

TEST REPORT

FCC ID: 2AN4XCDRZ25

Product: Wireless Charger

Model No.: CDRZ25

Additional Model: CDRZ26

Trade Mark: RANVOO

Report No.: TCT180109E919

Issued Date: Jan. 11, 2018

Issued for:

SHENZHEN RANVOO DIGITAL TECHNOLOGY CO., LTD.

16F, BLOCK C, ZHANTAO TECHNOLOGY BUILDING, MINZHI ROAD,
LONGHUA DISTRICT, SHENZHEN, China

Issued By:

Shenzhen Tongce Testing Lab.

1B/F., Building 1, Yibaolai Industrial Park, Qiaotou, Fuyong, Baoan District, Shenzhen, Guangdong, China

TEL: +86-755-27673339

FAX: +86-755-27673332

Note: This report shall not be reproduced except in full, without the written approval of Shenzhen Tongce Testing Lab.

This document may be altered or revised by Shenzhen Tongce Testing Lab. personnel only, and shall be noted in the revision section of the document. The test results in the report only apply to the tested sample.

Hotline: 400-6611-140 Tel: 86-755-27673339 Fax: 86-755-27673332 http://www.tct-lab.com





TABLE OF CONTENTS

1. Test Certif	ication						3
2. Test Resul	t Summary		(0)		(0)		4
3. EUT Descr	_						5
4. Genera Inf	ormation						6
4.1. Test ei	nvironment a	nd mode					6
	ption of Supp						
5. Facilities a	nd Accredi	tations	<u>. (a)</u>		<u>(a)</u>		7
5.1. Faciliti	es						7
	on						
5.3. Measu	rement Unce	rtainty		((0))		((0))	7
6. Test Resul	ts and Mea	suremen	t Data				8
	na requireme						
6.2. Condu	cted Emissio	n					9
6.3. Radiat	ed Spurious	Emission I	Measureme	ent			13
Appendix A	: Photograp	ohs of Te	st Setup				
Appendix B	: Photograp	ohs of EU	JT				



1. Test Certification

Report No.: TCT180109E919

Product:	Wireless Charger	
Model No.:	CDRZ25	
Additional Model No.:	CDRZ26	
Trade Mark:	RANVOO	
Applicant:	SHENZHEN RANVOO DIGITAL TECHNOLOGY CO., LTD.	
Address:	16F, BLOCK C, ZHANTAO TECHNOLOGY BUILDING, MINZHI ROAD, LONGHUA DISTRICT, SHENZHEN, China	C
Manufacturer:	SHENZHEN RANVOO TECHNOLOGY CO., LTD.	
Address:	17F, BLOCK C, ZHANTAO TECHNOLOGY BUILDING, MINZHI ROAD, LONGHUA DISTRICT, SHENZHEN, China	
Date of Test:	Dec. 19, 2017 - Jan. 02, 2018	
Applicable Standards:	FCC CFR Title 47 Part 15 Subpart C	S

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.

Reviewed By:

Date: Jan. 02, 2018

Brews Xu

Date: Jan. 11, 2018

Joe Zhou

Joe Zhou

Tomsin

Date: Jan. 11, 2018



Test Result Summary 2.

Requirement	Requirement CFR 47 Section			
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.
- 4. The test result judgment is decided by the limit of test standard.





3. EUT Description

Product:	Wireless Charger
Model No.:	CDRZ25
Additional Model No.:	CDRZ26
Trade Mark:	RANVOO
Operation Frequency:	110-205KHz
Number of Channel:	20 Channels
Modulation Technology:	MSK
Antenna Type:	Inductive loop coil Antenna
Antenna Gain:	0dBi
Remark:	All models above are identical in interior structure, electrical circuits and components, and just model names are different for the marketing requirement.

Operation Frequency each of channel

operation i requestoy each or charmer											
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) 1	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.

Report No.: TCT180109E919



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
1	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%

Report No.: TCT180109E919



6. Test Results and Measurement Data

6.1. Antenna requirement

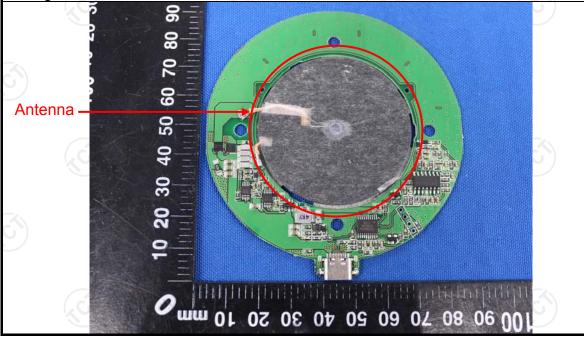
Standard requirement: FCC Part15 C Section 15.203

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

Test Requirement:	FCC Part15 C Section	15.207	Ke					
Test Method:	ANSI C63.10:2013							
Frequency Range:	150 kHz to 30 MHz							
Receiver setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto							
Limits:	Frequency range (MHz) Limit (dBuV) 0.15-0.5 66 to 56* 56 to 46* 0.5-5 56 46 5-30 60 50							
Test Setup:	Test table/Insulation plan Remark: E.U.T: Equipment Under Test LISN: Line Impedence Stabilization Test table height=0.8m	EMI Receiver	lter — AC power					
Test Mode:	Charging + Transmittin	g Mode						
Test Procedure:	 The E.U.T is connermodely impedance stabilized provides a 50 ohm/5 measuring equipment. 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 	ation network 50uH coupling im nt. es are also conne SN that provides with 50ohm terr diagram of the line are checke nce. In order to file positions of equal	(L.I.S.N.). This apedance for the ected to the main a 50ohm/50uH mination. (Please test setup and ed for maximum and the maximum ipment and all of jed according to					
Test Result:	PASS							



TESTING CENTRE TECHNOLOGY Report No.: TCT180109E919

6.2.2. Test Instruments

Conducted Emission Shielding Room Test Site (843)									
Equipment Manufacturer Model Serial Number Calibration Du									
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).



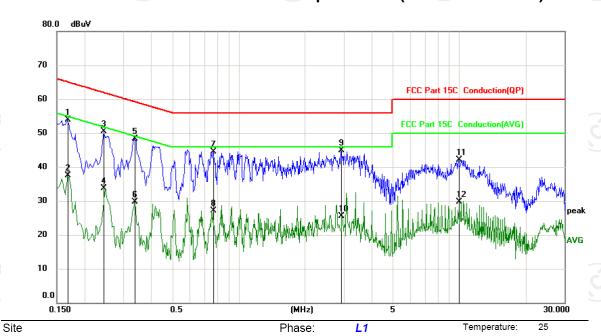




6.2.3. Test data

Please refer to following diagram for individual

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



Limit	FCC	Part 150	Conducti	on(QP)		Pov	ver:	AC 120V/60Hz		Humidity:	55 %
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Ove	r			
		MHz	dBu∀	dB	dBuV	dBuV	dB	Detector	Comment		
1		0.1680	42.36	11.47	53.83	65.06	-11.23	B peak			
2		0.1680	26.05	11.47	37.52	55.06	-17.54	4 AVG			
3		0.2445	39.01	11.43	50.44	61.94	-11.50) peak			
4		0.2445	22.28	11.43	33.71	51.94	-18.23	3 AVG			
5	*	0.3390	36.90	11.38	48.28	59.23	-10.95	5 peak			
6		0.3390	18.31	11.38	29.69	49.23	-19.54	4 AVG			
7		0.7710	33.22	11.22	44.44	56.00	-11.56	6 peak			
8		0.7710	15.83	11.22	27.05	46.00	-18.95	5 AVG			
9		2.9040	33.47	11.37	44.84	56.00	-11.16	6 peak			
10		2.9040	14.20	11.37	25.57	46.00	-20.43	B AVG			
11		9.9150	30.77	11.33	42.10	60.00	-17.90) peak			
12		9.9150	18.40	11.33	29.73	50.00	-20.27	7 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)

 $Limit (dB\mu V) = Limit stated in standard$

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

Q.P. =Quasi-Peak

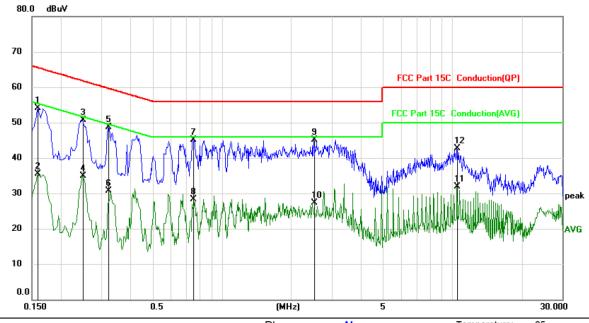
AVG =average

^{*} 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	Phase:	N	Temperature:	25
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		0.1590	42.70	11.47	54.17	65.52	-11.35	peak	
2		0.1590	24.09	11.47	35.56	55.52	-19.96	AVG	
3		0.2490	39.24	11.42	50.66	61.79	-11.13	peak	
4		0.2490	23.58	11.42	35.00	51.79	-16.79	AVG	
5		0.3209	37.26	11.39	48.65	59.68	-11.03	peak	
6		0.3209	19.22	11.39	30.61	49.68	-19.07	AVG	
7	*	0.7485	33.93	11.23	45.16	56.00	-10.84	peak	
8		0.7485	17.11	11.23	28.34	46.00	-17.66	AVG	
9		2.5035	33.64	11.51	45.15	56.00	-10.85	peak	
10		2.5035	15.71	11.51	27.22	46.00	-18.78	AVG	
11		10.4772	20.61	11.35	31.96	50.00	-18.04	AVG	
12		10.4775	31.44	11.35	42.79	60.00	-17.21	peak	

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)

 $Limit (dB\mu V) = Limit stated in standard$

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

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 Section	n 15.209	(0)	(6			
Test Method:	ANSI C63.10	D: 2013						
Frequency Range:	9 kHz to 25	GHz			(3)			
Measurement Distance:	3 m	V						
Antenna Polarization:	Horizontal & Vertical							
Operation mode:	Refer to item	C						
	Frequency 9kHz- 150kHz 150kHz-	Detector Quasi-pea Quasi-pea	k 200Hz	VBW 1kHz 30kHz	Remark Quasi-peak Value Quasi-peak Value			
Receiver Setup:	30MHz 30MHz-1GHz	Quasi-pea	ık 100KHz	300KHz	Quasi-peak Value Peak Value			
	Above 1GHz	Peak Peak	1MHz 1MHz	3MHz 10Hz	Average Value			
	Frequer	-	Field Str (microvolts	s/meter)	Measurement Distance (meters)			
	0.009-0.4 0.490-1.7		2400/F(24000/F		300 30			
	1.705-3	30		30				
	30-88	100		3				
	88-216		150		3			
Limit:	216-96	200		3				
	Above 9	60	500		3			
		(ز		(O')	I/O			
	Frequency		Field Strength (microvolts/meter)		ement nce Detector ers)			
	Above 1GH	z	500	3	Average			
			5000	3 0MU=	Peak			
	For radiated emissions below 30MHz Distance = 3m Computer Pre -Amplifier							
Test setup:	EUT	Turn table	Ground Plane		Receiver			
	30MHz to 10	_	I faire					

Page 14 of 26

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

919

T (T通测检测	
	TESTING CENTRE TECHNOLOGY	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 ≥RBW; 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.
T	est mode:	Refer to section 4.1 for details
T	est 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:



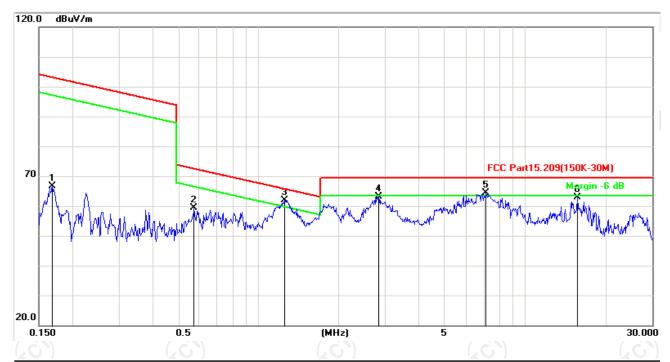
No. Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		Antenna Height	Table Degree	
	MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector	cm	degree	Comment
1	0.0091	54.66	0.00	54.66	128.2	-73.60	peak			
2	0.0340	32.58	19.47	52.05	116.9	-64.93	peak			
3	0.0680	32.69	21.76	54.45	110.9	-56.52	peak			
4	0.0990	35.06	23.87	58.93	107.7	-48.78	peak			
5	0.1129	32.18	24.56	56.74	106.5	-49.83	peak			
6 *	0.1350	31.12	25.62	56.74	105.0	-48.27	peak			







150KHz-30MHz:



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	0.1685	40.48	26.19	66.67	103.1	-36.42	peak			
2	0.5731	34.06	25.40	59.46	72.44	-12.98	peak			
3 *	1.2483	36.73	25.25	61.98	65.70	-3.72	peak			
4	2.8239	38.13	24.97	63.10	69.50	-6.40	peak			
5 !	7.1374	38.76	25.60	64.36	69.50	-5.14	peak			
6	15.7179	37.44	25.36	62.80	69.50	-6.70	peak			





30MHz-1GHz

Horizontal:



Site Polarization: Horizontal Temperature: 25
Limit: FCC Part 15C 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		55.2207	28.50	-13.05	15.45	40.00	-24.55	QP			
2		136.9391	36.80	-15.88	20.92	43.50	-22.58	QP			
3	*	210.7860	47.50	-12.32	35.18	43.50	-8.32	QP			
4		234.1684	41.80	-11.42	30.38	46.00	-15.62	QP			
5		354.1831	32.50	-7.12	25.38	46.00	-20.62	QP			
6		651.9417	27.50	-0.37	27.13	46.00	-18.87	QP			





Vertical:



Site Polarization: Vertical Temperature: 25
Limit: FCC Part 15C 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	*	32.8637	42.50	-13.51	28.99	40.00	-11.01	QP			
2		56.7916	33.80	-13.19	20.61	40.00	-19.39	QP			
3		78.9651	36.50	-17.29	19.21	40.00	-20.79	QP			
4		118.6013	33.50	-13.95	19.55	43.50	-23.95	QP			
5	2	211.5264	43.90	-12.29	31.61	43.50	-11.89	QP			
6	į	597.2233	27.50	-0.83	26.67	46.00	-19.33	QP			

Note:

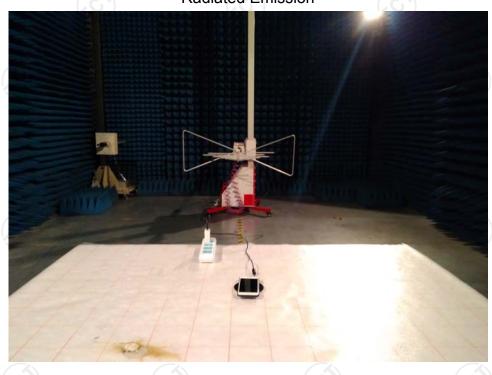
Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss - Pre-amplifier

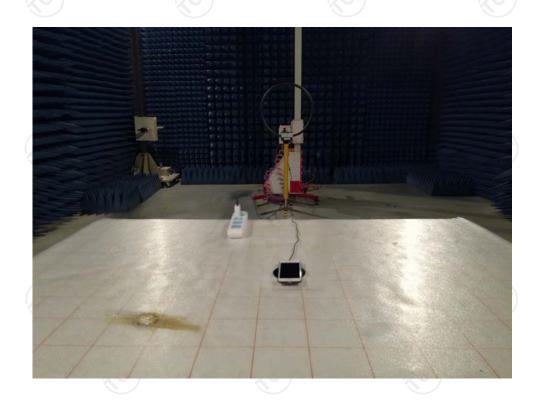




Appendix A: Photographs of Test Setup

Product: Wireless Charger Model: CDRZ25 Radiated Emission







Conducted Emission





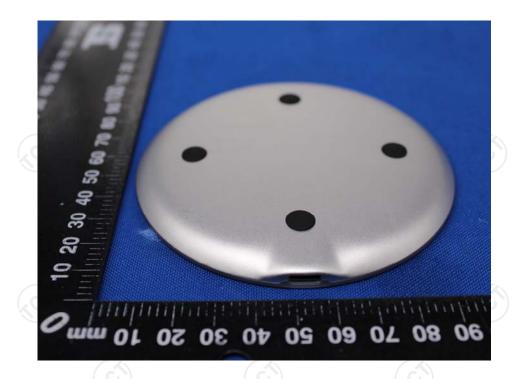
Appendix B: Photographs of EUT

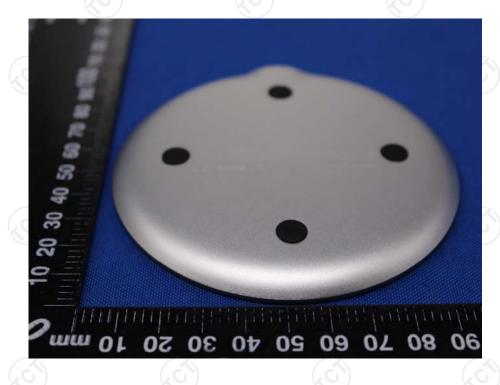
Product: Wireless Charger Model: CDRZ25 External Photos













Product: Wireless Charger Model: CDRZ25 Internal Photos

