



CTC Laboratories, Inc.

1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China
Tel: +86-755- 27521059 Fax: +86-755- 27521011 Http://www.sz-ctc.org.cn

RF Exposure Evaluation Report

Report No.: **CTC20211614E05**

FCC ID.....: **2A3KLWS-WC03**

Applicant.....: **WIISERTEC CO., LTD.**

Address.....: 6F., No. 465, Sec. 4, Bade Rd., Songshan Dist., Taipei, Taiwan

Manufacturer.....: WIISERTEC CO., LTD.

Address.....: 6F., No. 465, Sec. 4, Bade Rd., Songshan Dist., Taipei, Taiwan

Product Name.....: **Wireless Charger**

Trade Mark.....: **Dr. JEFFREY'S**

Model/Type reference.....: WS-WC03

Listed Model(s): /

Standard.....: **47 CFR FCC Part 1**

Date of receipt of test sample...: Oct. 14, 2021

Date of testing.....: Oct. 15, 2021 to Nov. 08, 2021

Date of issue.....: Nov. 09, 2021

Result.....: **PASS**

Compiled by: (Printed name+signature)	Terry Su	
Supervised by: (Printed name+signature)	Miller Ma	
Approved by: (Printed name+signature)	Totti Zhao	

Testing Laboratory Name..... **CTC Laboratories, Inc.**

Address 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

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Table of Contents

Page

1. TEST SUMMARY.....	3
1.1. TEST STANDARDS.....	3
1.2. REPORT VERSION.....	3
1.3. TEST FACILITY	4
1.4. MEASUREMENT UNCERTAINTY	4
1.5. ENVIRONMENTAL CONDITIONS	5
2. GENERAL INFORMATION.....	6
2.1. CLIENT INFORMATION	6
2.2. GENERAL DESCRIPTION OF EUT	6
2.3. ACCESSORY EQUIPMENT INFORMATION	7
2.4. DESCRIPTION OF TEST MODES	7
2.5. MEASUREMENT INSTRUMENTS LIST	7
2.6. EQUIPMENT APPROVAL CONSIDERATIONS	8
2.7. RF EXPOSURE.....	9



1. TEST SUMMARY

1.1. Test Standards

The tests were performed according to following standards:

[ANSI C95.1-1999](#): IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

[FCC KDB publication 680106 D01 RF Exposure Wireless Charging Apps v03](#): RF Exposure Considerations for Low Power Consumer Wireless Power Transfer Applications.

[FCC CFR 47 part1 1.1310](#): Radiofrequency radiation exposure limits.

[FCC CFR 47 part2 2.1091](#): Radiofrequency radiation exposure evaluation: mobile devices

1.2. Report version

Revised No.	Date of issue	Description
01	Nov. 09, 2021	Original



1.3. Test Facility

Address of the report laboratory

CTC Laboratories, Inc.

Add: 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

CNAS-Lab Code: L5365

CTC Laboratories, Inc. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation. Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Industry Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 951311, Aug 26, 2017.

1.4. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.



Test	Measurement Frequency Range	U (dB)
H-field requirements	100kHz ~ 1MHz	2.20dB
E-Field Strength	100kHz ~ 1MHz	2.20dB

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.5. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Normal Temperature:	25°C
Relative Humidity	55 %
Air Pressure	101kPa



2. GENERAL INFORMATION

2.1. Client Information

Applicant:	WIISERTEC CO., LTD.
Address:	6F., No. 465, Sec. 4, Bade Rd., Songshan Dist., Taipei, Taiwan
Manufacturer:	WIISERTEC CO., LTD.
Address:	6F., No. 465, Sec. 4, Bade Rd., Songshan Dist., Taipei, Taiwan

2.2. General Description of EUT

Product Name:	Wireless Charger
Marketing Name:	Dr. JEFFREY'S
Model/Type reference:	WS-WC03
Listed Model(s):	/
Power Supply:	5Vdc/2A, 9Vdc/2A, 12Vdc/1.5A from adapter
Power supply:	BT2-653-2 Input: 12 ~ 24Vdc Max 3A Output: 5Vdc/3A, 9Vdc/2A, 12Vdc/1.5A
Hardware version:	/
Software version:	/
Wireless Charger	
Frequency Range:	100kHz ~ 205kHz
Operation Frequency:	142kHz
Modulation Type:	FSK
Antenna Type:	Coil Antenna
Exposure category:	General population/uncontrolled environment
Device Type:	Fixed Device
Antenna Gain:	0dBi



2.3. Accessory Equipment information

Equipment Information			
Name	Model	S/N	Manufacturer
Load system	15W wireless charging test fixture	---	Weise
/	/	/	/
Cable Information			
Name	Shielded Type	Ferrite Core	Length
USB Cable	NO	NO	1M

2.4. Description of Test Modes

Test mode	Wireless charging (5V/1A)	Wireless charging (9V/1.2A)	Wireless charging (12V/1.2A)
1	■		
2		■	
3			■

Note: ■ is operation mode.

Only supports 5W, 10.8W and 14.4W.

Pre-scan above all test mode, found below test mode which it was worse case mode, so only show the test data for worse case mode (Test mode 3) on the test report.

2.5. Measurement Instruments List

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Electromagnetic field frequency selective analyzer	Narda	EHP-200A	180ZX00611	Mar. 22, 2022

Note: The Cal. Interval was one year.



2.6. Equipment Approval Considerations

The EUT does comply with item 5.b of KDB 680106 D01v03 as follows table;

Requirements of KDB 680106 D01	Yes / No	Description
Power transfer frequency is less than 1 MHz	Yes	The device operate in the frequency range 100.0 KHz - 205.0 KHz
Output power from each primary coil is less than 15 watts	Yes	The maximum output power of the primary coil is less than 14.4W.
The transfer system includes only single primary and secondary coils. This includes charging systems that may have multiple primary coils and clients that are able to detect and allow coupling only between individual pairs of coils.	Yes	The transfer system includes single coil that is able to detect receiver device.
Client device is placed directly in contact with the transmitter.	Yes	Client device is placed directly in contact with the transmitter.
Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	Yes	Mobile exposure conditions only
The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.	Yes	The aggregate H-field strengths at 15 cm surrounding the device and 20 cm above the top surface from all simultaneous transmitting coils are less than 50% the MPE limit.

In all other cases, unless excluded above, an RF exposure evaluation report must be reviewed and accepted through a KDB or PBA inquiry to enable authorization of the equipment. When evaluation is required to show compliance; for example, using field strength, power density, SAR measurements or computational modeling etc., the specific authorization requirements will be determined based on the results of the RF exposure evaluation.



2.7. RF Exposure

LIMIT

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation.

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.1-3.0	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

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.1-1.34	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

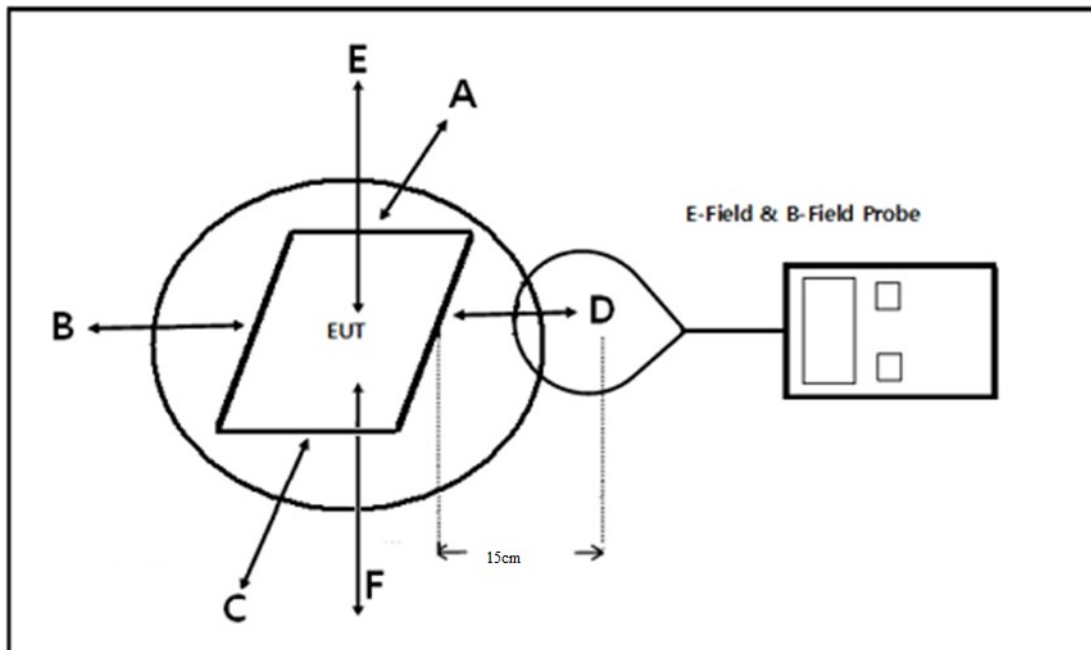
*=Plane-wave equivalent power density

According to FCC KDB 680106 D01 Section 3. RF Exposure Requirements clause 3 the Emission-Limits in the frequency range from 100 KHz to 300 KHz should be assessed versus the limits at 300 KHz in Table 1 of CFR 47 – Section 1.310 as following (measured distance shall be 15cm from the center of the probe to the edge of the device):

	E-filed	H-filed	B-filed
Frequency	V/m	A/m	uT
0.1 MHz – 1.34 MHz	614	1.63	2.0
1.34 MHz – 30 MHz	824/f(=27.5 _{30MHz})	2.19/f(=0.073 _{30MHz})	--

A KDB inquire was required to determine/confirm the applicable limits below 100 KHz.

TEST CONFIGURATION



TEST PROCEDURE

- A. The RF exposure test was performed on 360 degree turn table in anechoic chamber.
- B. The measurement probe was placed at test distance (15cm) which is between the edge of the charger and the geometric center of probe.
- C. The turn table was rotated 360 degree to search of highest strength.
- D. The highest emission level was recorded and compared with limit as soon as measurement of each points (A, B, C, D, E) were completed.
- E. The EUT were measured according to the dictates of KDB 680106D01v03.

TEST MODE

Please refer to the clause 2.4.

TEST RESULTS

E-Field Strength at 15cm from the edges surrounding the EUT

Test mode	Frequency Range (MHz)	Measured E-Field Strength Values (V/m)					FCC E-Field Strength 50% Limits (V/m)	FCC E-Field Strength Limits (V/m)
		Test Position A	Test Position B	Test Position C	Test Position D	Test Position E		
3	0.142	1.3684	2.4051	2.1603	2.1865	1.9204	307.0	614.0



H-Field Strength at 15cm from the edges surrounding the EUT

Test mode	Frequency Range (MHz)	Measured H-Field Strength Values (A/m)					FCC H-Field Strength 50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
		Test Position A	Test Position B	Test Position C	Test Position D	Test Position E		
3	0.142	0.0830	0.0769	0.1250	0.0951	0.0987	0.815	1.63

H-Field Strength at 20cm from the top surface of the EUT

Test mode	Frequency Range (MHz)	Measured H-Field Strength Values (A/m)	FCC H-Field Strength 50% Limits (A/m)	FCC H-Field Strength Limits (A/m)
		Test Position E		
3	0.142	0.1247	0.815	1.63

*****THE END*****