



RF Exposure Test Report

Report No.: ADQW-ESH-P21124270B-3

FCC ID: 2A3PS66T0

Product: Automotive Wireless Charger

Model: 66T0

Received Date: Dec.28,2021

Test Date: Dec.28,2021 to Jan.19, 2021

Issued Date: Jan.20, 2021

Applicant: Minda Industries Ltd.

Address: B-64/1, Wazirpur Industrial Area, Delhi – 110052, INDIA

Manufacturer: Minda Industries Ltd. (Controller Division)

Address: First Floor, Gat No. 427/5, 427/10, Village Mahalunge Tal. Khed, Dist. Pune, Maharashtra –410501, INDIA.

Issued By: BUREAU VERITAS ADT (Shanghai) Corporation

Lab Address: No. 829, Xinzhan Road, Shanghai, P.R.China (201612)



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Table of Contents

| | |
|--|---|
| Release Control Record..... | 3 |
| 1 Certificate of Conformity | 4 |
| 2 General Information..... | 5 |
| 2.1 General Description of EUT..... | 5 |
| 3 RF Exposure | 6 |
| 3.1 Limits For Maximum Permissible Exposure (MPE) | 6 |
| 3.2 Measurement Equipment | 7 |
| 3.3 RF Exposure Evaluation..... | 7 |
| 3.4 Calculation Result of Maximum Permissible Exposure..... | 9 |



Release Control Record

| Issue No. | Description | Date Issued |
|-----------------------|------------------|--------------|
| ADQW-ESH-P21124270B-3 | Original release | Jan.20, 2021 |



1 Certificate of Conformity

Product: Automotive Wireless Charger

Brand: UNO MINDA

Model: 66T0

Applicant: Minda Industries Ltd.

Test Date: Nov.30 to Dec.27,2021

Standards: 47 CFR FCC Part 1,1.1307(b) and 1.1310

KDB 680106 D01v03

The above equipment has been tested by **BUREAU VERITAS ADT (Shanghai) Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by :

A handwritten signature of 'Yan Zhou'.

, Date:

Jan.20, 2021

Yan ZHOU

Project Engineer

Approved by :



, Date:

Jan.20, 2021

Daniel SUN

EMC Lab Manager



2 General Information

2.1 General Description of EUT

WPT

| | |
|-----------------------|-----------------------------|
| Product | Automotive Wireless Charger |
| Brand | UNO MINDA |
| Test Model | 66T0 |
| Power Rating | DC 12V |
| Modulation Type | ASK and FSK |
| Modulation Technology | Qi |
| Operating Frequency | 127 ± 2 kHz |
| Antenna Type | Coil Antenna |
| Antenna Connector | -- |

Note:

1. For more details, please refer to the User's manual of the EUT.
2. All these models are same except appearance.



3 RF Exposure

3.1 Limits For Maximum Permissible Exposure (MPE)

(1) Table 1 to § 1.1310(e)(1) sets forth limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields.

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm ²) | Averaging time (minutes) |
|--|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (i) Limits for Occupational/Controlled Exposure | | | | |
| 0.3-3.0 | 614 | 1.63 | *(100) | ≤6 |
| 3.0-30 | 1842/f | 4.89/f | *(900/f ²) | <6 |
| 30-300 | 61.4 | 0.163 | 1.0 | <6 |
| 300-1,500 | | | f/300 | <6 |
| 1,500-100,000 | | | 5 | <6 |
| (ii) Limits for General Population/Uncontrolled Exposure | | | | |
| 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 |
| 300-1,500 | | | f/1500 | <30 |
| 1,500-100,000 | | | 1.0 | <30 |

f = frequency in MHz. * = Plane-wave equivalent power density.

(2) Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. The phrase fully aware in the context of applying these exposure limits means that an exposed person has received written and/or verbal information fully explaining the potential for RF exposure resulting from his or her employment. With the exception of transient persons, this phrase also means that an exposed person has received appropriate training regarding work practices relating to controlling or mitigating his or her exposure. In situations when an untrained person is transient through a location where occupational/controlled limits apply, he or she must be made aware of the potential for exposure and be supervised by trained personnel pursuant to § 1.1307(b)(2) of this part where use of time averaging is required to ensure compliance with the general population exposure limit. The phrase exercise control means that an exposed person is allowed and also knows how to reduce or avoid exposure by administrative or engineering work practices, such as use of personal protective equipment or time averaging of exposure.



(3) General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

3.2 Measurement Equipment

| Instrument | Manufacturer | Model No. | Fre Range | Last Cal. | Due Date |
|------------------------|--------------|-----------|------------|------------|------------|
| Field Meter Probe | WAVECONTROL | WP400 | 1Hz-400kHz | Aug.01, 21 | Aug.01, 22 |
| Field Meter | WAVECONTROL | SMP2 | - | Aug.01, 21 | Aug.01, 22 |
| Fully Anechoic Chamber | ETS-LINDGREN | C1FA002 | - | Jan.17, 20 | Jan.16, 23 |

3.3 Support Units

| Description | Manufacturer | Model No. | Serial No. |
|-------------|--------------|-----------|------------|
| Dummy Load | N/A | N/A | N/A |

3.4 RF Exposure Evaluation

Desktop WPT testing guidance from FCC KDB 680106 D01v03 is applied. RF Exposure evaluation at 15cm surrounding the device and 20cm above the top surface, Emissions between 50 KHz to 300 KHz should be assessed versus the limits at 300 KHz in table 1 of section 1.1310:1.63A/m and aggregate H-field strengths from all simultaneous transmitting coils.

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

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

Where S = power density in mW/cm²

P = transmit power in mW

G = numeric gain of transmit antenna (numeric gain=Log-1(dB antenna gain/10))

R = distance (cm)

3.5 Test mode

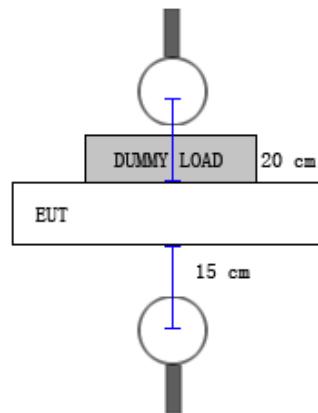
The EUT was tested under the following modes, the final worst mode were marked in boldface and recorded in this report.

WPT

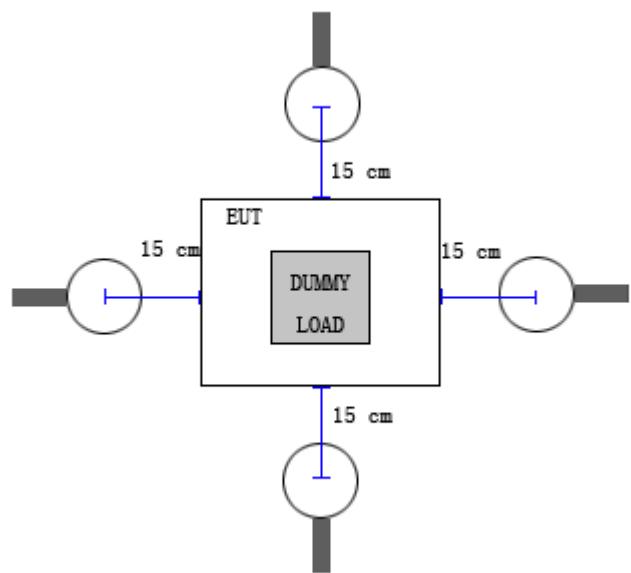
| Test Mode | Test setup configuration | Changing current condition |
|---------------|--------------------------------------|----------------------------|
| Mode 1 | EUT charging to receiver load | Near 100% battery status |
| Mode 2 | EUT charging to receiver load | 50% battery status |
| Mode 3 | EUT charging to receiver load | <1% battery status |
| Mode 4 | EUT charging standby mode | |

3.6 Test setup for WPT

Side View



Top View





3.7 Calculation Result of Maximum Permissible Exposure

WPT

Magnetic Field Emissions

| Frequency Band | Test Distance (cm) | H-Field Strength (A/m) | Limit (A/m) | 50% of the MPE Limit (A/m) | Pass / Fail |
|----------------|--------------------|------------------------|-------------|----------------------------|-------------|
| Side 1 | 15 | 0.56 | 1.63 | 0.815 | Pass |
| Side 2 | 15 | 0.48 | 1.63 | 0.815 | Pass |
| Side 2 | 15 | 0.67 | 1.63 | 0.815 | Pass |
| Top | 20 | 0.77 | 1.63 | 0.815 | Pass |
| Bottom | 15 | 0.59 | 1.63 | 0.815 | Pass |

Electric Field Emissions

| Frequency Band | Test Distance (cm) | E-Field Strength (V/m) | Limit (V/m) | 50% of the MPE Limit (V/m) | Pass / Fail |
|----------------|--------------------|------------------------|-------------|----------------------------|-------------|
| Side 1 | 15 | 21.94 | 614 | 307 | Pass |
| Side 2 | 15 | 19.16 | 614 | 307 | Pass |
| Side 2 | 15 | 20.84 | 614 | 307 | Pass |
| Top | 20 | 15.89 | 614 | 307 | Pass |
| Bottom | 15 | 12.81 | 614 | 307 | Pass |

Conclusion:

The test worst result of MPE is less than the limit

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