TEST REPORT

Product Name : Solar 15W Wireless Power Bank
Model Number : SP0610, 7122-12
FCC ID : 2BCGV0002

Prepared for	:	NINGBO CSTAR IMPRINT E-COMMERCE CO.,LTD
Address	:	B46,BUILDING B,INDUSTRIAL BLOCK,QIAOTOUHU STREET,NINGHAI COUNTY,NINGBO CITY,ZHEJIANG PROVINCE
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Date(s) of Tests	:	December 07, 2023 to January 24, 2024
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TEST REPORT DESCRIPTION

Applicant	:	NINGBO CSTAR IMPRINT E-COMMERCE CO.,LTD
Address	:	B46,BUILDING B,INDUSTRIAL BLOCK,QIAOTOUHU STREET,NINGHAI COUNTY,NINGBO CITY,ZHEJIANG PROVINCE
Manufacturer	:	NINGBO CSTAR IMPRINT E-COMMERCE CO.,LTD
Address	:	B46,BUILDING B,INDUSTRIAL BLOCK,QIAOTOUHU STREET,NINGHAI COUNTY,NINGBO CITY,ZHEJIANG PROVINCE
EUT	:	Solar 15W Wireless Power Bank
Model Name	:	SP0610, 7122-12
Trademark	:	N/A

Measurement Procedure Used:

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC Part 1(1.1310) and Part 2(2.1091) 680106 D01 Wireless Power Transfer v04 October 24, 2023	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 v03 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 : December 07, 2023 to January 24, 2024

Prepared by : Warren Deng

Warren Deng /Editor

Reviewer : Tim Dong

Tim Dong/ Supervisor

Approved & Authorized Signer :

Sam Lv / Manager

Modified Information

Version	Report No.	Revision Data	Summary
	EDG2312070150E00302R	/	Original Version

1. EUT SPECIFICATION

Characteristics	Description
EUT	Solar 15W Wireless Power Bank
Model number	SP0610, 7122-12 All products are the same, only the model number are different Here we selected SP0610 for all the test
Sample number	2#
Power Supply	DC 5V/2.4A, 9V/2A, 12V/1.5A from USB C DC 5V/0.2A from Solar
Output	DC 5V/2.4A, 9V/2A, 12V/1.5A Wireless 5W/7.5W/10W/15W, 15W MAX.
Operating Frequency Range	111KHz-205KHz
The MAX leakage (Electric)	3.28 v/m
The MAX leakage (Magnetic)	1.2526 a/m
Modulation Technique	Induction
Antenna Type	Induction Coil antenna
Device category	☒ Portable (<20cm separation) ☐ Mobile (>20cm separation) ☐ Others ___
Exposure classification	☐ Occupational/Controlled exposure (S = 5mW/cm2) ☒ General Population/Uncontrolled exposure (S=1mW/cm2)
Antenna diversity	☒ Single antenna ☐ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Evaluation applied	☒ MPE Evaluation ☐ SAR Evaluation
Note:The WPT device is only capable of wireless power transfer between one source and one client at a time.	

2. SUMMARY OF TEST RESULT

EMISSION		
Description of Test Item	Standard & Limits	Results
MPE	FCC Part 1(1.1310) and Part 2(2.1091) KDB 680106 D01 Wireless Power Transfer v04 October 24, 2023	Pass
Note: N/A is an abbreviation for Not Applicable.		

3. DESCRIPTION OF TEST FACILITY

Site Description

EMC Lab. : Accredited by CNAS, 2020.08.27
The certificate is valid until 2024.07.05
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, April 05, 2021
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.,Buiding 2,Zone A,Zhongda Marine Biotechnology Research and Development Base,N.9,Xincheng Avenue,Songshanhu High-technology Industrial Development Zone, Dongguan, Guangdong, China

4. MEASURING DEVICE AND TEST EQUIPMENT

4.1. For MPE Measurement

Used	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
☑	Probe(100cm^2)	Narda	ELT-400	C-0012	May 11, 2023	1 Year
☑	E-Field Probe(100kHz-3GHz)	Narda	EF0391	2304/03	May 11, 2023	1 Year
☑	Broadband Field Meter	Narda	NBM-550	232421	May 11, 2023	1 Year
☑	Electric and Magnatic Field Analyzer (1Hz-400kHz)	Narda	EHP-50F	2404/03	May 11, 2023	1 Year

5. RF EXPOSURE

5.1. Measuring Standard

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

5.2. Requiments

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 exposurerisks. 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.

5.3. Test configuration

For portable exposure conditions:

1 The RF exposure test was performed in anechoic chamber.

2 Perform H-field/E-field measurements are taken along all three axes the device from 0cm~20cm in 2cm minimum increment for each edge surface of the host/client pair. If the center of the probe sensing element is more than 5mm from the probe outer edge, the field strengths need to be estimated for the positions that are not reachable.

3 The highest emission level was recorded and compared with limit.

4 EUT is a loop/coil emitting structure, so E-field not required.

5 According to Calibration information and specification about EHP-200A, The Probe EHP-200A’s sensitive elements center is located in the probe’s center, and the dimensions is 92x92x109mm. so the actral 0cm, 2cm, 4cm field strengths need to be estimated for the positions that are not reachable. The Extrapolated Value Calculation Method please see the page 13. And the result of test distance 6cm~20cm was measured value.

For mobile exposure conditions:

1 The RF exposure test was performed in anechoic chamber.

2 The field strength of both E-field and H-field was measured at 15cm(the 15 cm measured from the center of the probe(s) to the edge of the device) using the equipment list above for determining compliance with the MPE requirements of FCC Part 1.1310.

3 The RF power density was measured at 3 ifferent charge conditions:. min load, mid load, max load.

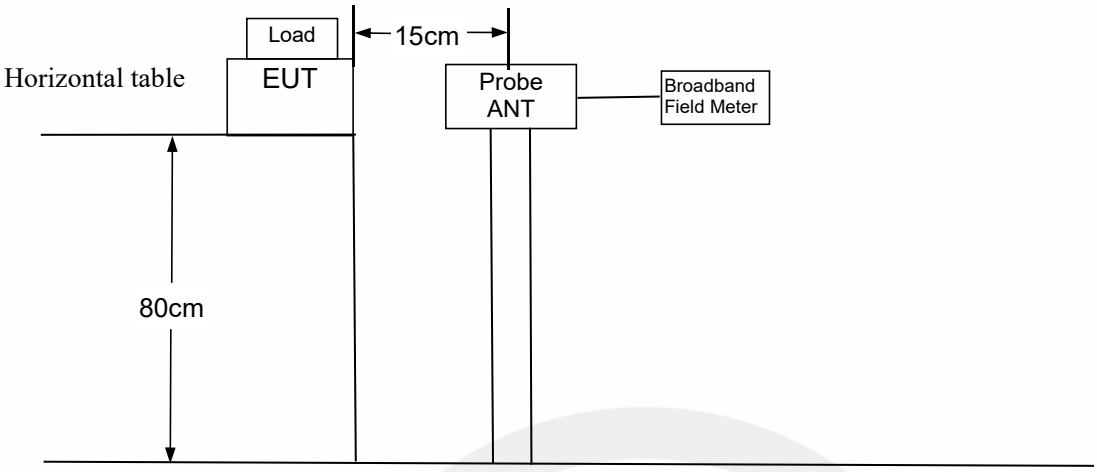
4 Maximum E-field and H-field measurements were made 15cm from each side of the EUT. Along the side of the EUT and still 15cm away from the edge of the EUT, the field probes were positioned at the location where there is maximum field strength. The maximum E-field and H-field is reported below.

5 The highest emission level was recorded and compared with limit.

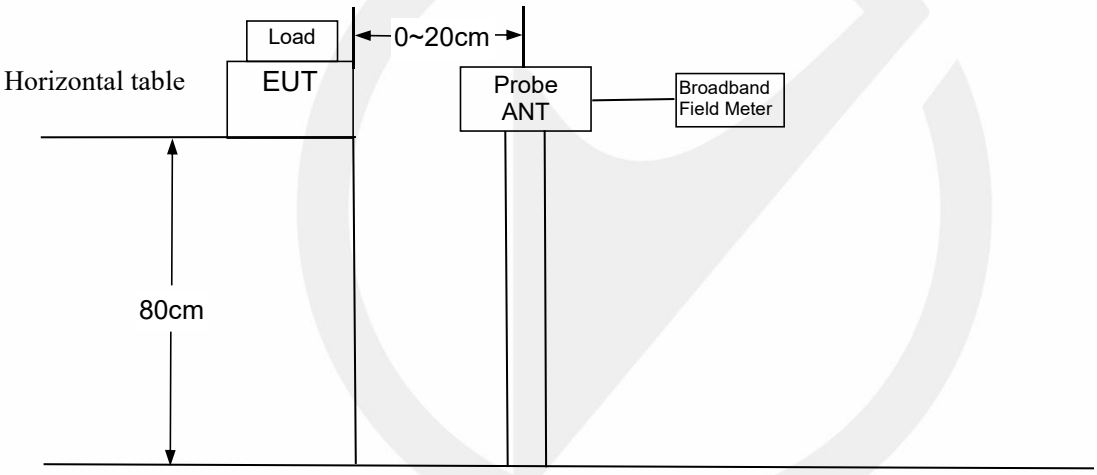
6 The EUT were measured according to the dictates of KDB 680106D01v03

5.4.Block diagram of EUT System

For mobile exposure conditions：



For portable exposure conditions:



5.5. Limits

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm^2)	Averaging Time $\|E\|^2$,$\|H\|^2$or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842 / f	4.89 / f	(900 / f)*	6
30-300	61.4	0.163	1.0	6
300-1500			F/300	6
1500-100,000			5	6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm^2)	Averaging Time $\|E\|^2$,$\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

Test Mode	Description	Remark
Mode A Charging	100% Load	With resistor
	50% Load	With resistor
	0% Load	No Load
Note: All the states have been tested, and only the worst case is reflected in the report.		

5.6. Measuring Results

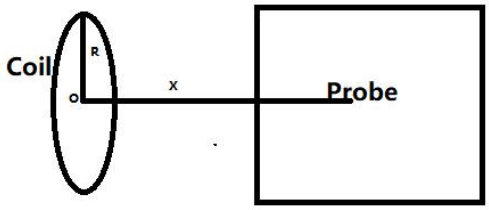
Requirement for KDB Publication 680106 D01

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.	Output power is less than or equal to 15W≤15W.
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 only single primary.
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).	No, The EUT has portable exposure condition.
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.	No, and H-field measurements for each edge/top surface of the host/client pair at every 2 cm, starting from as close as possible out to 20 cm were also evaluated for portable use condition. Please refer to the result of Electric Field Emissions and Magnetic Field Emissions.

For portable exposure conditions:

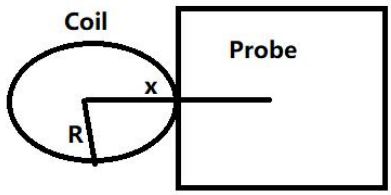
We use Biot-Savart formula theory to estimate the strength of the magnetic field that the measuring instrument cannot measure. According to Biot-Savart formula:

Top & Bottom Side:



$$B = \frac{\mu_0 * I * N * R^2}{2 * (R^2 + x^2)^{3/2}}$$

Front, left, right & rear Side:



$$B = \frac{\mu_0 * I * N}{2 * R}$$

B: means H-field value;
μ0 is space permeability; μ0=4 π *10-7;
I：A current element passing through a coil；
R：means the Radius of coil(According to provided Antenna specification: We can get the minimum R=40/2mm=0.02m);
x: means the evaluated point to the coil center.(For top & bottom side: x=test distance; For other side: x=test distance+R)
N: Number of turns, According to provided “Antenna specification” files: N=10.

For validation purposes: If the value to show a 30% agreement between the mode and the (E- and/or H-field) probe measurements for the two closest points to the device surface, and with 2cm increments. Then this extrapolation method is reasonable.
Note: The percent ratio of agreement is the difference between the estimated and measured values divided by the average of the estimated and measured values.

Test Mode: Mode 1(100% Load)

Magnetic Field Emissions							
Test Distance(cm)	Top	Left	Right	Rear	Front	Bottom	Limit(A/m)
	Measure Value (A/m)						
0(estimated)	1.2526	0.1071	0.1208	0.0158	0.0153	0.6990	1.63
2(estimated)	0.3870	0.0384	0.0421	0.0086	0.0083	0.1657	1.63
4(estimated)	0.1010	0.0175	0.0188	0.0051	0.0050	0.0533	1.63
6	0.0368	0.0093	0.0099	0.0033	0.0032	0.0226	1.63
8	0.0169	0.0055	0.0058	0.0023	0.0022	0.0115	1.63
10	0.0091	0.0035	0.0037	0.0016	0.0016	0.0066	1.63
12	0.0054	0.0024	0.0025	0.0012	0.0012	0.0041	1.63
14	0.0034	0.0017	0.0017	0.0009	0.0009	0.0027	1.63
16	0.0023	0.0012	0.0013	0.0007	0.0007	0.0019	1.63
18	0.0017	0.0009	0.0010	0.0005	0.0005	0.0014	1.63
20	0.0012	0.0007	0.0007	0.0004	0.0004	0.0010	1.63

Validation:

Magnetic Field Emissions							
Test Distance(cm)	Top	Left	Right	Rear	Front	Bottom	Conclusion
	Unit: Agreement (%); H-field (A/m)						
6(estimated)	0.0351	0.008	0.0089	0.0031	0.0034	0.0204	PASS
6(measured)	0.0368	0.0093	0.0099	0.0033	0.0032	0.0226	
contrast(%)	4.6196	13.9785	10.1010	6.0606	-6.2500	9.7345	
8(estimated)	0.016	0.0041	0.0052	0.0019	0.0017	0.0105	PASS
8(measured)	0.0169	0.0055	0.0058	0.0023	0.0022	0.0115	
contrast(%)	5.3254	25.4545	10.3448	17.3913	22.7273	8.6957	

Take a call while the phone is on the charging pad

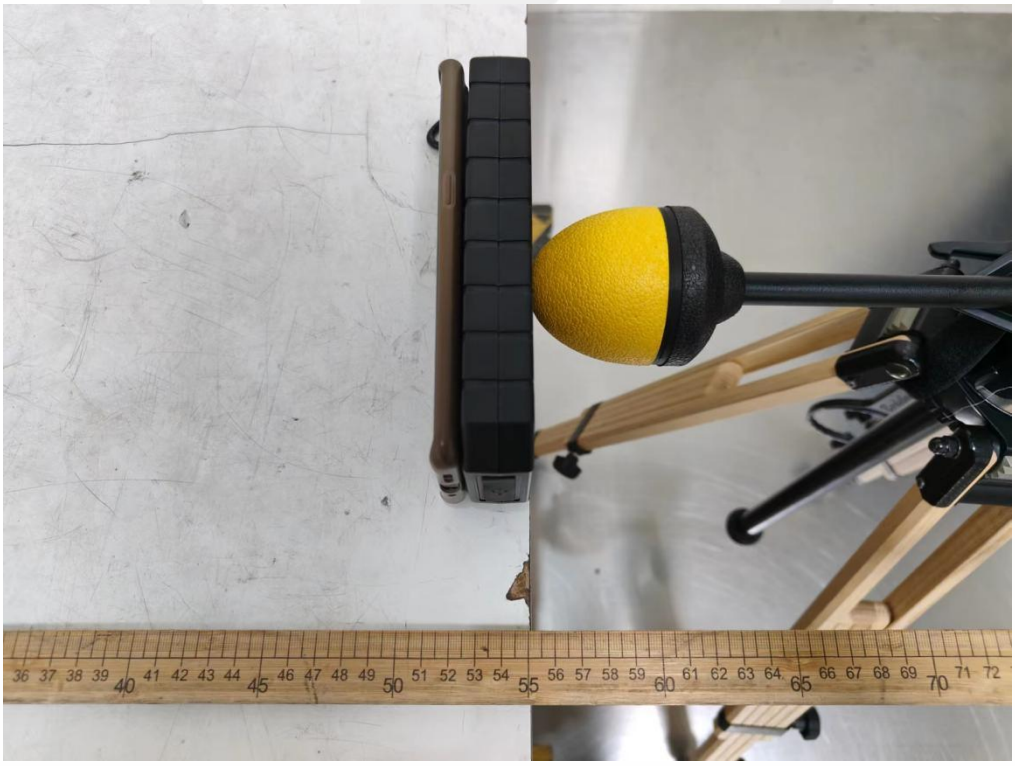
Electric Field Emissions		
Test Position	Measure Value (V/m)	Limit(V/m)
Top	3.28	614
Left	2.79	614
Right	2.65	614
Rear	2.69	614
Front	2.66	614
Bottom	2.54	614
Magnetic Field Emissions		
Test Position	Measure Value (A/m)	Limit(A/m)
Top	0.1953	1.63
Left	0.1677	1.63
Right	0.1227	1.63
Rear	0.1206	1.63
Front	0.1290	1.63
Bottom	0.1104	1.63

For mobile exposure conditions:

Test Mode: Mode 1(100% Load)

Electric Field Emissions		
Test Position	Measure Value (V/m)	Limit(V/m)
Top	4.22	614
Left	3.27	614
Right	3.00	614
Rear	3.44	614
Front	3.28	614
Bottom	3.93	614
Magnetic Field Emissions		
Test Position	Measure Value (A/m)	Limit(A/m)
Top	0.4689	1.63
Left	0.3391	1.63
Right	0.3354	1.63
Rear	0.3434	1.63
Front	0.3154	1.63
Bottom	0.4324	1.63

6. PHOTOGRAPHS OF TEST SETUP



*** End of Report ***