

TEST REPORT

Product Name : Wireless Charging Clock
Model Number : TWW30, TWW30X (X could be single or multiple digits by any alphabets and punctuation marks denoting different year version, buyers and cabinet colors)
FCC ID : EMOTWW30A

Prepared for : SDI Technologies Inc.
Address : 1299 Main Street, Rahway, NJ 07065, U.S.A

Prepared by : EMTEK (DONGGUAN) CO., LTD.
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Date(s) of Tests : Jun 12, 2024 to Jun 30, 2024
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1. TEST REPORT DESCRIPTION

Applicant : SDI Technologies Inc.
Address : 1299 Main Street, Rahway, NJ 07065, U.S.A
Manufacturer : SDI Technologies Inc.
Address : 1299 Main Street, Rahway, NJ 07065, U.S.A
Factory : Shenzhen Shuoyu Technology Co., Ltd
Address : 302, No. 1, Gankeng Tongfuyu Industrial Zone, Gankeng Community, Jihua Street, Longgang District, Shenzhen, Guangdong, China
EUT : Wireless Charging Clock
Model Name : TWW30, TWW30X (X could be single or multiple digits by any alphabets and punctuation marks denoting different year version, buyers and cabinet colors)
Trademark : iHome / Timex

Measurement Procedure Used:

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC Part 1(1.1310) and Part 2(2.1091) 680106 D01 RF Exposure Wireless Charging App v04	PASS

The above equipment was tested by DONGGUAN EMTEK CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in FCC Part 1(1.1310) and Part 2(2.1091)
680106 D01 RF Exposure Wireless Charging App v04 by the sample EUT tested as described in this report is in compliance with of FCC Rules

The test results of this report relate only to the tested sample identified in this report.

Date of Test :

Jun 12, 2024 to Jun 30, 2024

Prepared by :

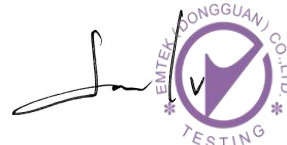
Warren Deng

Warren Deng //Editor

Tim Dong

Reviewer :

Tim Dong/ Supervisor



Approve & Authorized Signer :

Sam Lv / Manager

Modified History

Version	Report No.	Revision Date	Summary
	EDG2406120177E00202R	/	Original Report



2. EUT SPECIFICATION

Characteristics	Description
Product Name	Wireless Charging Clock
Model number	TWW30, TWW30X (X could be single or multiple digits by any alphabets and punctuation marks denoting different year version, buyers and cabinet colors) All products are the same, only the model number, year version, buyers and color are different. Here we selected TWW30 for all the test.
Power Supply	DC5V/9V12V from adapter
Operating Frequency Range	Coil 1 : 111KHz-205KHz Coil 2 : 111KHz-205KHz
Modulation Technique	FSK
Coil 1 Wireless Output Power	5W/7.5W/10W/15W
Coil 2 Wireless Output Power	5W
WPT device placement mode:	direct contact with or docked onto the WPT source
Maximum coupling surface:	less than or equal to 400 cm ²
The total leakage (Electric):	6.67 v/m
The total leakage (Magnetic):	0.4211 a/m
Antenna1 Type	Induction Coil antenna
Antenna2 Type	Induction Coil antenna
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others ____
Exposure classification	☐ Occupational/Controlled exposure (S = 5mW/cm ²) ☒ General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity	☐ Single antenna ☒ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Evaluation applied	☒ MPE Evaluation ☐ SAR Evaluation

3. SUMMARY OF TEST RESULT

EMISSION		
Description of Test Item	Standard & Limits	Results
MPE	FCC Part 1(1.1310) and Part 2(2.1091) 680106 D01 RF Exposure Wireless Charging App v04	Pass
Note: N/A is an abbreviation for Not Applicable.		



4. DESCRIPTION OF TEST FACILITY

Site Description

EMC Lab.

: **Accredited by CNAS**

The Laboratory has been assessed and proved to be in compliance with
CNAS/CL01:2018

The Certificate Registration Number is L3150

Accredited by FCC

Designation Number: CN1300

Test Firm Registration Number: 945551

Accredited by A2LA

The Certificate Registration Number is 4321.02

Accredited by Industry Canada

The Certificate Registration Number is CN0113

Name of Firm

: EMTEK(DONGGUAN) CO., LTD.

Site Location

: -1&2/F., Building 2, Zone A, Zhongda Marine Biotechnology Research and
Development Base, No.9, Xincheng Avenue, Songshanhu High-technology
Industrial Development Zone, Dongguan, Guangdong, China

5. MEASURING DEVICE AND TEST EQUIPMENT

5.1. For MPE Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☒	Probe(100cm ²)	Narda	ELT-400	C-0012	2024/4/28	1 Year
☒	E-Field Probe(100kHz-3GHz)	Narda	EF0391	2304/03	2024/4/28	1 Year
☒	Broadband Field Meter	Narda	NBM-550	232421	2024/4/28	1 Year
☒	Electric and Magnetic Field Analyzer (1Hz-400kHz)	Narda	EHP-50F	2404/03	2024/4/28	1 Year

6. RF EXPOSURE

6.1. Measuring Standard

FCC Part 1(1.1310) and Part 2(2.1091)
680106 D01 RF Exposure Wireless Charging App v04

6.2. Requirements

FCC Part 1(1.1310) and Part 2(2.1091)

Three different categories of transmitters are defined by the FCC in OET Bulletin 65. These categories are fixed installation, mobile, and portable and are defined as follows:

- o Fixed Installations: fixed location means that the device, including its antenna, is physically secured at a permanent location and is not able to be easily moved to another location. Additionally, distance to humans from the antenna is maintained to at least 2 meters.
- o Mobile Devices: a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to be generally used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structures and the body of the user or nearby persons. Transmitters designed to be used by consumers or workers that can be easily re-located, such as a wireless modem operating in a laptop computer, are considered mobile devices if they meet the 20 centimeter separation requirement. The FCC rules for evaluating mobile devices for RF compliance are found in 47 CFR §2.1091.
- o Portable Devices: a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user. Portable device requirements are found in Section 2.1093 of the FCC's Rules (47 CFR §2.1093). The FCC also categorizes the use of the device as based upon the user's awareness and ability to exercise control over his or her exposure. The two categories defined are Occupational/ Controlled Exposure and General Population/Uncontrolled Exposure. These two categories are defined as follows:

Occupational/Controlled Exposure: In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means. Awareness of the potential for RF exposure in a workplace or similar environment can be provided through specific training as part of a RF safety program. If appropriate, warning signs and labels can also be used to establish such awareness by providing prominent information on the risk of potential exposure and instructions on methods to minimize such exposure risks.

General Population/Uncontrolled Exposure: The general population / uncontrolled exposure limits are applicable to 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 made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

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Mobile Device and Portable Device Configurations

Wireless power transfer devices must comply with RF exposure requirements for all design configurations in which they can operate. At a minimum, RF exposure must be evaluated for the worst-case scenario, typically when the transmitter, while delivering energy to a client device, is operating at maximum output power.

RF exposure compliance for equipment authorization must be determined following the guidance of KDB 447498, which includes consideration of the different test requirements for Mobile Device and Portable Device exposure categories, as defined in §§ 2.1091 and 2.1093 of the Rules.

Sometimes, a device may meet the RF exposure compliance requirements for a specified minimum distance for all but the most unlikely use conditions. For example, some typical desktop applications, such as wireless charging pads connected to household power, operate only when the active coil is covered and coupled with the target, and are characterized by a form factor that would discourage any on-body use because of size and/or weight. Thus, these devices may be considered to meet the § 2.1091-Mobile conditions (“generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the RF source’s radiating structure(s) and [the nearest person]”), and may be tested for compliance according to the applicable procedures for Mobile devices that are less onerous than those for Portable devices. In other analogous cases, still for a Mobile device, RF Exposure compliance may be ensured only for a minimum separation distance that is greater than 20 cm, while use conditions at smaller distances can still be considered unlikely.

For these scenarios, the equipment authorization of the device may be allowed, on a case-by-case basis, only after receiving FCC concurrence. This procedure requires the submittal of a KDB Inquiry selecting “Equipment Compliance Review” (ECR) as the first category, and “Minimum RF Exposure Compliance Distance” as the second category.

The ECR KDB inquiry shall explain why the stated minimum distance for RF exposure compliance was chosen, and justify why non-compliant use conditions (such as a person getting closer than the distance chosen for testing, and for a long enough time) are highly unlikely to occur. If these statements are deemed acceptable, then authorization may be granted, with the provision that the information about these specific conditions is clearly reported both in the grant comments (for certified devices) and in the user’s manual/instructions available to consumers, as discussed in further detail in KDB 951290-D01.

6.3. Test configuration

- 1) Accordingly, for § 2.1091-Mobile devices, the MPE limits between 100 kHz to 300 kHz are to be considered the same as those at 300 kHz in Table 1 of § 1.1310, that is, 614 V/m and 1.63 A/m, for the electric field and magnetic field, respectively. For § 2.1093-Portable devices below 4 MHz and down to 100 kHz, the MPE limits in § 1.1310 (with the 300 kHz limit applicable all the way down to 100 kHz) can be used for the purpose of equipment authorization in lieu of SAR evaluations.
- 2) Furthermore, consistent with FCC' s equipment authorization RF exposure guidance, any device (both portable and mobile) operating at frequencies below 100 kHz is considered compliant for the purpose of equipment authorization when the external (unperturbed) temporal peak field strengths do not exceed the following reference levels:
83 V/m for the electric field strength (E)
and
90 A/m for the magnetic field strength (H).
These data may be provided through measurements and/or numerical simulations, and for all the positions in space relevant for any possible body exposure.
- 3) For all the cases mentioned above, E and H measurements should be made from all sides of the transmitter, along all the principal axes defined with respect to the orientation of the transmitting element (e.g., coil or antenna). When clearly demonstrated, symmetry considerations may be used to reduce the amount of testing. Furthermore, for “low-frequency” loop/coil emitting structures that lead to dominant H-field near-field emissions (i.e., with E/H ratio less than 1/10 of the 377-ohm free space wave impedance, typically frequencies less than 1 MHz), only H-field1 measurements are sufficient for demonstrating MPE limit compliance.
- 4) It should be also noted that if numerical modeling is used to support compliance data for certification, the application is subject to PAG, related to the NUMSIM item in the PAG list of KDB Publication 388624-D02.

6.4. Limits

Table 1 to § 1.1310(e)(1)—Limits for Maximum Permissible Exposure (MPE)

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.

6.5. Independent Operation Modes

- A ON
1. ANT1 Wireless 15W (100% load)
 2. ANT1 Wireless 15W (50% load)
 3. ANT1 Wireless 15W (10% load)
 4. ANT2 Wireless 5W(100% load)
 5. ANT2 Wireless 5W(50% load)
 6. ANT2 Wireless 5W(10% load)
 7. ANT1+ANT2 Wireless(100% load)
 8. ANT1+ANT2 Wireless(50% load)
 9. ANT1+ANT2 Wireless(10% load)
- Note: The mode 7 is the worst mode

6.6. Measuring Results

Test Mode: Mode A.7(100% Load)

Electric Field Emissions			
Test Position	Measure Value (V/m)	Limit(V/m)	50%Limit(V/m)
Top	6.67	614	307
Left	6.21	614	307
Right	6.24	614	307
Rear	6.25	614	307
Front	6.23	614	307
Bottom	6.27	614	307
Magnetic Field Emissions			
Test Position	Measure Value (A/m)	Limit(A/m)	50%Limit(A/m)
Top	0.4211	1.63	0.815
Left	0.4207	1.63	0.815
Right	0.4206	1.63	0.815
Rear	0.4139	1.63	0.815
Front	0.4199	1.63	0.815
Bottom	0.4209	1.63	0.815

Test Mode: Mode A.8(50% Load)

Electric Field Emissions			
Test Position	Measure Value (V/m)	Limit(V/m)	50%Limit(V/m)
Top	4.29	614	307
Left	4.11	614	307
Right	4.06	614	307
Rear	4.12	614	307
Front	4.15	614	307
Bottom	4.20	614	307
Magnetic Field Emissions			
Test Position	Measure Value (A/m)	Limit(A/m)	50%Limit(A/m)
Top	0.3298	1.63	0.815
Left	0.3207	1.63	0.815
Right	0.3211	1.63	0.815
Rear	0.3200	1.63	0.815
Front	0.3263	1.63	0.815
Bottom	0.3284	1.63	0.815

Test Mode: Mode A.9(10% Load)

Electric Field Emissions			
Test Position	Measure Value (V/m)	Limit(V/m)	50%Limit(V/m)
Top	2.56	614	307
Left	2.34	614	307
Right	2.17	614	307
Rear	2.09	614	307
Front	2.28	614	307
Bottom	2.44	614	307
Magnetic Field Emissions			
Test Position	Measure Value (A/m)	Limit(A/m)	50%Limit(A/m)
Top	0.2487	1.63	0.815
Left	0.2265	1.63	0.815
Right	0.2301	1.63	0.815
Rear	0.2100	1.63	0.815
Front	0.2139	1.63	0.815
Bottom	0.2279	1.63	0.815

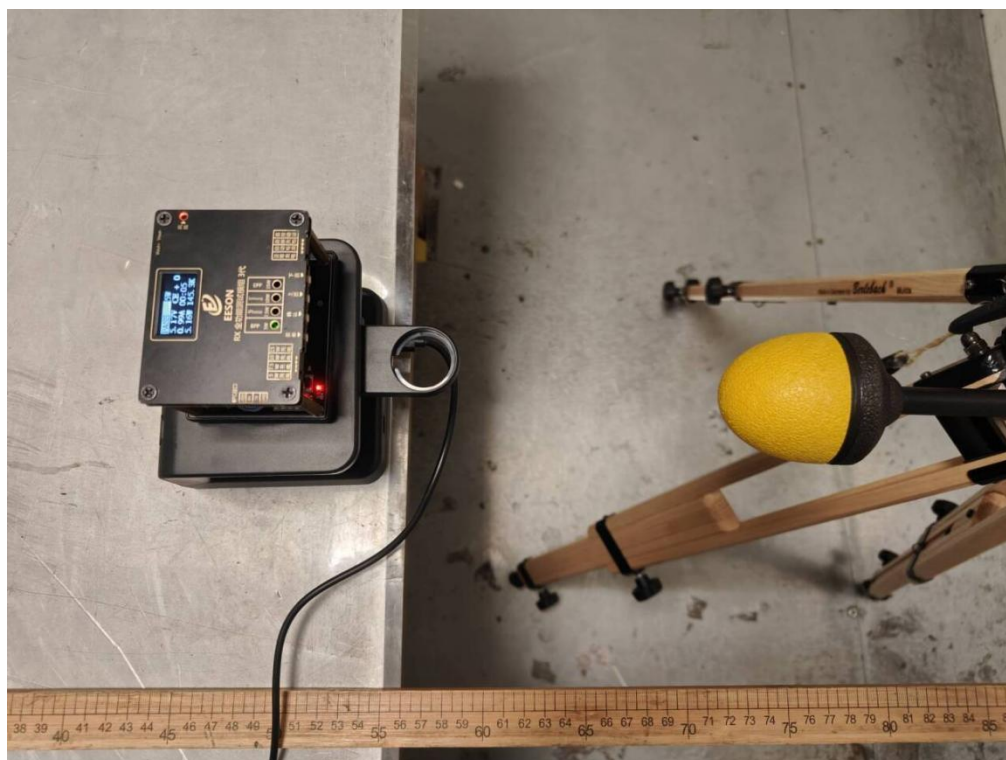
Remark: These measurements shall be taken along the principal axes of the device, with one axis oriented along the direction of the estimated maximum field strength, and for three points per axis. Test results for the worst position (20cm) are reported.

The device meets the mobile RF exposure limit at a 20cm separation distance as specified in §2.1091 of the FCC Rules. The maximum leakage fields at 20 cm surrounding the device from all simultaneous transmitting coils are demonstrated to be less than 50% of the MPE limit.

Requirement for KDB Publication 680106 D01

Condition Requirement	Answers
Power transfer frequency is less than 1 MHz.	The power transfer frequency is 111KHz-205KHz.
Output power from each primary coil is less than or equal to 15 watts.	Coil 1 Output power is less than or equal to $15W \leq 15W$. Coil 2 Output power is less than or equal to $5W \leq 15W$.
Client device is placed directly in contact with the transmitter.	Client device is placed directly in contact with the transmitter.
Mobile exposure conditions only (portable exposure conditions are not covered by this exclusion).	Mobile exposure conditions only
The aggregate H-field strengths at 20 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.	Meet the requirements, please refer to the result of Electric Field Emissions and Magnetic Field Emissions.
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.	The transfer system includes two primary. This product has two coils, the output power of the first coil is 15W, the output power of the second coil is 5W, which can work independently or simultaneously. Among them, the mode of simultaneous work is the worst mode, and only the worst mode is reflected in the evaluation report.

7. PHOTOGRAPHS OF TEST SETUP



*** End of Report ***