

FCC Part 15B Test Report

Application No. : TB170916728
Applicant : USC056
Equipment Under Test (EUT)
EUT Name : Power bank
Model(s) : SP8186, T1036
Brand Name :
Receipt Date : 2017-09-08
Test Date : 2017-09-08 to 2017-09-11
Issue Date : 2017-09-11
Standards : FCC Part 15:2016 Subpart B
Conclusions : **PASS**

In the configuration tested, the EUT complied with the standards specified above

The EUT technically complies with the FCC requirements

Test/Witness Engineer :

Approved & Authorized :



This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.

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1. General Information

1.1 Client Information

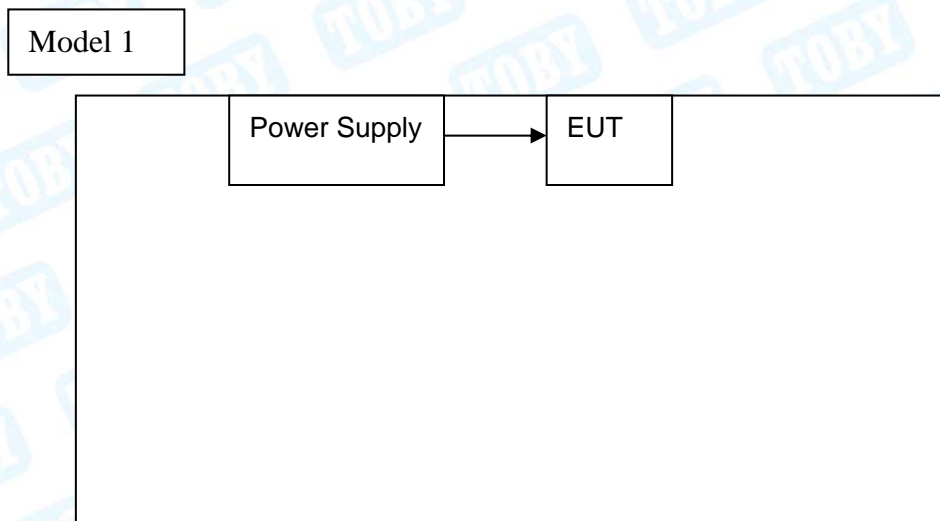
Applicant	:	USC056
Address	:	China
Manufacturer	:	USC056
Address	:	China

1.2 General Description of EUT (Equipment Under Test)

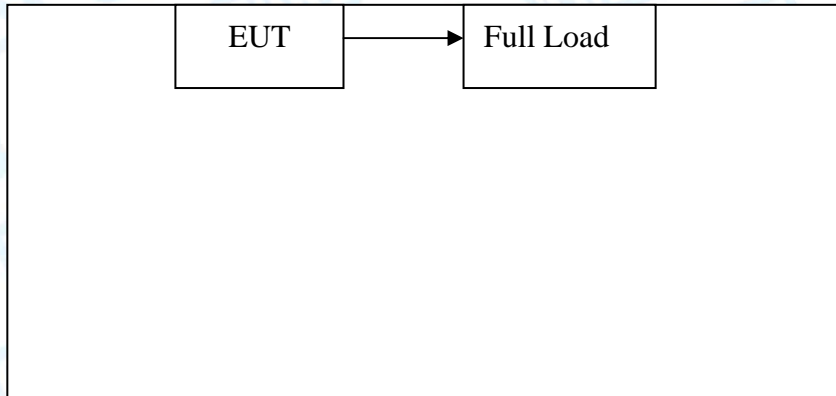
EUT Name	:	Power bank
Model(s)	:	SP8186, T1036
Brand Name	:	
Power Supply	:	Input: DC 5V/1500mA, Output: DC 5V/2100mA Capacity: 4400mAh

Remark: All above models are identical in schematic, structure and critical components except for only different appearance; therefore, FCC testing was performed with SP8186 only.

1.3 Block Diagram Showing The Configuration of System Tested



Model 2



1.4 Description of Support Units

Name	Model	S/N	Manufacturer	Used “√”
Power Supply	02D050200	---	BSY	√

1.5 Description of Test Mode

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned follow was evaluated respectively.

For Conducted Test	
Final Test Mode	Description
Mode 1	N/A
For Radiated Test	
Final Test Mode	Description
Mode 1	Charging Mode
Mode 2	Discharging Mode

1.6 Test standards

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.107, 15.109 rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.7 Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

FCC List No.: (811562)

The Laboratory is listed in the United States of American Federal Communications Commission (FCC), and the registration number is 811562.

IC Registration No.: (11950A-1)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A-1.

1.8 Equipment Used Test

Radiation Emission Test					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Due Date
Spectrum Analyzer	Agilent	E4407B	MY45106456	Jul. 20, 2017	Jul. 19, 2018
EMI Test Receiver	Rohde & Schwarz	ESCI	100010/007	Jul. 20, 2017	Jul. 19, 2018
Bilog Antenna	ETS-LINDGREN	3142E	00117537	Mar.25, 2017	Mar. 24, 2018
Bilog Antenna	ETS-LINDGREN	3142E	00117542	Mar.25, 2017	Mar. 24, 2018
Horn Antenna	ETS-LINDGREN	3117	00143207	Mar.24, 2017	Mar. 23, 2018
Horn Antenna	ETS-LINDGREN	3117	00143209	Mar.24, 2017	Mar. 23, 2018
Pre-amplifier	HP	11909A	185903	Mar.24, 2017	Mar. 23, 2018
Pre-amplifier	HP	8447B	3008A00849	Mar.25, 2017	Mar. 24, 2018
Cable	HUBER+SUHNER	100	SUCOFLEX	Mar.25, 2017	Mar. 24, 2018
Signal Generator	Rohde & Schwarz	SML03	IKW682-054	Mar.25, 2017	Mar. 24, 2018
Positioning Controller	ETS-LINDGREN	2090	N/A	N/A	N/A

2. Test Summary

Test Items	Test Requirement	Test Method	Result
Conducted Emission	FCC Part 15:2016 Subpart B	ANSI C63.4	N/A
Radiated Emission	FCC Part 15:2016 Subpart B	ANSI C63.4	Pass

Note: N/A is an abbreviation for Not Applicable.

3. Conducted Emission Test

3.1 Test Standard and Limit

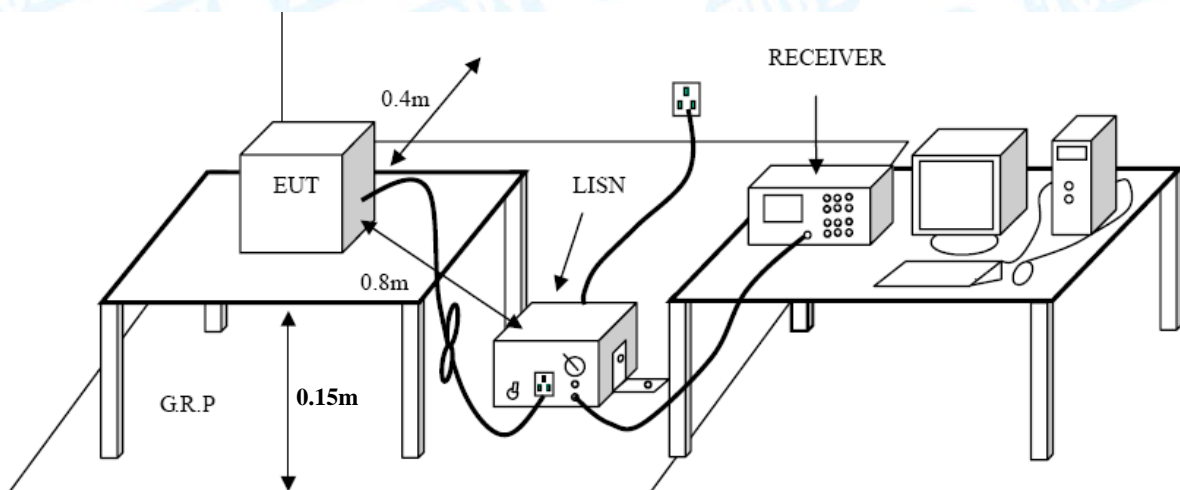
- 3.1.1 Test Standard
FCC Part 15 B: 2016
- 3.1.2 Test Limit

Conducted Emission Test Limit (Class B)

Frequency	Maximum RF Line Voltage (dB μ V)	
	Quasi-peak Level	Average Level
150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
500kHz~5MHz	56	46
5MHz~30MHz	60	50

*decreasing linearly with logarithm of the frequency

3.2 Test Setup



3.3 Test Procedure

The EUT was placed 0.15 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

The cables shall be insulated (by up to 15 cm) from the horizontal ground reference plane, and shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

LISN at least 80 cm from nearest part of EUT chassis.

The bandwidth of EMI test receiver is set at 9kHz, and the test frequency band is from 0.15MHz to 30MHz.

3.4 Test Data

This test is not applicable.

4. Radiated Emission Test

4.1 Test Standard and Limit

4.1.1 Test Standard
FCC Part 15 B: 2016

4.1.2 Test Limit

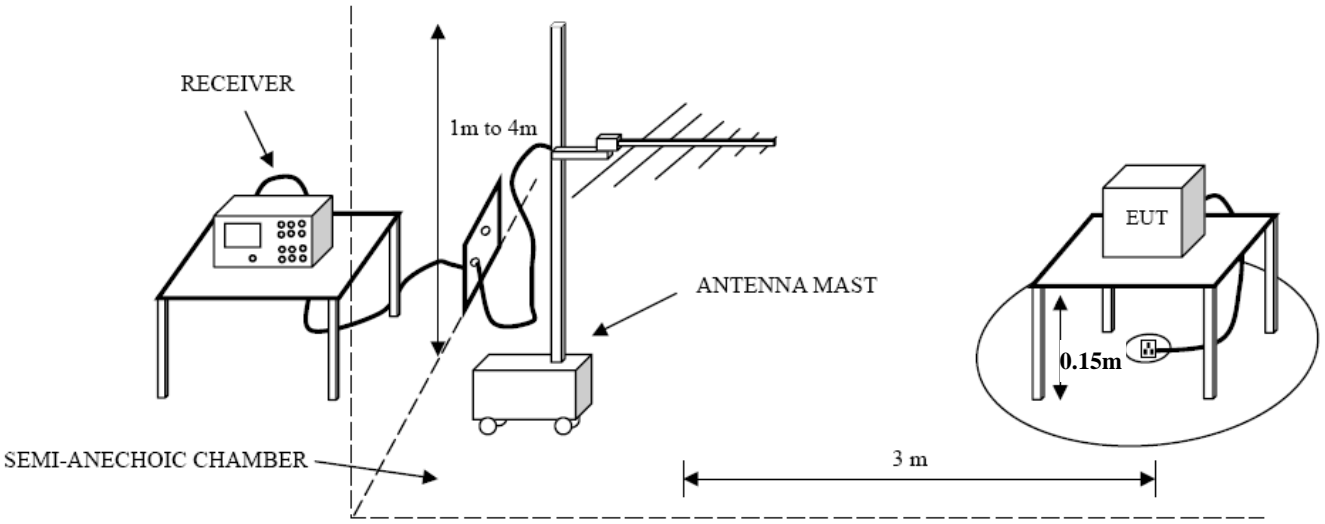
Radiated Emission Test Limit (Class B)

Frequency MHz	Field Strengths Limits dB(μ V/m)
30 ~ 88	40.0
88 ~ 216	43.5
216 ~ 960	46.0
960 ~ 1000	54.0

* The lower limit shall apply at the transition frequency.

* The test distance is 3m.

4.2 Test Setup



4.3 Test Procedure

The EUT was placed on the top of a rotating table which is 0.15 meters above the ground. EUT is set 3.0 meters away from the receiving antenna that mounted on a antenna tower. The table was rotated 360 degrees to determine the position of the highest radiation, the antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

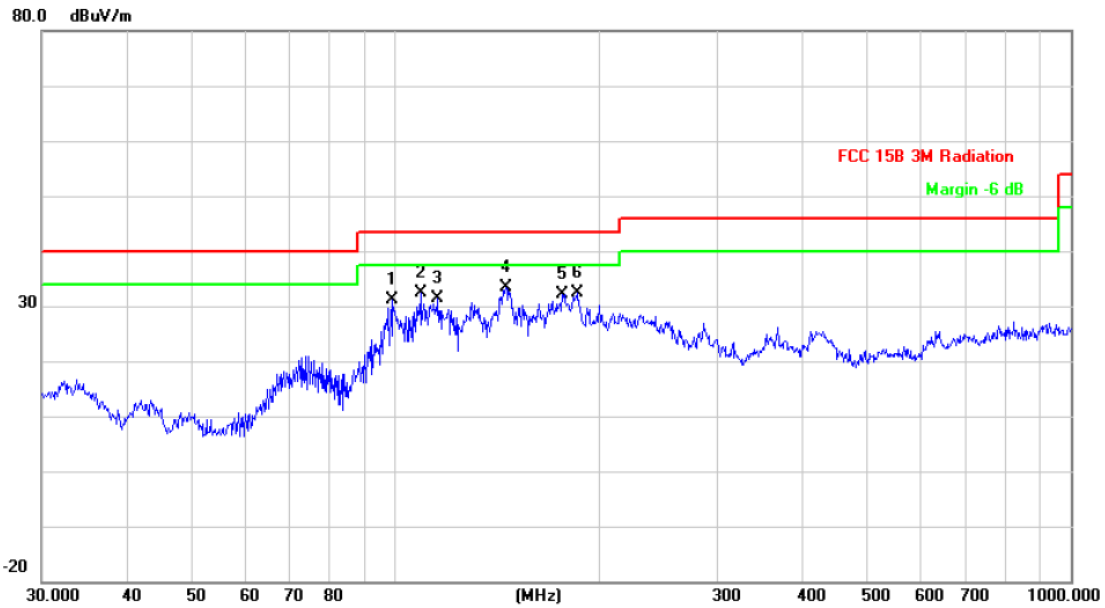
Measurements shall be made with a quasi-peak measuring receiver in the frequency range

30MHz to 1000MHz. If the Peak Mode measured value compliance with and lower than quasi-peak mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.

4.4 Test Data

Please refer to the following pages.

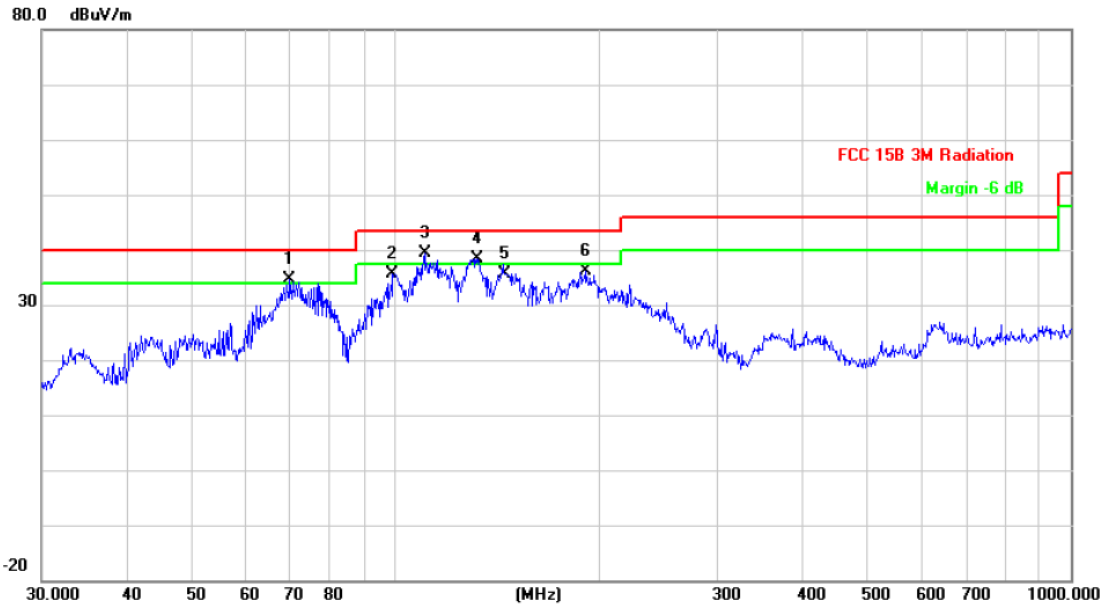
EUT:	Power bank	Model Name :	SP8186
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 5V		
Ant. Pol.	Horizontal		
Test Mode:	Mode 1		
Remark:			



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		99.1797	52.59	-21.44	31.15	43.50	-12.35	peak
2		109.0286	53.88	-21.41	32.47	43.50	-11.03	peak
3		115.7256	53.17	-21.78	31.39	43.50	-12.11	peak
4	*	145.8611	54.55	-21.07	33.48	43.50	-10.02	peak
5		176.8878	52.29	-20.22	32.07	43.50	-11.43	peak
6		185.7882	52.51	-20.18	32.33	43.50	-11.17	peak

Emission Level= Read Level+ Correct Factor

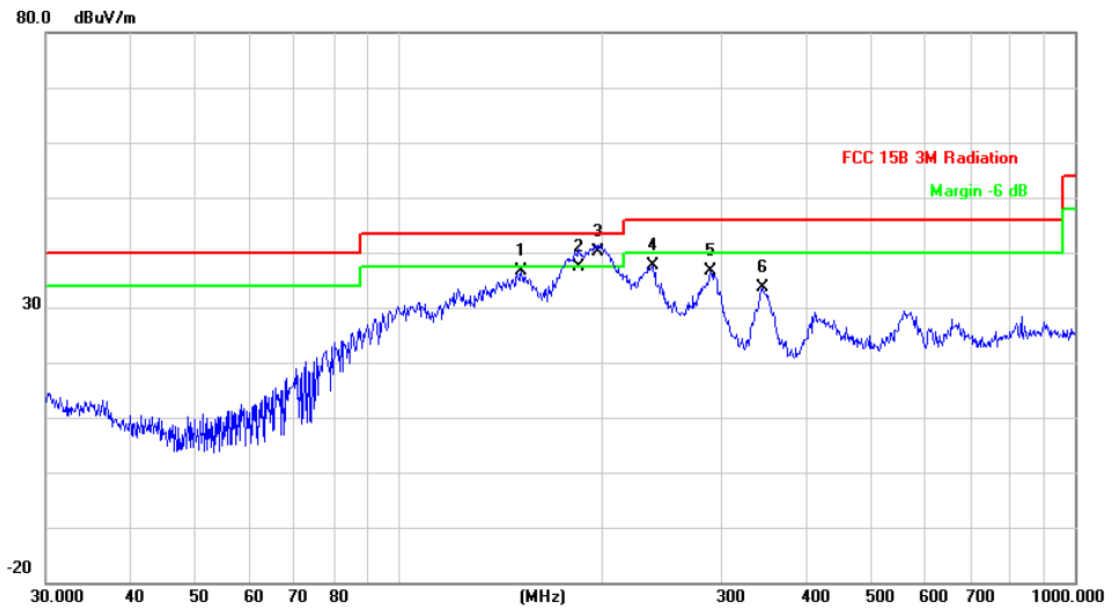
EUT:	Power bank	Model Name :	SP8186
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 5V		
Ant. Pol.	Vertical		
Test Mode:	Mode 1		
Remark:			



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1	!	69.8450	57.94	-23.28	34.66	40.00	-5.34	peak
2		99.1797	57.18	-21.44	35.74	43.50	-7.76	peak
3	*	110.5687	60.77	-21.46	39.31	43.50	-4.19	peak
4	!	132.2206	60.15	-21.69	38.46	43.50	-5.04	peak
5		145.3506	56.84	-21.11	35.73	43.50	-7.77	peak
6		191.0738	56.35	-20.26	36.09	43.50	-7.41	peak

Emission Level= Read Level+ Correct Factor

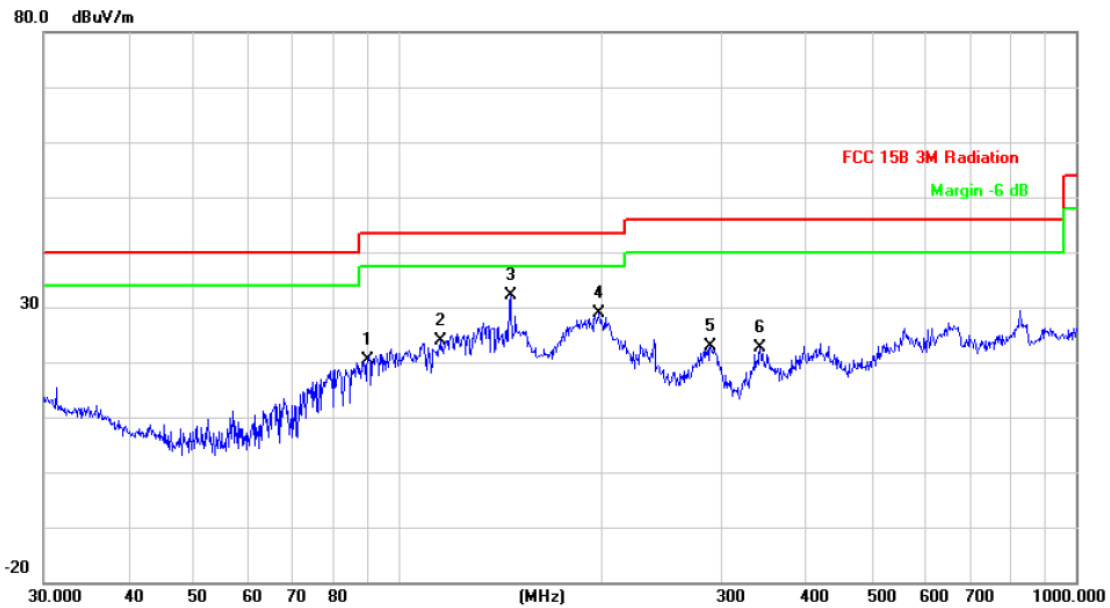
EUT:	Power bank	Model Name :	SP8186
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 5V		
Ant. Pol.	Horizontal		
Test Mode:	Mode 2		
Remark:			



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		151.5972	57.14	-20.62	36.52	43.50	-6.98	peak
2		184.4898	57.46	-20.16	37.30	43.50	-6.20	QP
3	*	196.5098	60.05	-19.95	40.10	43.50	-3.40	QP
4		237.4760	55.57	-18.03	37.54	46.00	-8.46	peak
5		289.0021	53.09	-16.52	36.57	46.00	-9.43	peak
6		345.5952	47.72	-14.08	33.64	46.00	-12.36	peak

Emission Level= Read Level+ Correct Factor

EUT:	Power bank	Model Name :	SP8186
Temperature:	25 °C	Relative Humidity:	55%
Test Voltage:	DC 5V		
Ant. Pol.	Vertical		
Test Mode:	Mode 2		
Remark:			



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB/m	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector
1		90.2205	42.62	-22.27	20.35	43.50	-23.15	peak
2		115.7256	45.59	-21.78	23.81	43.50	-19.69	peak
3	*	146.3735	53.13	-21.03	32.10	43.50	-11.40	peak
4		197.8928	48.70	-19.87	28.83	43.50	-14.67	peak
5		289.0021	39.38	-16.52	22.86	46.00	-23.14	peak
6		341.9786	36.84	-14.30	22.54	46.00	-23.46	peak

Emission Level= Read Level+ Correct Factor

5. Photographs - Constructional Details

Photo 1 Appearance of EUT



Photo 2 Appearance of EUT



Photo 3 Appearance of EUT

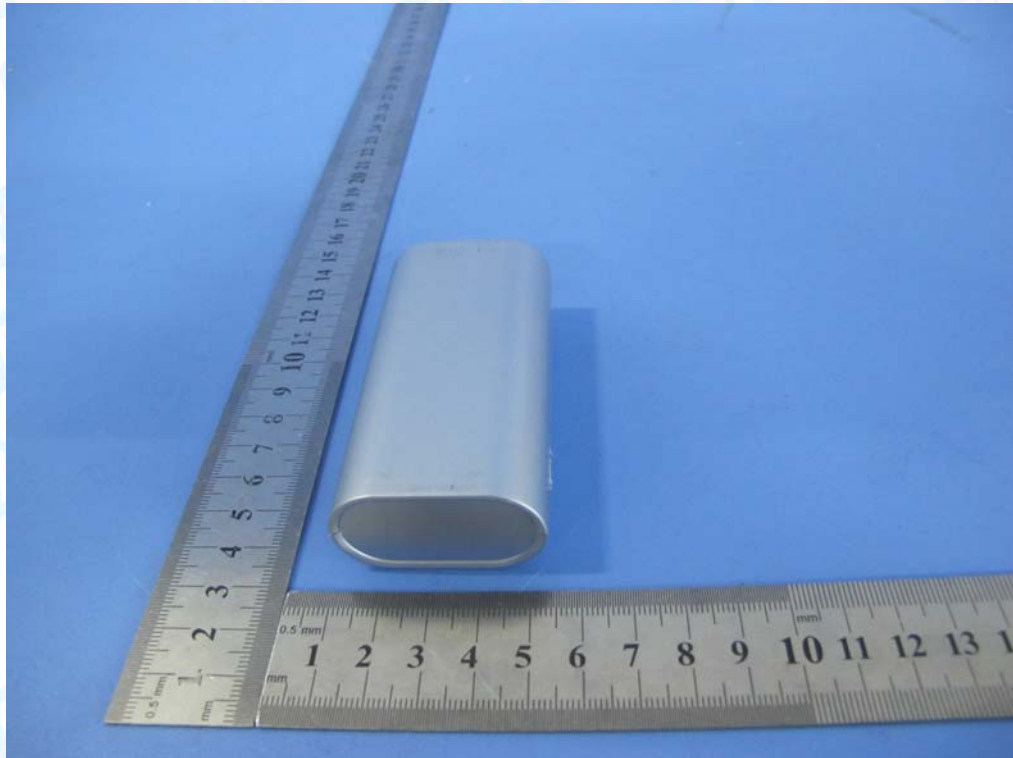


Photo 4 Internal of EUT

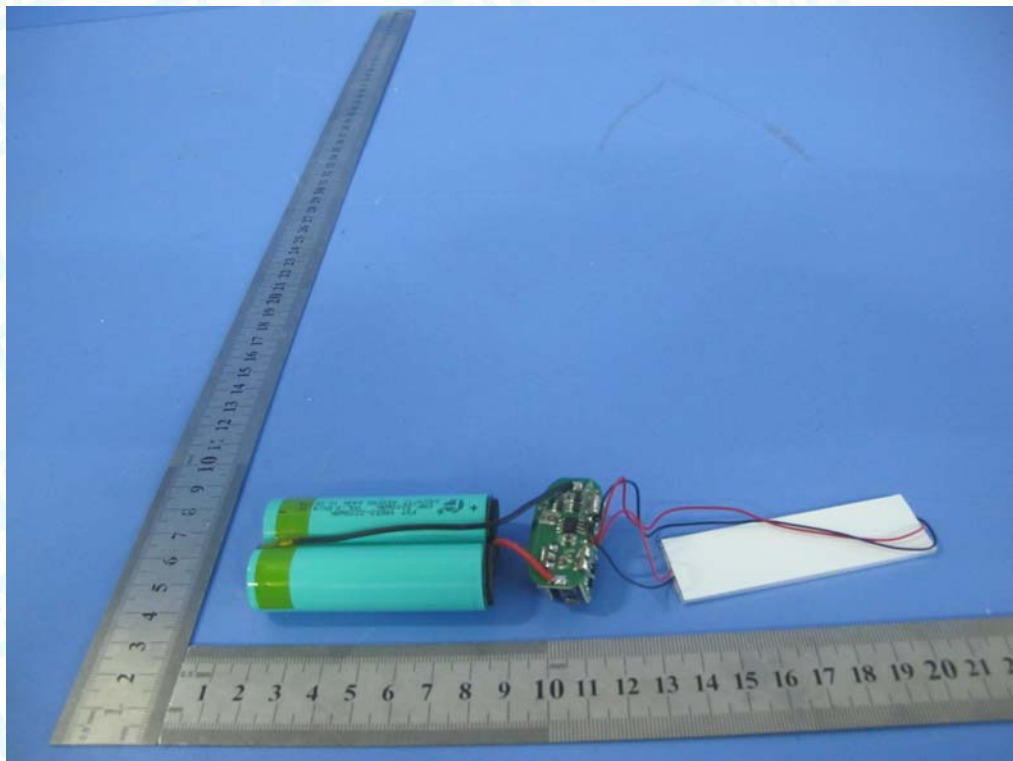


Photo 5 Appearance of PCB

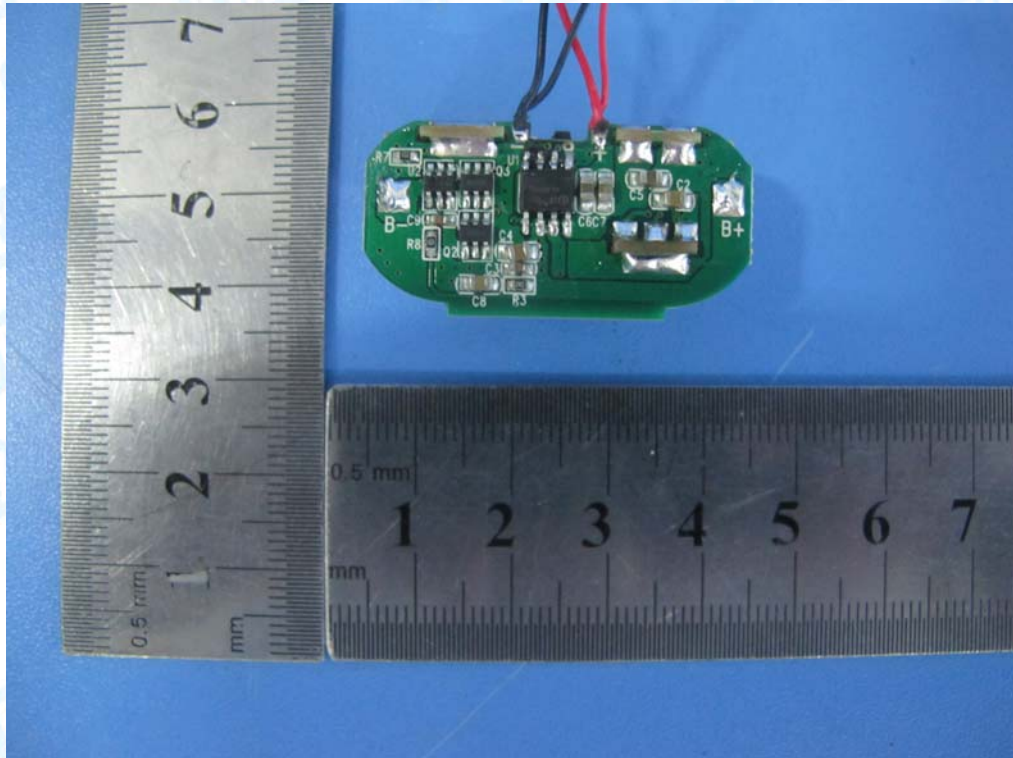
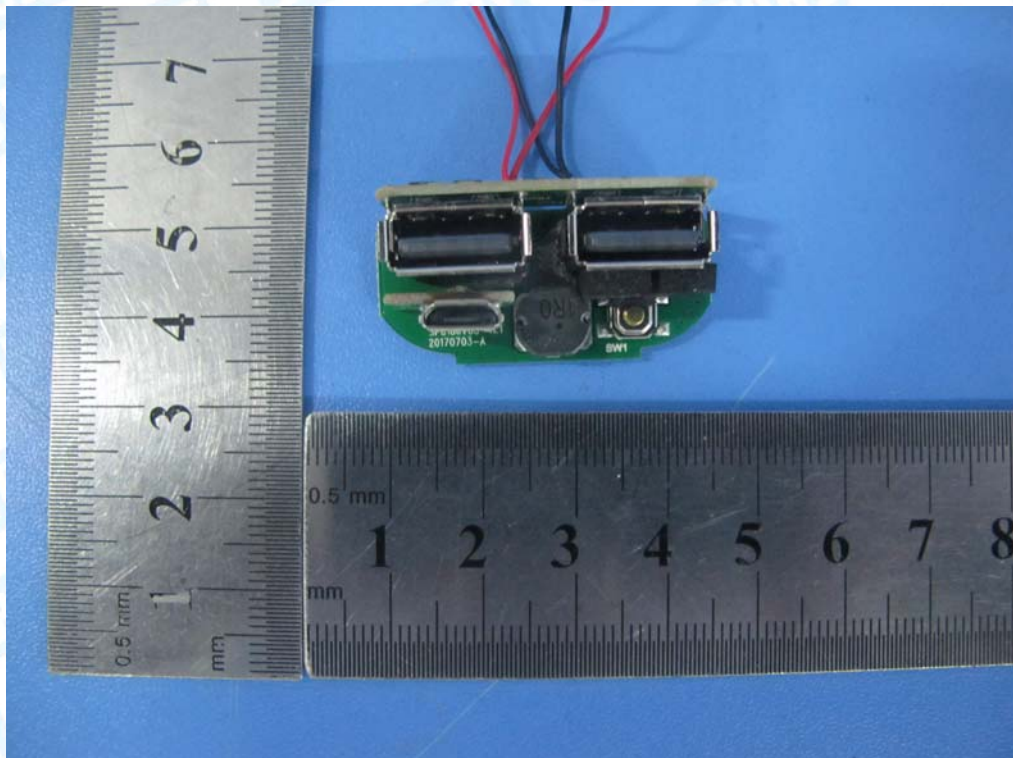


Photo 6 Appearance of PCB



6. Photographs - Test Setup

Photo 1 Radiated Emission Test Setup

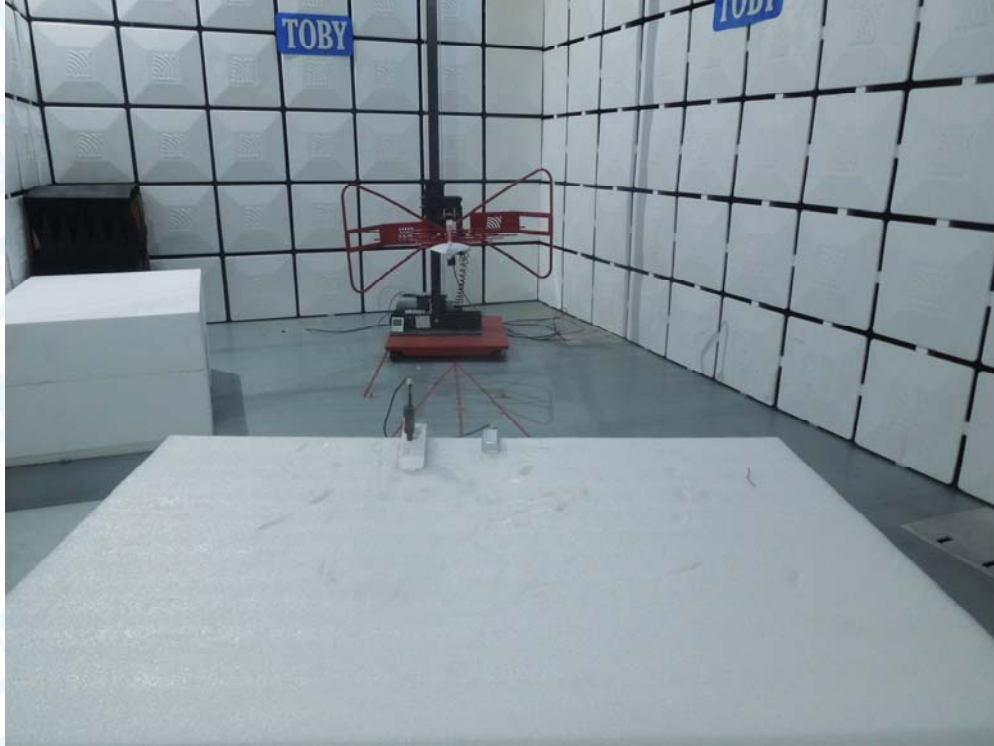
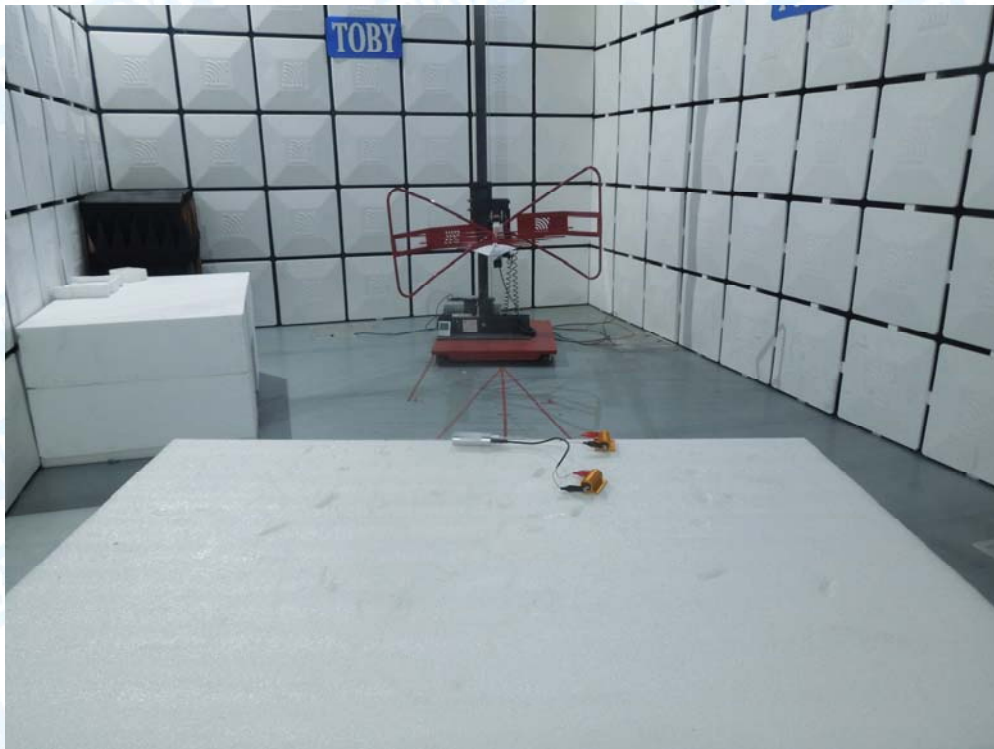


Photo 2 Radiated Emission Test Setup



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