

TEST REPORT

FCC ID: 2APESCDRZ21

Product: Wireless Charger

Model No.: CDRZ21

Additional Model No.: N/A

Trade Mark: Andobil

Report No.: TCT180425E902

Issued Date: Apr. 26, 2018

Issued for:

Shenzhen Andobil Technology Co., Ltd.
322, Bldg.7, Pengsheng Village, No.39 Bagua 1 Rd., Pengsheng CMNY, Yuanling St Futian Dist., shenzhen, China

Issued By:

Shenzhen Tongce Testing Lab.

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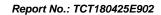




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1. Test Certification

Applicable

Standards:

Product: Wireless Charger Model No.: CDRZ21 Additional N/A Model No.: Trade Mark: **Andobil** Applicant: Shenzhen Andobil Technology Co., Ltd. 322, Bldg.7, Pengsheng Village, No.39 Bagua 1 Rd., Pengsheng Address: CMNY, Yuanling St Futian Dist., shenzhen, China Manufacturer: Shenzhen Andobil Technology Co., Ltd. 322, Bldg.7, Pengsheng Village, No.39 Bagua 1 Rd., Pengsheng Address: CMNY, Yuanling St Futian Dist., shenzhen, China Date of Test: Nov. 09 – 13, 2017

The above equipment has been tested by Shenzhen Tongce Testing Lab. and found compliance with the requirements set forth in the technical standards mentioned above. The results of testing in this report apply only to the product/system, which was tested. Other similar equipment will not necessarily produce the same results due to production tolerance and measurement uncertainties.

FCC CFR Title 47 Part 15 Subpart C

Tested By:	Brens Xu	Date:	Nov. 13, 2017	
	Brews Xu	7,		
Reviewed By:	Zonthon	Date:	Apr. 26, 2018	
	Joe Zhou			

Approved By: Date: Apr. 26, 2018

Tomsin



2. Test Result Summary

Requirement	CFR 47 Section	Result
Antenna requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Spurious Emission	§15.209(a)(f)	PASS

Note:

- 1. PASS: Test item meets the requirement.
- 2. Fail: Test item does not meet the requirement.
- 3. N/A: Test case does not apply to the test object.





3. EUT Description

Report No.:	TCT180425E902
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Product:	Wireless Charger
Model No.:	CDRZ21
Additional Model No.:	N/A
Trade Mark:	Andobil
Operation Frequency:	110-205KHz
Number of Channel:	20 Channels
Modulation Technology:	MSK
Antenna Type:	Inductive loop coil Antenna
Antenna Gain:	0dBi

Operation Frequency each of channel

Operation	Operation requeitly each of chainles						
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	0.110	6	0.135	11	0.160	16	0.185
2	0.115	7	0.140	12	0.165	17	0.190
3	0.120	8	0.145	13	0.170	18	0.195
4	0.125	9	0.150	14	0.175	19	0.200
5	0.130	10	0.155	15	0.180	20	0.205





4. Genera Information

4.1. Test environment and mode

Operating Environment:	
Temperature:	25.0 °C
Humidity:	56 % RH
Atmospheric Pressure:	1010 mbar
Test Mode:	
Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations(The value of duty cycle is 98.46%) with Fully-charged battery.

The sample was placed (0.1m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

4.2. Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Equipment	Model No.	Serial No.	FCC ID	Trade Name
Adapter	HW-059200CHQ	K68247F5H01734	/ /	HUAWEI
Mobilephone	honor 9	5JPDU17610004560	1	honor

Note:

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
- 3. For conducted measurements (Output Power, 6dB Emission Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.



5. Facilities and Accreditations

5.1. Facilities

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

• FCC - Registration No.: 645098

Shenzhen Tongce Testing Lab

The 3m Semi-anechoic chamber has been registered and fully described in a report with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

• IC - Registration No.: 10668A-1

The 3m Semi-anechoic chamber of Shenzhen TCT Testing Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

5.2. Location

Shenzhen Tongce Testing Lab

Address: 1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District,

Shenzhen, Guangdong, China

TEL: +86-755-27673339

5.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	MU	
9	Conducted Emission	±2.56dB	
2	RF power, conducted	±0.12dB	
3	Spurious emissions, conducted	±0.11dB	
4	All emissions, radiated(<1G)	±3.92dB	
5	All emissions, radiated(>1G)	±4.28dB	
6	Temperature	±0.1°C	
7	Humidity	±1.0%	



6. Test Results and Measurement Data

6.1. Antenna requirement

Standard requirement:

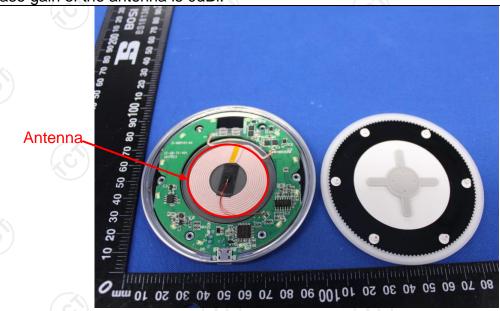
FCC Part15 C Section 15.203

15.203 requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

E.U.T Antenna:

The antenna is inductive loop coil antenna which permanently attached, and the best case gain of the antenna is 0dBi.





6.2. Conducted Emission

6.2.1. Test Specification

Tost Poquiroment	ECC Part15 C Saction	15 207	(, c			
Test Requirement:	FCC Part15 C Section 15.207					
Test Method:	ANSI C63.10:2013					
Frequency Range:	150 kHz to 30 MHz	150 kHz to 30 MHz				
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto					
Limits:	Frequency range (MHz) 0.15-0.5 0.5-5 5-30	(MHz) Quasi-peak A 0.15-0.5 66 to 56* 56 0.5-5 56				
	Refere	nce Plane	1201			
Test Setup:	Adapter Filter AC power E.U.T Adapter Filter AC power EMI Receiver Remark: E.U.T: Equipment Under Test LISN: Line Impedence Stabilization Network Test table height=0.8m					
Test Mode:	Charging + Transmitting	ng Mode				
Test Procedure:	 The E.U.T is conne impedance stabilizy provides a 500hm/5 measuring equipme The peripheral device power through a LI coupling impedance refer to the block photographs). Both sides of A.C. conducted interferer emission, the relative the interface cables ANSI C63.10: 2013 	cation network 50uH coupling im nt. ces are also connects with 50ohm terr diagram of the line are checkence. In order to five positions of equals must be changed.	(L.I.S.N.). This appedance for the ected to the main a 500hm/50uH mination. (Please test setup and ed for maximum and the maximum sipment and all of ged according to			
Test Result:	PASS		<u> </u>			

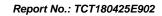


6.2.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)						
Equipment	Manufacturer	Model	Serial Number	Calibration Due		
Test Receiver	R&S	ESPI	101401	Jun. 12, 2018		
LISN	Schwarzbeck	NSLK 8126	8126453	Sep. 27, 2018		
Coax cable (9KHz-30MHz)	тст	CE-05	N/A	Sep. 27, 2018		
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A		

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).



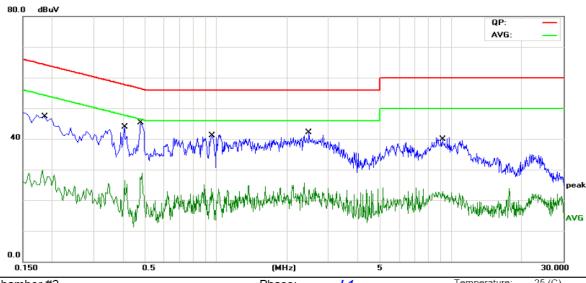




6.2.3. Test data

Please refer to following diagram for individual

Conducted Emission on Line Terminal of the power line (150 kHz to 30MHz)



Site Chamber #2	Phase:	L1	remperature	: 25 (C)
Limit: FCC Part 15C Conduction(QP)	Power:	AC 120V/60Hz	Humidity:	55 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBu∀	dBu∀	dB	Detector	Comment
1		0.1859	35.85	11.48	47.33	64.21	-16.88	QP	
2		0.1859	18.51	11.48	29.99	54.21	-24.22	AVG	
3		0.4063	32.55	11.36	43.91	57.72	-13.81	QP	
4		0.4063	15.06	11.36	26.42	47.72	-21.30	AVG	
5	*	0.4828	33.93	11.32	45.25	56.29	-11.04	QP	
6		0.4828	17.67	11.32	28.99	46.29	-17.30	AVG	
7		0.9600	29.83	11.21	41.04	56.00	-14.96	QP	
8		0.9600	12.76	11.21	23.97	46.00	-22.03	AVG	
9		2.4855	30.54	11.52	42.06	56.00	-13.94	QP	
10		2.4855	14.20	11.52	25.72	46.00	-20.28	AVG	
11		9.1813	29.15	11.26	40.41	60.00	-19.59	QP	
12		9.1813	11.68	11.26	22.94	50.00	-27.06	AVG	

Note:

Freq. = Emission frequency in MHz

Reading level $(dB\mu V)$ = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

Measurement ($dB\mu V$) = Reading level ($dB\mu V$) + Corr. Factor (dB)

Limit (dBµV) = Limit stated in standard

 $Margin (dB) = Measurement (dB\mu V) - Limits (dB\mu V)$

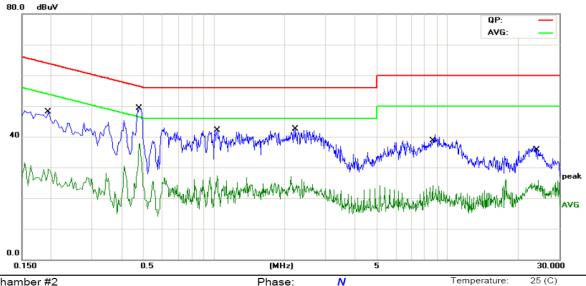
Q.P. =Quasi-Peak

AVG =average

^{*} is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz



Conducted Emission on Neutral Terminal of the power line (150 kHz to 30MHz)



Site Chamber #2 Phase: N Temperature: 25 (C)
Limit: FCC Part 15C Conduction(QP) Power: AC 120V/60Hz Humidity: 55 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBu∀	dB	dBu∀	dBu∀	dB	Detector	Comment
1		0.1949	36.60	11.47	48.07	63.82	-15.75	QP	
2		0.1949	17.94	11.47	29.41	53.82	-24.41	AVG	
3	*	0.4784	38.08	11.32	49.40	56.37	-6.97	QP	
4		0.4784	26.48	11.32	37.80	46.37	-8.57	AVG	
5		1.0274	30.96	11.22	42.18	56.00	-13.82	QP	
6		1.0274	15.98	11.22	27.20	46.00	-18.80	AVG	
7		2.2334	30.81	11.61	42.42	56.00	-13.58	QP	
8		2.2334	15.41	11.61	27.02	46.00	-18.98	AVG	
9		8.6280	29.49	11.18	40.67	60.00	-19.33	QP	
10		8.6280	12.90	11.18	24.08	50.00	-25.92	AVG	
11		24.3825	26.19	10.78	36.97	60.00	-23.03	QP	
12		24.3825	15.18	10.78	25.96	50.00	-24.04	AVG	

Note1:

Freq. = Emission frequency in MHz

Reading level $(dB\mu V)$ = Receiver reading

Corr. Factor (dB) = Antenna factor + Cable loss

Measurement ($dB\mu V$) = Reading level ($dB\mu V$) + Corr. Factor (dB)

Limit (dBµV) = Limit stated in standard

 $Margin (dB) = Measurement (dB\mu V) - Limits (dB\mu V)$

Q.P. =Quasi-Peak AVG =average

* is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.



6.3. Radiated Spurious Emission Measurement

6.3.1. Test Specification

Test Requirement:	FCC Part15	C Sectio	n 1	5.209	(0)		KC		
Test Method:	ANSI C63.10	0: 2013							
Frequency Range:	9 kHz to 25 (GHz							
Measurement Distance:	3 m		6)		1/6			
Antenna Polarization:	Horizontal &	Vertical							
Operation mode:	Refer to item	1 4.1			C		ÇĆ		
	Frequency 9kHz- 150kHz 150kHz-	Detector Quasi-pea Quasi-pea	ak 200Hz		VBW 1kHz 30kHz	Quas	Remark si-peak Value si-peak Value		
eceiver Setup:	30MHz 30MHz-1GHz	Quasi-pea Peak	ak	100KHz 1MHz	300KHz 3MHz		si-peak Value eak Value		
	Above 1GHz	Peak		1MHz	10Hz		erage Value		
		Frequency			ength /meter)	Measurement Distance (meters)			
		0.009-0.490 0.490-1.705			(Hz)		300		
	1.705-30			24000/F(30	KHZ)		30		
mit:	30-88			100		- KC	3		
	88-216			150			3		
	216-960			200			3		
	Above 960			500			3		
	('C')			(20.)			ľζC		
	Frequency		Field Strength (microvolts/meter)		Measuremer Distance (meters)		Detector		
	Above 1GH	z	500		3	(,0	Average		
			5000 3 Peak				Peak		
	For radiated	emissior	ns b	elow 30	MHz				
		Distance = 3m							
To ad a ad our	Pre -Amplifier								
Test setup:	EUT	EUT Turn table Receiver							
			Groun	d Plane					
	30MHz to 10	SHz							

「通测检测 Report No.: TCT180425E902 Antenna Tower Search Antenna EUT 4m RF Test Receiver Turn 0.8m Above 1GHz 1. For the radiated emission test below 1GHz: The EUT was placed on a turntable with 0.8 meter above ground. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high PASS filter are used for the test in order to get better signal level. For the radiated emission test above 1GHz: **Test Procedure:** Place the measurement antenna on a turntable with 1.5 meter above ground, which is away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for

maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission

and staying aimed at the emission source for receiving the maximum signal. The final

TESTING CENTRE TECHNOL	Report No.: TCT180425E9
	measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane. 2. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level 3. For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission
	level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported. 4. Use the following spectrum analyzer settings: (1) Span shall wide enough to fully capture the emission being measured; (2) Set RBW=100 kHz for f < 1 GHz; VBW 承BW;
	Sweep = auto; Detector function = peak; Trace = max hold; (3) Set RBW = 1 MHz, VBW= 3MHz for f 1 GHz for peak measurement. For average measurement: VBW = 10 Hz, when duty cycle is no less than 98 percent. VBW ≥1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.
Test mode:	Refer to section 4.1 for details
Test results:	PASS (C)







6.3.2. Test Instruments

	Radiated Em	ission Test Sit	te (966)	
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
Test Receiver	ROHDE&SCHW ARZ	ESVD	100008	Sep. 27, 2018
Spectrum Analyzer	ROHDE&SCHW ARZ	FSQ	200061	Sep. 27, 2018
Pre-amplifier	EM Electronics Corporation CO.,LTD	EM30265	07032613	Sep. 27, 2018
Pre-amplifier	HP	8447D	2727A05017	Sep. 27, 2018
Loop antenna	ZHINAN	ZN30900A	12024	Sep. 27, 2018
Broadband Antenna	Schwarzbeck	VULB9163	340	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Sep. 27, 2018
Horn Antenna	Schwarzbeck	BBH 9170	582	Jun. 07, 2018
Antenna Mast	Keleto	CC-A-4M	N/A	N/A
Coax cable (9KHz-1GHz)	тст	RE-low-01	N/A	Sep. 27, 2018
Coax cable (9KHz-40GHz)	тст	RE-high-02	N/A	Sep. 27, 2018
Coax cable (9KHz-1GHz)	тст	RE-low-03	N/A	Sep. 27, 2018
Coax cable (9KHz-40GHz)	тст	RE-high-04	N/A	Sep. 27, 2018
EMI Test Software	Shurple Technology	EZ-EMC	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

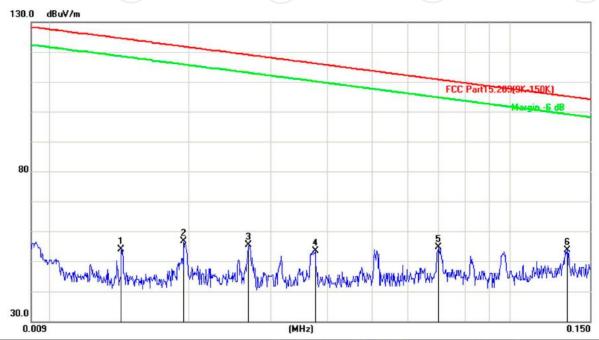


6.3.3. Test Data

Please refer to following diagram for individual

9KHz-30MHz

9KHz-150KHz:



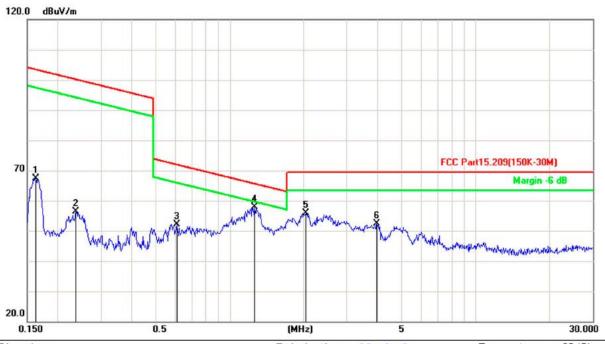
Site Chamber Polarization: Vertical Temperature: 25 (C)
Limit: FCC Part15.209(9K-150K) Power: AC 120V/60Hz Humidity: 55 %

No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.0142	32.48	21.47	53.95	126.89	-72.94	peak	
2	0.0194	38.01	18.72	56.73	126.02	-69.29	peak	
3	0.0269	36.61	18.86	55.47	124.76	-69.29	peak	
4	0.0376	33.73	19.57	53.30	122.97	-69.67	peak	
5	0.0700	32.79	21.76	54.55	117.53	-62.98	peak	
6 *	0.1337	28.25	25.42	53.67	106.84	-53.17	peak	





150KHz-30MHz:



Site Chamber Polarization: Vertical Temperature: 25 (C)
Limit: FCC Part15.209(150K-30M) Power: AC 120V/60Hz Humidity: 55 %

No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	0.1621	41.29	26.10	67.39	103.73	-36.34	peak	
2	0.2366	30.70	25.73	56.43	101.48	-45.05	peak	
3	0.6075	26.99	25.16	52.15	72.76	-20.61	peak	
4 *	1.2620	32.93	24.92	57.85	66.94	-9.09	peak	
5	2.0440	31.29	24.70	55.99	69.50	-13.51	peak	
6	3.9639	27.83	24.57	52.40	69.50	-17.10	peak	





30MHz-1GHz

Horizontal:



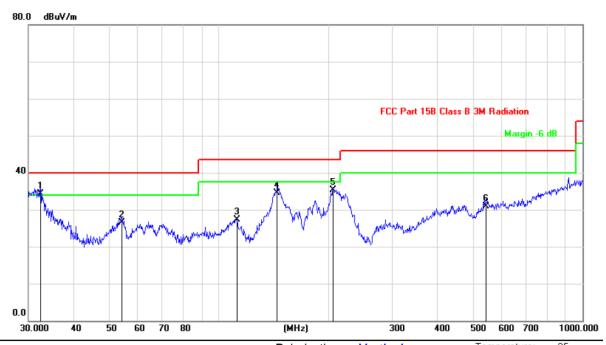
Site	Polarizatio	on: <i>Horizontal</i>	Temperature	: 25
Limit: FCC Part 15B Class B 3M Radiation	Power:	AC 120V/60Hz	Humidity:	55 %

No. N	Иk. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
	MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1	59.8588	30.00	-7.42	22.58	40.00	-17.42	QP			
2	99.8777	27.40	-6.44	20.96	43.50	-22.54	QP			
3	142.3243	38.80	-11.34	27.46	43.50	-16.04	QP			
4 '	* 210.0482	40.60	-9.07	31.53	43.50	-11.97	QP			
5	483.9094	33.10	-1.33	31.77	46.00	-14.23	QP			
6	744.8661	28.00	5.07	33.07	46.00	-12.93	QP			





Vertical:



Site Polarization: Vertical Temperature: 25

Limit: FCC Part 15B Class B 3M Radiation Power: AC 120V/60Hz Humidity: 55 %

No.	Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1	*	32.4059	42.10	-7.78	34.32	40.00	-5.68	QP			
2		54.0711	33.60	-7.04	26.56	40.00	-13.44	QP			
3		112.1305	35.00	-7.63	27.37	43.50	-16.13	QP			
4		144.8418	45.80	-11.35	34.45	43.50	-9.05	QP			
5		206.3976	44.40	-9.07	35.33	43.50	-8.17	QP			
6		543.2742	30.80	0.05	30.85	46.00	-15.15	QP			

Note:

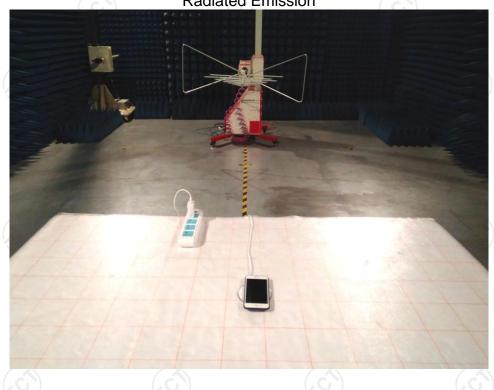
Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss - Pre-amplifier

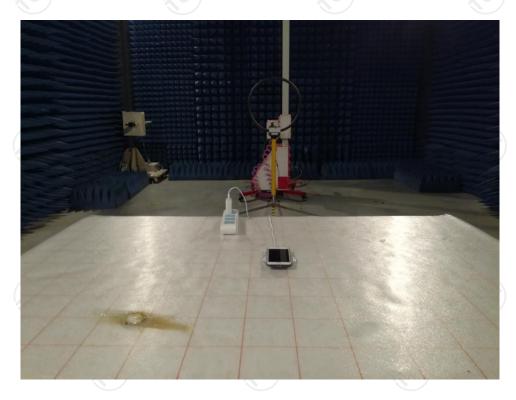




Appendix A: Photographs of Test Setup Product: Wireless Charger

Product: Wireless Charger
Model: CDRZ21
Radiated Emission







CE











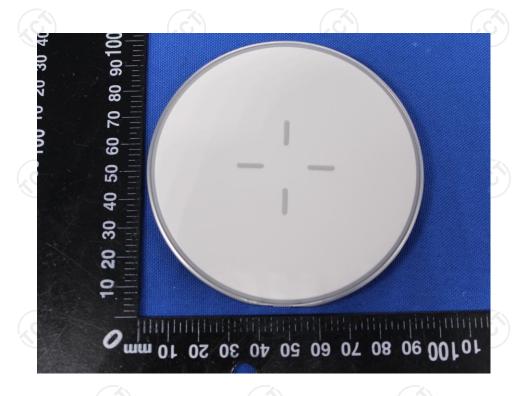




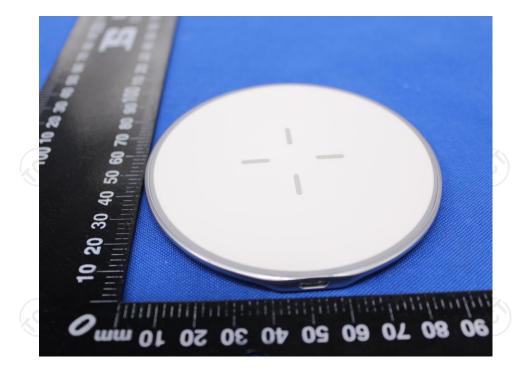


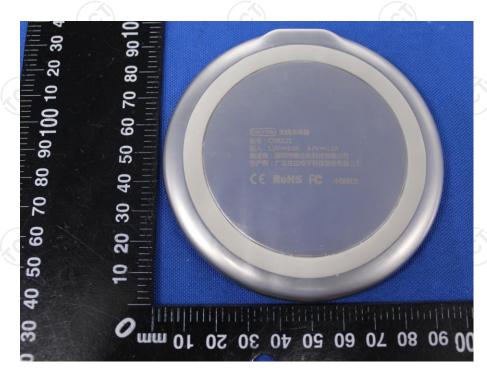
Appendix B: Photographs of EUT Product: Wireless Charger Model: CDRZ21





TCT通测检测 TESTING CENTRE TECHNOLOGY

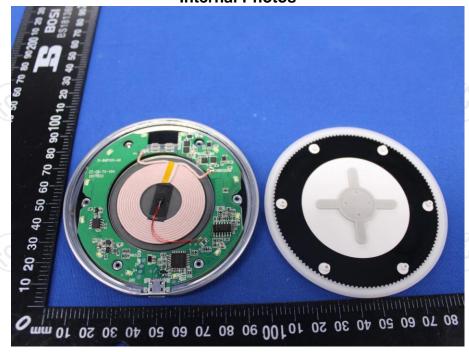


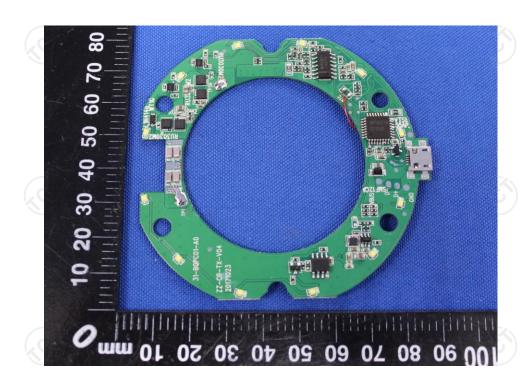




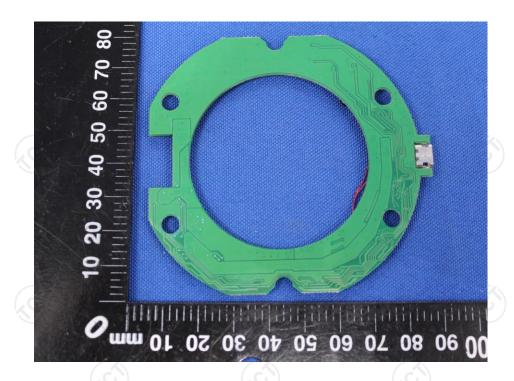


Product: Wireless Charger Model: CDRZ21 Internal Photos









*****END OF REPORT****







