

TESTING CENTRE TEC	TEST REPO	RT					
FCC ID:	2A646-T1156						
Test Report No::	TCT230217E019	(C)	(0)				
Date of issue::	Mar. 06, 2023						
Testing laboratory:	SHENZHEN TONGCE TEST	ING LAB					
Testing location/ address:	2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China						
Applicant's name::	Shenzhen ChuangliJiacheng	Technology Co., Ltd.					
Address:	1616X4 Building C, Huangdu Square, No.3008, Yitian Road, Huanggang Community, Futian Street, Shenzhen, China						
Manufacturer's name:	Dong guan Utopia-Originality	Technology Co., Ltd					
Address:	NO.2, moushan Road, Chan' Guangdong Province, China	an Town, Dongguan City,					
Standard(s):	FCC CFR Title 47 Part 15 Su	ibpart C					
Product Name::	Power bank						
Trade Mark:	ערטרכ	TA (A)					
Model/Type reference:	T1156						
Rating(s):	Rechargeable Li-ion Battery I	DC 3.85V					
Date of receipt of test item :	Feb. 17, 2023						
Date (s) of performance of test:	Feb. 17, 2023 ~ Mar. 06, 202	23					
Tested by (+signature):	Rleo LIU	Preo Wonger	L				
Check by (+signature):	Beryl ZHAO	Boy(TCT)					
Approved by (+signature):	Tomsin	Toms of					

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TCT通测检测
TESTING CENTRE TECHNOLOGY

Report No.: TCT230217E019

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1. General Product Information

Report No.: TCT230217E019

1.1. EUT description

Product Name:	Power bank
Model/Type reference:	T1156
Sample Number:	TCT230217E019-0101
Operation Frequency:	For Wireless Charging: 112.36KHz ~ 170.43KHz For Apple Watch Wireless Charging: 154.01KHz
Center frequency:	For Wireless Charging: 142.79KHz For Apple Watch Wireless Charging: 154.01KHz
Modulation Technology:	Load modulation
Antenna Type:	Inductive loop coil Antenna
Rating(s):	Rechargeable Li-ion Battery DC 3.85V



2. Test Result Summary

Report No.:	TCT230217E019

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. General Information

3.1. Test environment and mode

Operating Environment:			
Condition	Conducted Emission	Radiated Emission	
Temperature:	25.4 °C	24.8 °C	
Voltage:	DC 5V	DC 5V	
Humidity:	54 % RH	52 % RH	
Atmospheric Pressure:	1010 mbar	1010 mbar	
Test Mode:			
	Mode1	Mode2	
AC mode	Charging + wireless charging1(15W) + wireless charging2(2.5W)	Charging + wireless charging1(5W) + wireless charging2(2.5W) + Full load(5W)	
	Mode3	Mode4	
Internal Battery Mode	Wireless charging 1(15W) + Wireless charging 2(2.5W)	Wireless charging 1(5W) + Wireless charging 2(2.5W) + Full load(5W)	
Remark	Wireless charging 1:wireless charging for phone Wireless charging 2:wireless charging for apple watch All modes have been tested. The worst mode (Mode 2) reported for Conducted emission test and Radiated emission test		

The sample was placed 0.8m for the measurement below 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(Z axis) are shown in Test Results of the following pages.



3.2. 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.	Trade Name
Phone	SM-G9350	R28HA2ER3GT	SAMSUNG
Apple watch	1	1	I
Adapter	JD-050200	2012010907576735	JD

Note:

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.





4. Facilities and Accreditations

4.1. Facilities

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

• FCC - Registration No.: 645098

SHENZHEN TONGCE TESTING LAB

Designation Number: CN1205

The testing lab 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

SHENZHEN TONGCE TESTING LAB

CAB identifier: CN0031

The testing lab has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing.

4.2. Location

SHENZHEN TONGCE TESTING LAB

Address: 2101 & 2201, Zhenchang Factory, Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China

TEL: +86-755-27673339

4.3. 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	± 3.10 dB
2	RF power, conducted	± 0.12 dB
3	Spurious emissions, conducted	± 0.11 dB
4	All emissions, radiated(<1 GHz)	± 4.56 dB
5	All emissions, radiated(1 GHz - 18 GHz)	± 4.22 dB
6	All emissions, radiated(18 GHz- 40 GHz)	± 4.36 dB



5. Test Results and Measurement Data

5.1. Antenna requirement

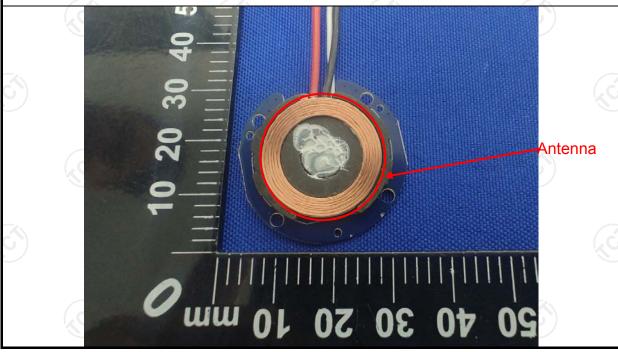
Standard requirement: FCC Part15 C Section 15.203

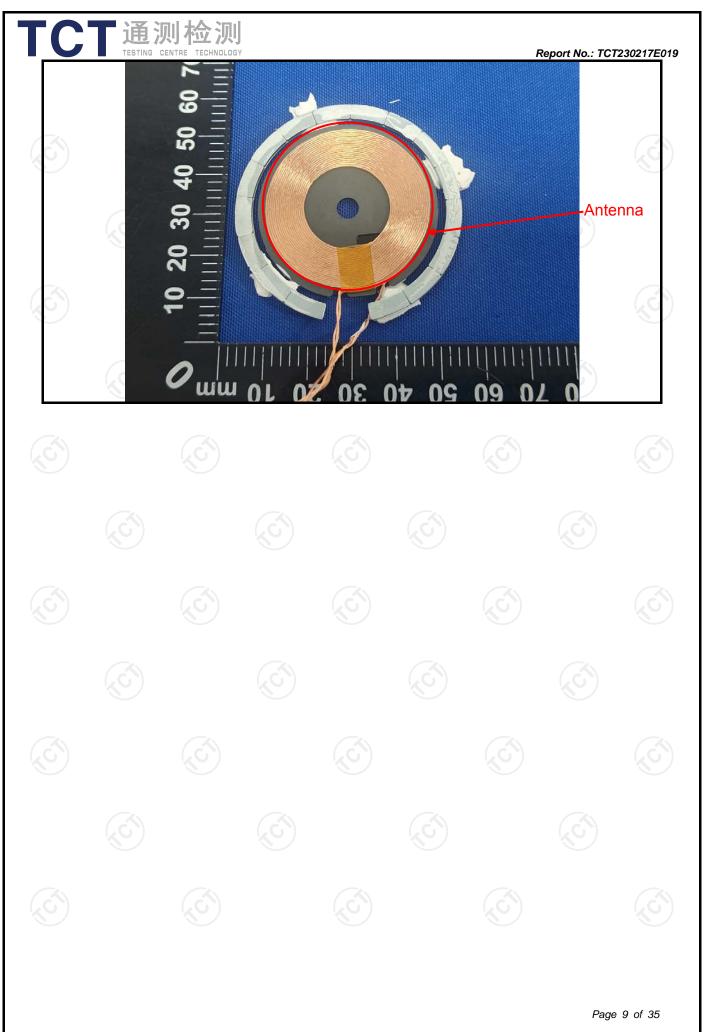
15.203 requirement:

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 antennas are inductive loop coil antenna which permanently attached.









5.2. Conducted Emission

5.2.1. Test Specification

Test Requirement:	FCC Part15 C Section	15 207	(10)					
<u> </u>								
Test Method:		ANSI C63.10:2013						
Frequency Range:	150 kHz to 30 MHz	(C)	(c)					
Receiver setup:	RBW=9 kHz, VBW=30	kHz, Sweep time	e=auto					
	Frequency range (MHz)	Limit (Quasi-peak	Limit (dBuV)					
Limits:	0.15-0.5	66 to 56*	Average 56 to 46*					
	0.5-5	56	46					
	5-30	60	50					
	Referen	nce Plane	1201					
Test Setup:	E.U.T Adapter Test table/Insulation plane Remark: E.U.T. Equipment Under Test LISN: Line Impedence Stabilization Network							
Test Mode:	AC Mode							
Test Procedure:	 The E.U.T is connected to an adapter through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to on conducted measurement. 							
	conducted incasure	ment.						



5.2.2. Test Instruments

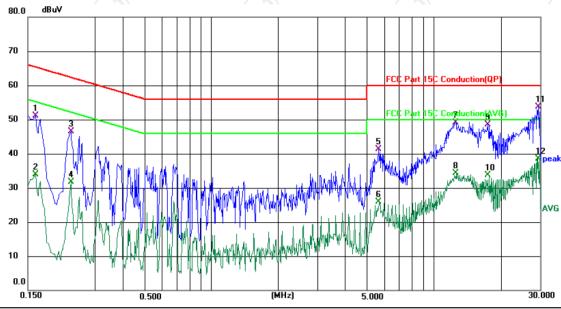
Conducted Emission Shielding Room Test Site (843)									
Equipment Manufacturer Model Serial Number Calibration D									
EMI Test Receiver	R&S	ESCI3	100898	Jul. 03, 2023					
Line Impedance Stabilisation Newtork(LISN)	Schwarzbeck	NSLK 8126	8126453	Feb. 24, 2023					
Line-5	TCT	CE-05	/	Jul. 03, 2024					
EMI Test Software	Shurple Technology	EZ-EMC	1 (6)	1					





5.2.3. Test data

Please refer to following diagram for individual Conducted Emission on Line Terminal of the power line (9 kHz to 30MHz)



Site 844 Shielding Room

Phase: L1

Temperature: 25.4 (℃)

Humidity: 54 %

Report No.: TCT230217E019

Limit: FCC Part 15C Conduction(QP)

Power:DC 5 V(Adapter Input AC 120 V/60 Hz)

				. ,					•
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1620	40.55	10.53	51.08	65.36	-14.28	QP	
2		0.1620	23.46	10.53	33.99	55.36	-21.37	AVG	
3		0.2340	36.20	10.27	46.47	62.31	-15.84	QP	
4		0.2340	21.35	10.27	31.62	52.31	-20.69	AVG	
5		5.6420	31.19	10.16	41.35	60.00	-18.65	QP	
6		5.6420	15.68	10.16	25.84	50.00	-24.16	AVG	
7		12.4619	38.94	10.26	49.20	60.00	-10.80	QP	
8		12.4619	24.08	10.26	34.34	50.00	-15.66	AVG	
9		17.5259	38.22	10.38	48.60	60.00	-11.40	QP	
10		17.5259	23.29	10.38	33.67	50.00	-16.33	AVG	
11	*	29.6020	43.05	10.58	53.63	60.00	-6.37	QP	
12		29.6020	27.93	10.58	38.51	50.00	-11.49	AVG	

Note:

Freq. = Emission frequency in MHz

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

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

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

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

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

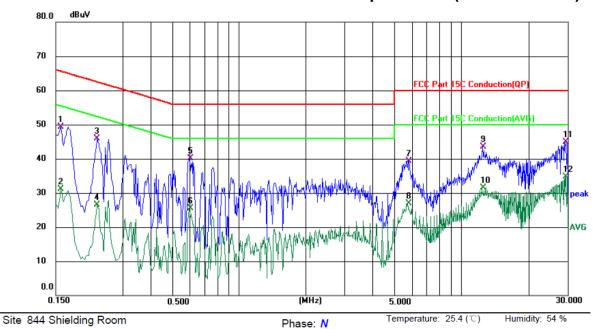
Q.P. =Quasi-Peak

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 (9 kHz to 30MHz)



Limit: FCC Part 15C Conduction(QP)

Power:DC 5 V(Adapter Input AC 120 V/60 Hz)

No. Mk	. Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
	MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	0.1580	38.90	10.45	49.35	65.57	-16.22	QP	
2	0.1580	20.71	10.45	31.16	55.57	-24.41	AVG	
3	0.2300	35.62	10.27	45.89	62.45	-16.56	QP	
4	0.2300	16.24	10.27	26.51	52.45	-25.94	AVG	
5	0.6020	29.92	10.10	40.02	56.00	-15.98	QP	
6	0.6020	15.31	10.10	25.41	46.00	-20.59	AVG	
7	5.7780	29.20	10.20	39.40	60.00	-20.60	QP	
8	5.7780	16.71	10.20	26.91	50.00	-23.09	AVG	
9	12.4940	33.23	10.36	43.59	60.00	-16.41	QP	
10	12.4940	21.06	10.36	31.42	50.00	-18.58	AVG	
11 *	29.6100	34.47	10.48	44.95	60.00	-15.05	QP	
12	29.6100	24.20	10.48	34.68	50.00	-15.32	AVG	

Note:

Freq. = Emission frequency in MHz

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

Corr. Factor (dB) = LISN 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

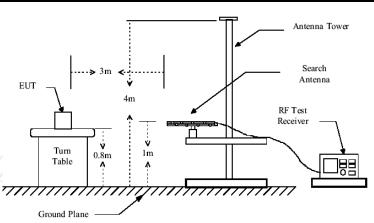
^{*} is meaning the worst frequency has been tested in the frequency range 150 kHz to 30MHz.



5.3. Radiated Spurious Emission Measurement

5.3.1. Test Specification

		Z\							
Test Requirement:	FCC Part15 C Section 15.209								
Test Method:	ANSI C63.10	0: 2013							
Frequency Range:	9 kHz to 25	GHz	<u> </u>						
Measurement Distance:	3 m								
Antenna Polarization:	Horizontal & Vertical								
Operation mode:	Refer to item	(,c							
Receiver Setup:	Frequency 9kHz- 150kHz 150kHz- 30MHz 30MHz-1GHz	Detector Quasi-peak Quasi-peak Quasi-peak	RBW 200Hz 9kHz 120KHz	VBW 1kHz 30kHz	Remark Quasi-peak Value Quasi-peak Value Quasi-peak Value				
Limit:	0.009-0.4 0.490-1.7 1.705-3 30-88 88-216 216-96 Above 9	490 705 80 80	Field Str (microvolts 2400/F(24000/F) 30 100 150 200 500	s/meter) Distance (meters) (KHz) 300 (KHz) 30 0 30 0 3 0 3 0 3 0 3 0 3 0 3 0 3					
Test setup:	For radiated	Turn table	lm	Pre -	Computer Amplifier				



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: 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

Test Procedure:

 Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

maximizes the emissions. The measurement

measurement antenna elevation shall be that which

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.

- 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.
- Use the following spectrum analyzer settings:
 Span shall wide enough to fully capture the

C		(2) S r For duty whe the tran pow	Sweep = and an ax hold; average may cycle is not the minimum to the control of the maximum to the control of the control of the maximum to the control of the maximum to the control of th	; VBW ≥RE = peak; Tra 10 Hz, who it. VBW ≥ 1 cent where over which at its maxin	BW; ace = en /T, T is the mum		
	mode: results:	PASS	o section 3	.1 for detai	IS		
					(0)		(0)





5.3.2. Test Instruments

	Radiated En	nission Test Site	e (966)	
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Due
EMI Test Receiver	R&S	ESIB7	100197	Jul. 03, 2023
Spectrum Analyzer	R&S	FSQ40	200061	Jul. 03, 2023
Pre-amplifier	SKET	LNPA_0118G- 45	SK2021012 102	Feb. 20, 2024
Pre-amplifier	SKET	LNPA_1840G- 50	SK2021092 03500	Feb. 20, 2024
Pre-amplifier	HP	8447D	2727A05017	Jul. 03, 2023
Loop antenna	Schwarzbeck	FMZB1519B	00191	Jun. 11, 2023
Broadband Antenna	Schwarzbeck	VULB9163	340	Jul. 05, 2023
Horn Antenna	Schwarzbeck	BBHA 9120D	631	Jul. 05, 2023
Horn Antenna	Schwarzbeck	BBHA 9170	00956	Feb. 24, 2024
Antenna Mast	Keleto	RE-AM	1	(E)
Coaxial cable	SKET	RC-18G-N-M	1	Feb. 24, 2024
Coaxial cable	SKET	RC_40G-K-M	1	Feb. 24, 2024
EMI Test Software	Shurple Technology	EZ-EMC		1



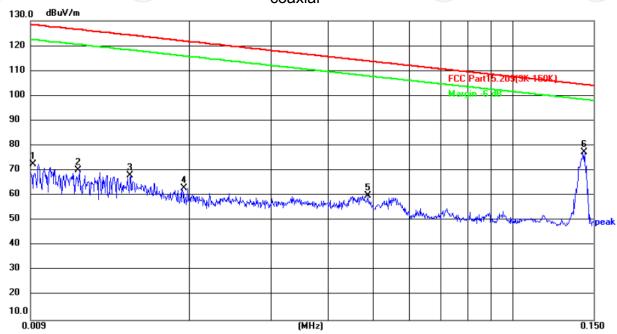
5.3.3. Test Data

Please refer to following diagram for individual

9KHz-30MHz

9KHz-150KHz:

coaxial



Site: #3 3m Anechoic Chamber Polarization: coaxial Temperature: 20.4(°C) Humidity: 40 %

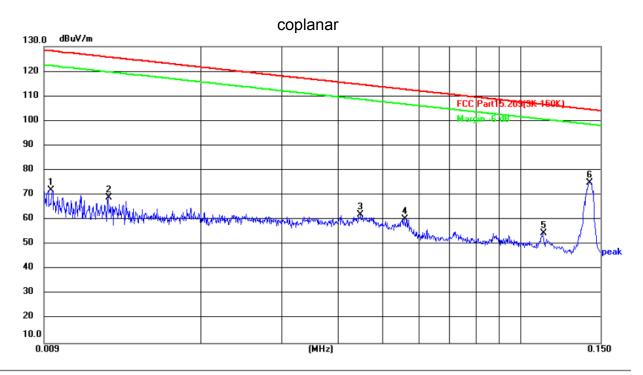
Limit: FCC Part15.209(9K-150K) Pow

Power:DC 5 V(Adapter Input AC 120 V/60 Hz)

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.0091	51.63	20.93	72.56	128.42	-55.86	peak	Р	
2	0.0114	49.42	20.71	70.13	126.47	-56.34	peak	Р	
3	0.0148	47.25	20.66	67.91	124.20	-56.29	peak	Р	
4	0.0190	42.43	20.61	63.04	122.03	-58.99	peak	Р	
5	0.0485	39.42	20.60	60.02	113.89	-53.87	peak	Р	
6 *	0.1433	56.96	20.50	77.46	104.48	-27.02	peak	Р	





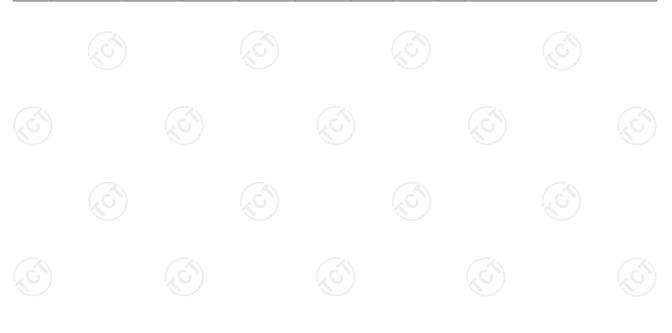


Site: #3 3m Anechoic Chamber Polarization: conplanar Temperature: 20.4(°C) Humidity: 40 %

Limit: FCC Part15.209(9K-150K)

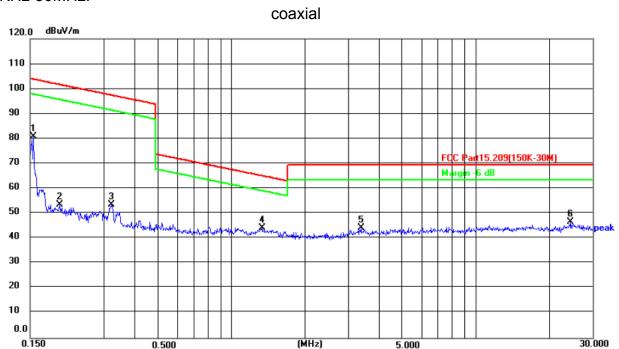
Power:DC 5 V(Adapter Input AC 120 V/60 Hz)

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.0092	50.94	20.91	71.85	128.33	-56.48	peak	Р	
2	0.0125	48.25	20.69	68.94	125.67	-56.73	peak	Р	
3	0.0446	41.37	20.56	61.93	114.62	-52.69	peak	Р	
4	0.0556	39.65	20.75	60.40	112.70	-52.30	peak	Р	
5	0.1126	33.59	21.00	54.59	106.57	-51.98	peak	Р	
6 *	0.1420	54.59	20.46	75.05	104.56	-29.51	peak	Р	





150KHz-30MHz:



Site: #3 3m Anechoic Chamber Polarization: coaxial Temperature: 20.4(°C) Humidity: 40 %

Limit: FCC Part15.209(150K-30M)

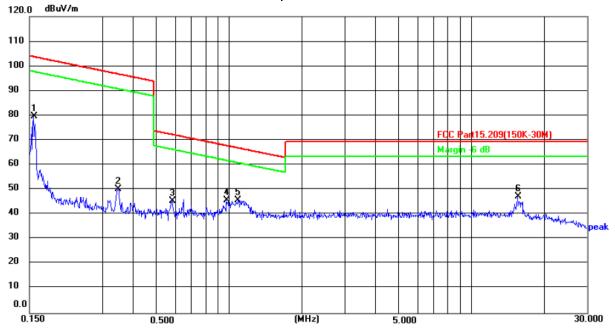
Power:DC 5 V(Adapter Input AC 120 V/60 Hz)

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.1547	60.16	20.72	80.88	103.81	-22.93	peak	Р	
2	0.1980	32.68	20.83	53.51	101.67	-48.16	peak	Р	
3	0.3240	32.53	21.12	53.65	97.39	-43.74	peak	Р	
4 *	1.3306	21.00	23.35	44.35	65.15	-20.80	peak	Р	
5	3.3902	16.73	27.54	44.27	69.50	-25.23	peak	Р	
6	24.5289	26.91	19.70	46.61	69.50	-22.89	peak	Р	





coplanar



Site: #3 3m Anechoic Chamber Polarization: conplanar Temperature: 20.4(°C) Humidity: 40 %

Limit: FCC Part15.209(150K-30M)

Power:DC 5 V(Adapter Input AC 120 V/60 Hz)

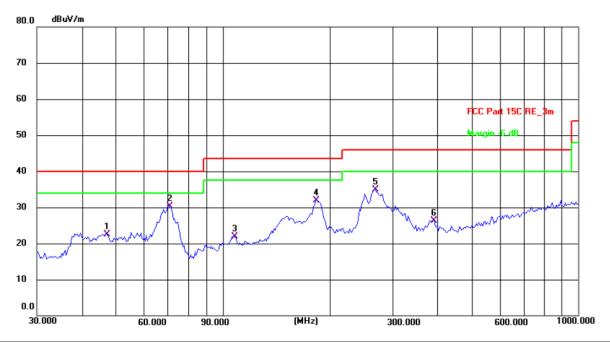
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	0.1555	59.00	20.74	79.74	103.77	-24.03	peak	Р	
2	0.3482	29.21	21.19	50.40	96.77	-46.37	peak	Р	
3	0.5837	23.87	21.72	45.59	72.28	-26.69	peak	Р	
4	0.9760	23.27	22.62	45.89	67.83	-21.94	peak	Р	
5 *	1.0938	22.99	22.84	45.83	66.84	-21.01	peak	Р	
6	15.5521	27.49	19.79	47.28	69.50	-22.22	peak	Р	





30MHz-1GHz

Horizontal:



Site: #1 3m Anechoic Chamber Polarization: Horizontal Temperature: 24.8(C) Humidity: 52 %

Limit: FCC Part 15C RE_3m

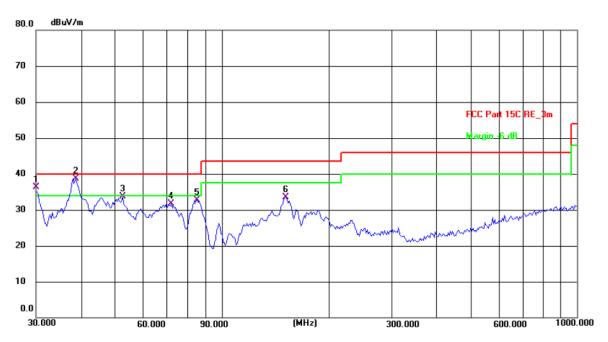
Power: DC 5 V(Adapter Input AC 120 V/60 Hz)

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	46.9948	8.60	13.95	22.55	40.00	-17.45	QP	Р	
2 *	70.5836	20.78	9.48	30.26	40.00	-9.74	QP	Р	
3	107.5101	9.98	11.88	21.86	43.50	-21.64	QP	Р	
4	183.2005	21.70	10.25	31.95	43.50	-11.55	QP	Р	
5	267.5455	21.15	13.71	34.86	46.00	-11.14	QP	Р	
6	393.4723	9.63	16.68	26.31	46.00	-19.69	QP	Р	





Vertical:



Site: #1 3m Anechoic Chamber Polarization: Vertical Temperature: 24.8(C) Humidity: 52 %

Limit: FCC Part 15C RE_3m

Power: DC 5 V(Adapter Input AC 120 V/60 Hz)

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1!	30.0000	25.37	11.00	36.37	40.00	-3.63	QP	Р	
2 *	38.8877	26.03	12.71	38.74	40.00	-1.26	QP	Р	
3	52.5752	19.64	13.97	33.61	40.00	-6.39	QP	Р	
4	72.0841	22.88	8.80	31.68	40.00	-8.32	QP	Р	
5	85.2980	23.77	8.90	32.67	40.00	-7.33	QP	Р	
6	151.5971	25.09	8.47	33.56	43.50	-9.94	QP	Р	

Note:

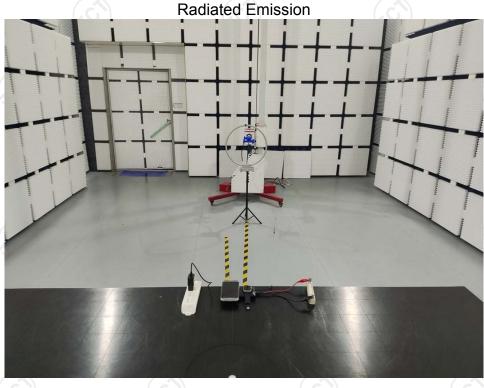
Emission Level=Peak Reading + Correction Factor; Correction Factor= Antenna Factor + Cable loss - Pre-amplifier





Appendix A: Photographs of Test Setup

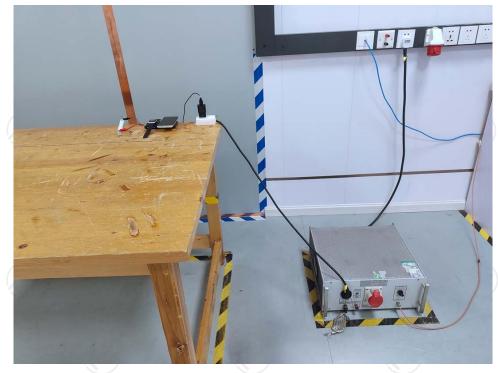
Product: Power bank Model: T1156







Conducted Emission



























































Appendix B: Photographs of EUT

Product: Power bank Model: T1156 External Photos



















Product: Power bank Model: T1156 Internal Photos







