Registration Lab CAB identifier.: CN0051 |
| | VCCI Registration Lab Registration No.: R-14243, G-10845, C-14723, T-12252 |
| | A2LA Accreditation Lab Certificate Number: 3309.02 |

2 MPE Assessment

Test result: Pass

2.1 MPE Assessment Limit

Mobile device exposure for standalone operations:

| Frequency range | E-field strength (V/m) | H-field strength (A/m) | B-field (uT) | Equivalent plane wave power density S_{eq} (W/m ²) |
|-----------------|------------------------|------------------------|---------------------|--|
| 0-1 Hz | - | $3,2 \times 10^4$ | 4×10^4 | - |
| 1-8 Hz | 10 000 | $3,2 \times 10^4/f^2$ | $4 \times 10^4/f^2$ | - |
| 8-25 Hz | 10 000 | $4\,000/f$ | $5\,000/f$ | - |
| 0,025-0,8 kHz | $250/f$ | $4/f$ | $5/f$ | - |
| 0,8-3 kHz | $250/f$ | 5 | 6,25 | - |
| 3-150 kHz | 87 | 5 | 6,25 | - |
| 0,15-1 MHz | 87 | $0,73/f$ | $0,92/f$ | - |
| 1-10 MHz | $87/f^{1/2}$ | $0,73/f$ | $0,92/f$ | - |
| 10-400 MHz | 28 | 0,073 | 0,092 | 2 |
| 400-2 000 MHz | $1,375 f^{1/2}$ | $0,0037 f^{1/2}$ | $0,0046 f^{1/2}$ | $f/200$ |
| 2-300 GHz | 61 | 0,16 | 0,20 | 10 |

Mobile device exposure for simultaneous transmission operations: **the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.0**

2.2 Assessment Results

Power density (S) is calculated according to the formula:

$$S = PG / (4\pi R^2)$$

Where S = power density in mW/cm²

P = Radiated transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

As we can see from the test report 200502363SHA-001:

The maximum radiated power = 22.51dBm = 178.24 mW;

Here R is chosen to be 20cm,

$$S = PG / (4\pi R^2) = 178.24 / (4 * 3.14 * 20 * 20) = 0.0355 \text{ mW/cm}^2$$

As we can see from the test report 200502363SHA-002:

The maximum radiated power = 7.77dBm = 5.984 mW;

Here R is chosen to be 20cm,

$$S = PG / (4\pi R^2) = 5.984 / (4 * 3.14 * 20 * 20) = 0.0012 \text{ mW/cm}^2$$

$$0.0355 + 0.0012 = 0.0367 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$$

Appendix I

Definition below must be outlined in the User Manual:

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation. To ensure compliance, operations at closer than this distance is not recommended.

***** END *****