



**SGS-CSTC Standards Technical Services Co., Ltd.  
Shenzhen Branch**

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## **TEST REPORT**

**Application No.:** SZEM1605003675BA  
**Applicant:** Flashbay Electronics  
**Address of Applicant:** Blag b & C Xi Feng Cheng IND Zone, No.2 FuYuan Road He Ping, Village, FuYuan Town, ShenZhen  
**Manufacturer:** Flashbay Electronics  
**Address of Manufacturer:** Blag b & C Xi Feng Cheng IND Zone, No.2 FuYuan Road He Ping, Village, FuYuan Town, ShenZhen  
**Factory:** Flashbay Electronics  
**Address of Factory:** Blag b & C Xi Feng Cheng IND Zone, No.2 FuYuan Road He Ping, Village, FuYuan Town, ShenZhen

**Equipment Under Test (EUT):**  
**EUT Name:** power bank  
**Model No.:** ERGO  
**Standards:** EN 55022:2010  
EN 55024:2010+A1:2015  
EN 61000-3-2:2014  
EN 61000-3-3:2013

**Date of Receipt:** 2016-05-20  
**Date of Test:** 2016-05-20 to 2016-05-24  
**Date of Issue:** 2016-05-31

<b>Test Result :</b>	<b>Pass*</b>
----------------------	--------------

\* In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.



Jack Zhang  
EMC Laboratory Manager



The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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## 2 Test Summary

Item	Standard	Method	Class	Result
Conducted Disturbance at Mains Terminals (150kHz-30MHz)	EN 55022:2010	EN 55022:2010	Class B	Pass
Radiated Disturbance (30MHz-1GHz)	EN 55022:2010	EN 55022:2010	Class B	Pass
Electrostatic Discharge	EN 55024:2010 +A1:2015	EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
Radiated Immunity (80MHz-1GHz)	EN 55024:2010 +A1:2015	EN 61000-4-3:2006 +A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod.	Pass
Electrical Fast Transients/Burst at Power Port	EN 55024:2010 +A1:2015	EN 61000-4-4:2012	1kV 5/50ns Tr/Th 5kHz Repetition Frequency	Pass
Surge at Power Port	EN 55024:2010 +A1:2015	EN 61000-4-5:2014	1.2/50µs Tr/Th 1kV Line to Line 2kV Line to Ground	Pass
Conducted Immunity at Power Port (150kHz-80MHz)	EN 55024:2010 +A1:2015	EN 61000-4-6:2014	3Vrms (emf), 80%, 1kHz Amp. Mod.	Pass
Voltage Dips and Interruptions	EN 55024:2010 +A1:2015	EN 61000-4-11:2004	0 % UT for 0.5per 0 % UT for 250per 70 % UT for 25per UT is Supply Voltage	Pass
Harmonic Current Emission	EN 61000-3-2:2014	EN 61000-3-2:2014	Class A	Pass
Voltage Fluctuations and Flicker	EN 61000-3-3:2013	EN 61000-3-3:2013	Clause 5 of EN 61000-3-3	Pass



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## 4 General Information

### 4.1 Details of E.U.T.

Power Supply:                          Input:DC5V 1A  
    Output:DC5V 1A  
    Capacity:2600mAh 9.36WH  
Cable:    USB Cable:20cm unshielded

### 4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Adapter	Apple	A1357 W010A051	REF. No.SEA0500
Cement Resister	SGS	N/A	REF. No.SEA0600

### 4.3 Standards Applicable for Testing

**Table 1 : Tests Carried Out Under EN 55022:2010**

Method	Item	Status
EN 55022:2010	Conducted Disturbance at Mains Terminals (150kHz-30MHz)	√
EN 55022:2010	Conducted Disturbance at Telecommunication Port (150kHz-30MHz)	×
EN 55022:2010	Radiated Disturbance(30MHz-1GHz)	√
EN 55022:2010	Radiated Disturbance(above 1GHz)	×

**Table 2 : Tests Carried Out Under EN 55024:2010+A1:2015**

Method	Item	Status
EN 61000-4-2:2009	Electrostatic Discharge	√
EN 61000-4-3:2006 +A1:2008+A2:2010	Radiated Immunity(80MHz-1GHz)	√
EN 61000-4-4:2012	Electrical Fast Transients/Burst at Power Port	√
EN 61000-4-4:2012	Electrical Fast Transients/Burst at Signal Port	×
EN 61000-4-5:2014	Surge at Power Port	√
EN 61000-4-5:2014	Surge at Signal Port	×
EN 61000-4-6:2014	Conducted Immunity at Power Port(150kHz-80MHz)	√
EN 61000-4-6:2014	Conducted Immunity at Signal Port(150kHz-80MHz)	×
EN 61000-4-8:2010	Power Frequency Magnetic Field	×
EN 61000-4-11:2004	Voltage Dips and Interruptions	√

**Table 3 : Tests Carried Out Under EN 61000-3-2:2014**

Method	Item	Status
EN 61000-3-2:2014	Harmonic Current Emission	√

**Table 4 : Tests Carried Out Under EN 61000-3-3:2013**

Method	Item	Status
EN 61000-3-3:2013	Voltage Fluctuations and Flicker	√

- × Indicates that the test is not applicable  
√ Indicates that the test is applicable



#### **4.4 Test Location**

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China.  
518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

#### **4.5 Test Facility**

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

**•CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

**• A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

**• VCCI**

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

**• FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

**• Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

#### **4.6 Deviation from Standards**

None

#### **4.7 Abnormalities from Standard Conditions**

None

#### **4.8 Monitoring of EUT for All Immunity Test**

Visual: Monitored the working status of the EUT

Audio: None



## 5 Equipment List

Conducted Emission						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2016-05-13	2017-05-13
2	LISN	Rohde & Schwarz	ENV216	SEM007-01	2015-10-09	2016-10-09
3	LISN	ETS-LINDGREN	3816/2	SEM007-02	2016-04-25	2017-04-25
4	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T8-02	EMC0120	2015-08-30	2016-08-30
5	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T4-02	EMC0121	2015-08-30	2016-08-30
6	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLISN-T2-02	EMC0122	2015-08-30	2016-08-30
7	EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2016-04-25	2017-04-25

RE in Chamber						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2015-08-01	2016-08-01
2	EMI Test Receiver (9k-3GHz)	Rohde & Schwarz	ESCI	SEM004-01	2016-04-25	2017-04-25
3	Trilog-Broadband Antenna(30M-1GHz)	Schwarzbeck	VULB9168	SEM003-17	2016-01-26	2017-01-26
4	Pre-amplifier	Sonoma Instrument Co	310N	SEM005-03	2016-04-25	2017-04-25
5	Loop Antenna	ETS-Lindgren	6502	SEM003-08	2015-08-14	2016-08-14

ESD						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	ESD Simulator	SCHAFFNER	NSG 438	SEM019-01	2016-03-16	2017-03-16
2	ESD Ground Plane	SGS(3m*3m)	N/A	SEN006-01	N/A	N/A





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<b>Radiated Immunity</b>						
<b>Item</b>	<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Inventory No.</b>	<b>Cal. date (yyyy-mm-dd)</b>	<b>Cal.Due date (yyyy-mm-dd)</b>
1	Fully-Anechoic Chamber 2	Chang Zhou Zhong Shuo	N/A	SEM001-05	2014-06-10	2017-06-10
2	Power Sensor	Rohde & Schwarz	NRP-Z91	SEM009-08	2016-04-25	2017-04-25
3	Power Sensor	Rohde & Schwarz	NRP-Z91	SEM009-09	2016-04-25	2017-04-25
4	Log-periodic Antenna (0.07-3GMHz)	Schwarzbeck	VUSLP9111 E	SEM003-17	N/A	N/A
5	Signal Generator	Rohde & Schwarz	SMB100A	SEM006-11	2016-04-25	2017-04-25
6	Broadband Amplifier (80MHz-1GHz)	Rohde & Schwarz	BBA150- BC250	SEM005-12	2015-10-31	2016-10-31
7	Broadband Amplifier (800MHz-3GHz)	Rohde & Schwarz	BBA150- D110	SEM005-13	2015-10-31	2016-10-31
8	Open Switch and Control Unit	Rohde & Schwarz	OSP130	SEN007-01	2015-10-31	2016-10-31
9	Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	SEM005-13	2015-10-23	2016-10-23
10	Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2016-04-25	2017-04-25
11	Audio Analyzer	Rohde & Schwarz	UPV	SEM008-03	2015-10-09	2016-10-09
12	Conditioning Amplifier	Brüel & Kjaer	2690-OS2	SEM005-10	2016-04-25	2017-04-25

<b>EFT, Surge, Voltage dips and Interruption, Power-frequency Magnetic Field</b>						
<b>Item</b>	<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Inventory No.</b>	<b>Cal. date (yyyy-mm-dd)</b>	<b>Cal.Due date (yyyy-mm-dd)</b>
1	EMC Immunity Test System	Thermo Electron	EMC Pro Plus	SEM018-01	2015-10-09	2016-10-09
2	Pro Plus Capacitive Clamp	Thermo Electron	N/A	SEM013-02	N/A	N/A
3	Magnetic Field Immunity Loop	FCC	F-1000-4- 8/9/10-L-1M	SEM003-16	2015-10-09	2016-10-09
4	High speed signal Surge CDN	EMC Partner	CDN-UTP	EMC2060	2016-05-13	2017-05-13



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<b>Conducted Immunity</b>						
<b>Item</b>	<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Inventory No.</b>	<b>Cal. date (yyyy-mm-dd)</b>	<b>Cal.Due date (yyyy-mm-dd)</b>
1	RF-Generator	SCHAFFNER	NSG 2070	SEM006-01	2015-10-09	2016-10-09
2	Coupling/Decoupling Network	SCHAFFNER	CDN M016	SEM007-03	2015-10-09	2016-10-09
3	EM Clamp	SCHAFFNER	KEMZ 801	SEM013-01	2015-10-09	2016-10-09

<b>Voltage Fluctuations and Flicker</b>						
<b>Item</b>	<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Inventory No.</b>	<b>Cal. date (yyyy-mm-dd)</b>	<b>Cal.Due date (yyyy-mm-dd)</b>
1	AC Power Source	California Instruments	5001ix	SEM016-02	2016-04-25	2017-04-25
2	Power Analyzer	California Instruments	PACS-1	SEM016-01	2016-04-25	2017-04-25

<b>General used equipment</b>						
<b>Item</b>	<b>Test Equipment</b>	<b>Manufacturer</b>	<b>Model No.</b>	<b>Inventory No.</b>	<b>Cal. date (yyyy-mm-dd)</b>	<b>Cal.Due date (yyyy-mm-dd)</b>
1	Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2015-10-12	2016-10-12
2	Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2015-10-12	2016-10-12
3	Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2015-10-12	2016-10-12
4	Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2016-04-25	2017-04-25

## 6 Emission Test Results

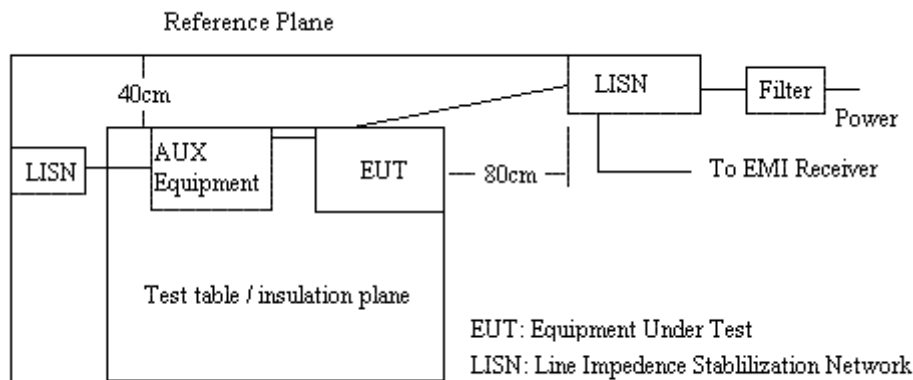
### 6.1 Conducted Disturbance at Mains Terminals(150kHz-30MHz)

Test Requirement:	EN 55022:2010
Test Method:	EN 55022:2010
Frequency Range:	150kHz to 30MHz
Limit:	
0.15M-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5M-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5M-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

#### 6.1.1 E.U.T. Operation

Operating Environment:					
Temperature:	25.0 °C	Humidity:	57 % RH	Atmospheric Pressure:	1015 mbar
Test mode:	a:Charge mode,keep EUT being charged.				

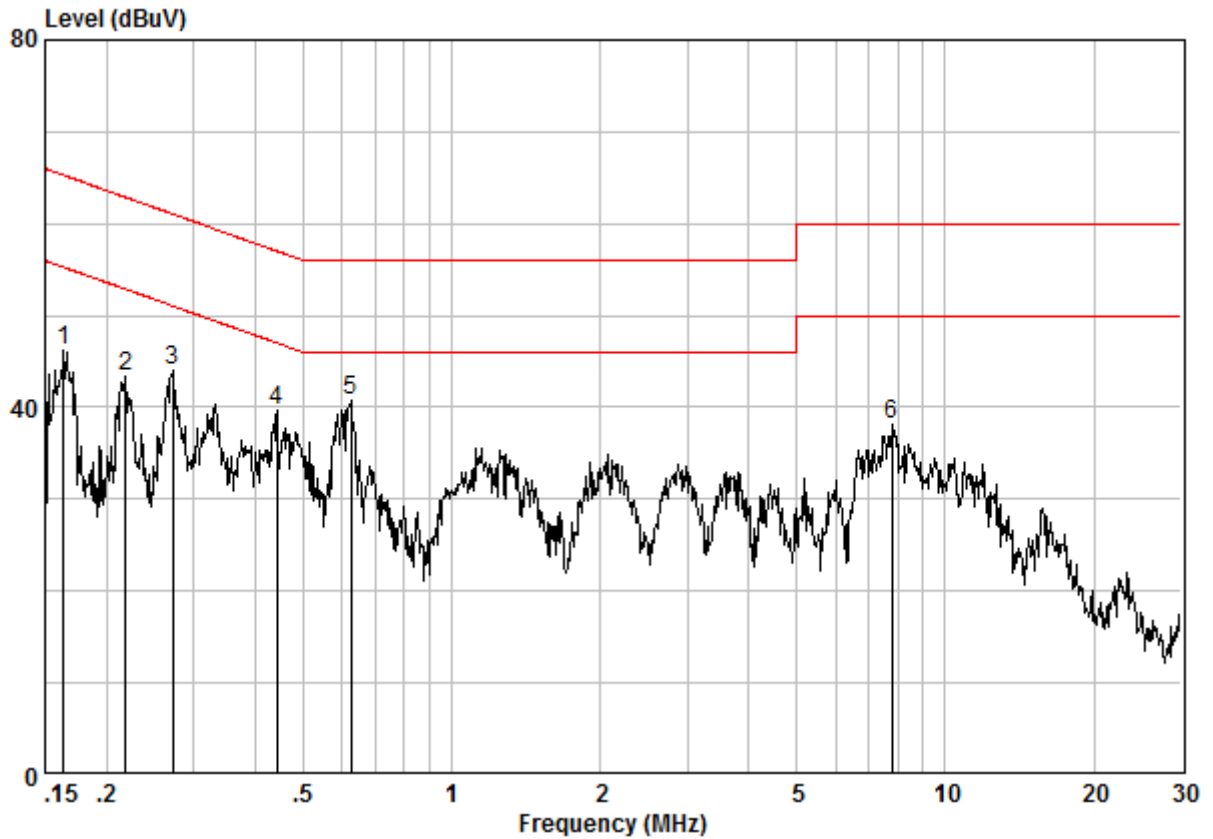
#### 6.1.2 Test Setup



#### 6.1.3 Measurement Data

An initial pre-scan was performed with peak detector. Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

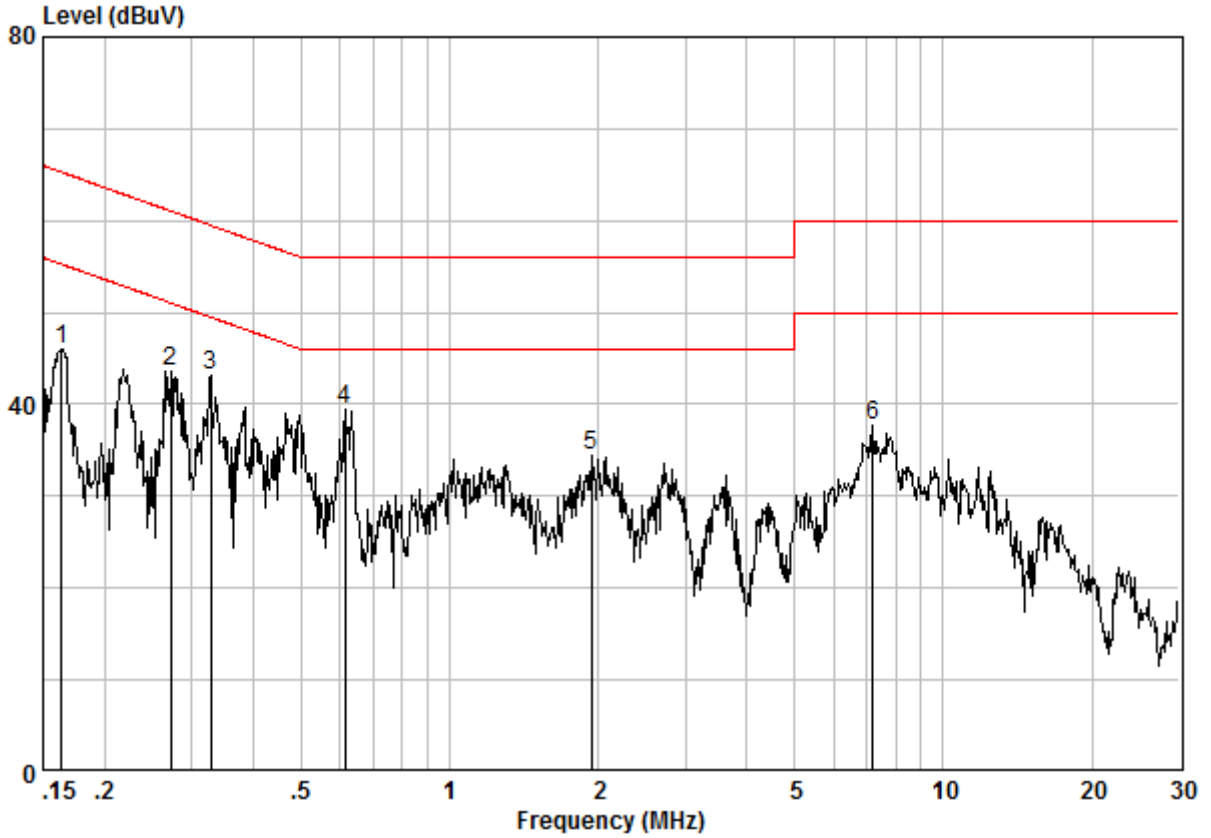
Mode:a;Line:Live Line



Site : Shielding Room  
 Condition : CE LINE  
 Job No. : 3675BA  
 Mode : a

	Freq	Cable Loss	LISN Factor	Read Level	Limit Level	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dB	
1 @	0.16327	0.02	9.60	36.52	46.14	55.30	-9.16 Peak
2 @	0.21851	0.02	9.60	33.74	43.36	52.88	-9.52 Peak
3 @	0.27152	0.01	9.60	34.36	43.97	51.07	-7.10 Peak
4 @	0.44208	0.01	9.60	30.09	39.70	47.02	-7.32 Peak
5 @	0.62383	0.02	9.61	31.20	40.82	46.00	-5.18 Peak
6 @	7.810	0.01	9.69	28.43	38.13	50.00	-11.87 Peak

Mode:a;Line:Neutral Line



Site : Shielding Room  
 Condition : CE NEUTRAL  
 Job No. : 3675BA  
 Mode : a

	Freq	Cable Loss	LISN Factor	Read Level	Limit Level	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dB	
1 @	0.16327	0.02	9.61	36.43	46.06	55.30	-9.24 Peak
2 @	0.27152	0.01	9.61	33.97	43.60	51.07	-7.47 Peak
3 @	0.32858	0.01	9.62	33.43	43.06	49.49	-6.43 Peak
4 @	0.61400	0.02	9.63	29.89	39.54	46.00	-6.46 Peak
5 @	1.939	0.02	9.66	24.77	34.45	46.00	-11.55 Peak
6 @	7.213	0.01	9.74	27.87	37.62	50.00	-12.38 Peak



**6.2 Radiated Disturbance(30MHz-1GHz)**

Test Requirement: EN 55022:2010  
 Test Method: EN 55022:2010  
 Frequency Range: 30MHz to 1GHz  
 Limit:  
 30MHz-230MHz 30 dB(μV/m) quasi-peak  
 230MHz-1GHz 37 dB(μV/m) quasi-peak  
 Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

**6.2.1 E.U.T. Operation**

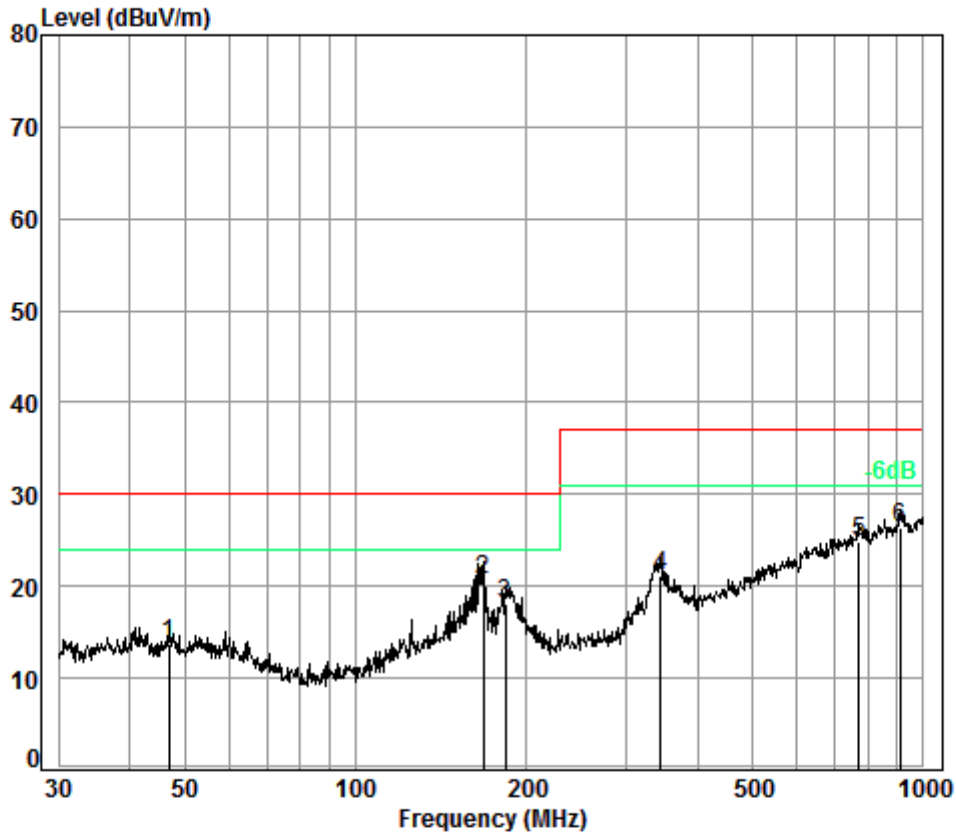
Operating Environment:						
Temperature:	25.0 °C	Humidity:	50 % RH	Atmospheric Pressure:	1015	mbar
Pretest these mode to find the worst case:	a:Charge mode,keep EUT being charged. b: Discharge mode,keep EUT discharging.					
The worst case for final test:	b: Discharge mode,keep EUT discharging.					

**6.2.2 Measurement Data**

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.



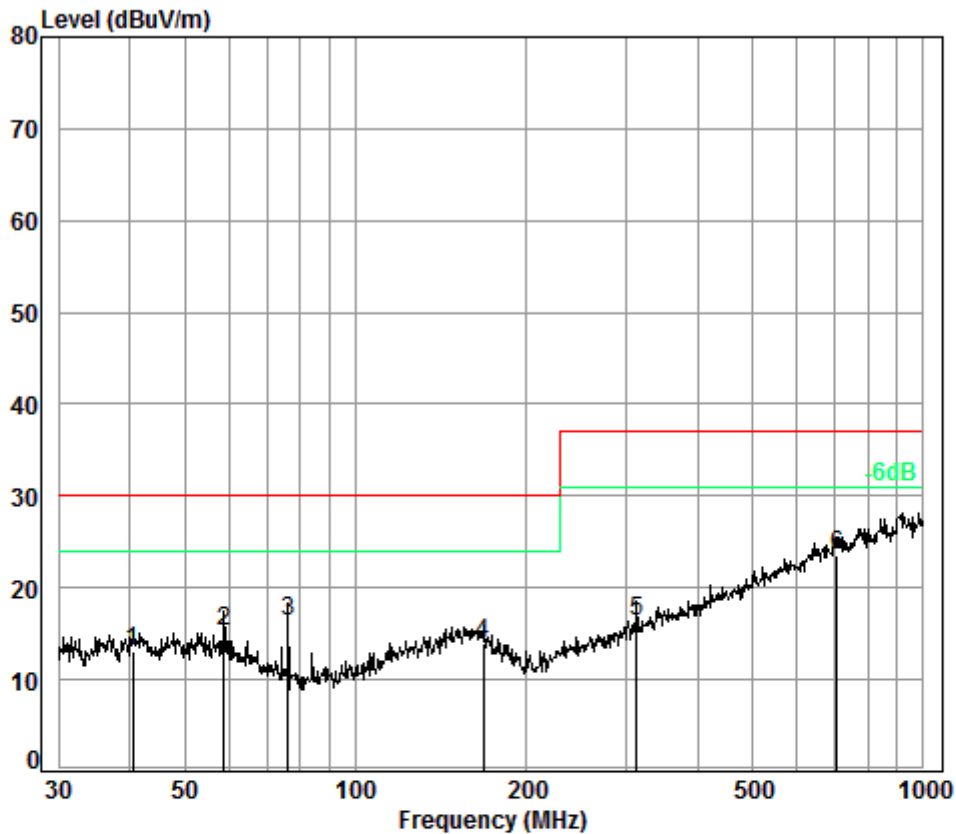
Mode:b;Polarization:Horizontal



Condition: 10m Horizontal  
Job No. : 3675BA  
Test Mode: b

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	46.99	6.84	12.85	33.00	27.07	13.76	30.00	-16.24
2 pp	167.82	7.50	12.63	32.73	33.32	20.72	30.00	-9.28
3	183.84	7.52	10.48	32.71	32.78	18.07	30.00	-11.93
4	344.39	8.22	13.74	32.60	31.85	21.21	37.00	-15.79
5	771.45	9.23	21.02	32.60	27.21	24.86	37.00	-12.14
6	909.67	9.50	22.35	32.50	27.04	26.39	37.00	-10.61

Mode:b;Polarization:Vertical



Condition: 10m Vertical

Job No. : 3675BA

Test Mode: b

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Limit Level	Limit Line	Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	40.56	6.80	13.27	32.99	26.07	13.15	30.00	-16.85
2	58.61	7.00	12.10	32.95	29.20	15.35	30.00	-14.65
3	76.24	7.03	9.09	32.88	33.07	16.31	30.00	-13.69
4	167.82	7.50	12.63	32.73	26.48	13.88	30.00	-16.12
5	313.28	8.08	13.04	32.60	27.93	16.45	37.00	-20.55
6 pp	704.23	9.16	20.17	32.60	26.86	23.59	37.00	-13.41





### **6.3 Harmonic Current Emission**

Test Requirement: EN 61000-3-2:2014  
Test Method: EN 61000-3-2:2014  
Frequency Range: 100Hz to 2kHz

There is no need for Harmonics test to be performed on this product (rated power is less than 75W) in accordance with EN 61000-3-2.

For further details, please refer to Clause 7 of EN 61000-3-2 which states:

"For the following categories of equipment, limits are not specified in this standard.- equipment with a rated power of 75W or less, other than lighting equipment."



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### 6.4 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-3-3:2013

Test Method: EN 61000-3-3:2013

#### 6.4.1 E.U.T. Operation

Operating Environment:								
Temperature:	25.0	°C	Humidity:	50	% RH	Atmospheric Pressure:	1015	mbar
Test mode:	a:Charge mode,keep EUT being charged.							

#### 6.4.2 Measurement Data



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Shenzhen Branch**

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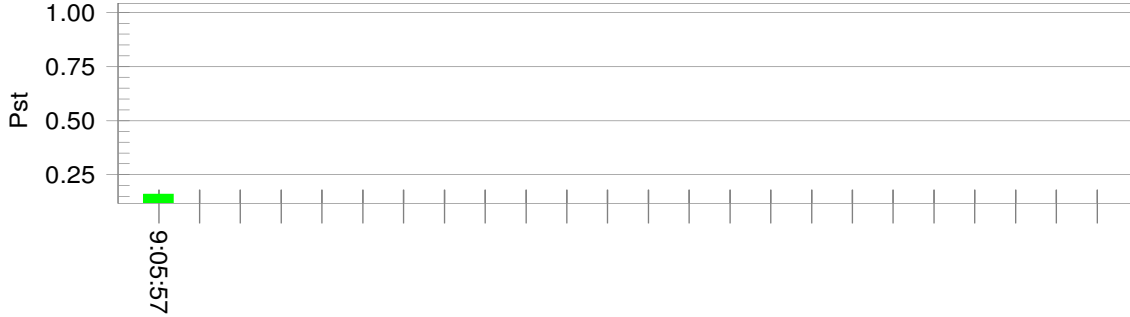
Mode:a

**Test Result: Pass**

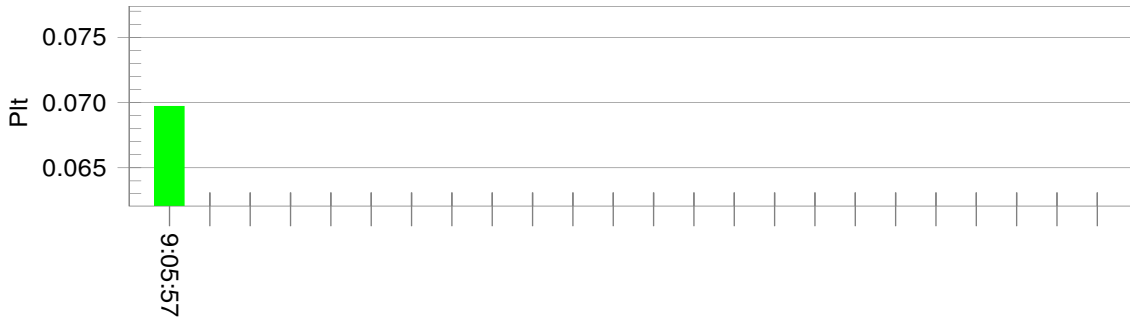
**Status: Test Completed**

**Pst<sub>i</sub> and limit line**

**European Limits**



**Plt and limit line**



**Parameter values recorded during the test:**

<b>Vrms at the end of test (Volt):</b>	<b>230.13</b>		
<b>Highest dt (%):</b>	<b>0.00</b>	<b>Test limit (%):</b>	<b>3.30 Pass</b>
<b>Time(mS) &gt; dt:</b>	<b>0.0</b>	<b>Test limit (mS):</b>	<b>500.0 Pass</b>
<b>Highest dc (%):</b>	<b>0.00</b>	<b>Test limit (%):</b>	<b>3.30 Pass</b>
<b>Highest dmax (%):</b>	<b>0.00</b>	<b>Test limit (%):</b>	<b>4.00 Pass</b>
<b>Highest Pst (10 min. period):</b>	<b>0.160</b>	<b>Test limit:</b>	<b>1.000 Pass</b>

## **7 Immunity Test Results**

### **7.1 Performance Criteria Description in EN 55024:2010+A1:2015**

- Criterion A** The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
- Criterion B** After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance.  
During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test.  
If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
- Criterion C** Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.  
Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

## 7.2 Electrostatic Discharge

Test Requirement: EN 55024:2010+A1:2015  
 Test Method: EN 61000-4-2:2009  
 Performance Criterion: B  
 Discharge Impedance: 330Ω/150pF  
 Number of Discharge: Minimum of four test points (a minimum of 50 discharges at each point)  
 Discharge Mode: Single Discharge  
 Discharge Period: 1 second minimum

### 7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C      Humidity: 54 % RH      Atmospheric Pressure: 1020 mbar  
 Test mode: a: Charge mode, keep EUT being charged.  
 b: Discharge mode, keep EUT discharging.

### 7.2.2 Test Results:

Observations: Test Point:  
 1. All insulated enclosure and seams.  
 2. All accessible metal parts of the enclosure.  
 3. All side

Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	2,4,8	+	1	A
Air Discharge	2,4,8	-	1	A
Contact Discharge	4	+	2	B
Contact Discharge	4	-	2	B
Horizontal Coupling	4	+	3	A
Horizontal Coupling	4	-	3	A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A

### Results:

A: No degradation in the performance of the EUT was observed.

B: Contact Discharge (Discharge mode): The voltage fluctuate when testing on the metallic shell of USB port, but it can recover automatically.



### 7.3 Radiated Immunity(80MHz-1GHz)

Test Requirement: EN 55024:2010+A1:2015  
Test Method: EN 61000-4-3:2006+A1:2008+A2:2010  
Performance Criterion: A  
Frequency Range: 80MHz to 1GHz  
Antenna Polarisation: Vertical and Horizontal  
Modulation 1kHz,80% Amp. Mod,1% increment

#### 7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23.0 °C Humidity: 56 % RH Atmospheric Pressure: 1015 mbar

Test mode: a:Charge mode,keep EUT being charged.

b: Discharge mode,keep EUT discharging.

#### 7.3.2 Test Results:

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-1GHz	3	Front	2s	A
80MHz-1GHz	3	Back	2s	A
80MHz-1GHz	3	Left	2s	A
80MHz-1GHz	3	Right	2s	A
80MHz-1GHz	3	Top	2s	A
80MHz-1GHz	3	Underside	2s	A

#### Results:

A: No degradation in the performance of the EUT was observed.



#### 7.4 Electrical Fast Transients/Burst at Power Port

Test Requirement: EN 55024:2010+A1:2015  
Test Method: EN 61000-4-4:2012  
Performance Criterion: B  
Repetition Frequency: 5kHz  
Burst Period: 300ms  
Test Duration: 2 minute per level & polarity

##### 7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 25.0 °C      Humidity: 50 % RH      Atmospheric Pressure: 1015 mbar  
Test mode: a:Charge mode,keep EUT being charged.

##### 7.4.2 Test Results:

Test Line	Level (kV)	Polarity	Direct/Coupling	Result / Observations
AC power port	1	+	Direct	A
AC power port	1	-	Direct	A

##### Results:

A: No degradation in the performance of the EUT was observed.



### 7.5 Surge at Power Port

Test Requirement: EN 55024:2010+A1:2015  
Test Method: EN 61000-4-5:2014  
Performance Criterion: B  
Interval: 60s between each surge  
No. of surges: 5 positive, 5 negative at 0°, 90°, 180°, 270°.

#### 7.5.1 E.U.T. Operation

Operating Environment:  
Temperature: 25.0 °C      Humidity: 50 % RH      Atmospheric Pressure: 1015 mbar  
Test mode: a:Charge mode,keep EUT being charged.

#### 7.5.2 Test Results:

Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	1	+	0°	A
L-N	1	-	0°	A
L-N	1	+	90°	A
L-N	1	-	90°	A
L-N	1	+	180°	A
L-N	1	-	180°	A
L-N	1	+	270°	A
L-N	1	-	270°	A

#### Results:

A: No degradation in the performance of the EUT was observed.





## 7.6 Conducted Immunity at Power Port(150kHz-80MHz)

Test Requirement: EN 55024:2010+A1:2015  
Test Method: EN 61000-4-6:2014  
Performance Criterion: A  
Frequency Range: 0.15MHz to 80MHz  
Modulation: 80%, 1kHz Amplitude Modulation  
Step Size 1%

### 7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 25.0 °C Humidity: 50 % RH Atmospheric Pressure: 1015 mbar  
Test mode: a:Charge mode,keep EUT being charged.

### 7.6.2 Test Results:

Cable port	Level (Vrms)	Direct/Coupling	Dwell time	Result / Observations
AC power port	3	Direct	2s	A

#### Results:

A: No degradation in the performance of the EUT was observed.



## 7.7 Voltage Dips and Interruptions

Test Requirement: EN 55024:2010+A1:2015  
Test Method: EN 61000-4-11:2004  
Performance Criterion: 0% of UT (Supply Voltage) for 0.5 Periods:B; 0% of UT for 250 Periods:C;  
70 % of UT for 25 Periods:C  
No. of Dips / Interruptions: 3 per Level  
Time between dropout 10s

### 7.7.1 E.U.T. Operation

Operating Environment:  
Temperature: 25.0 °C Humidity: 50 % RH Atmospheric Pressure: 1015 mbar  
Test mode: a:Charge mode,keep EUT being charged.

### 7.7.2 Test Results:

Level % UT	Phase (deg)	Duration	No. of Dips / Interruptions	Result / Observations
0	0°	0.5 Periods	3	A
0	180°	0.5 Periods	3	A
0	0°	250 Periods	3	C
0	180°	250 Periods	3	C
70	0°	25 Periods	3	A
70	180°	25 Periods	3	A

#### Results:

A: No degradation in the performance of the EUT was observed.

C: The EUT is off during the test, it can be recovered by user after the test.

## 8 Photographs

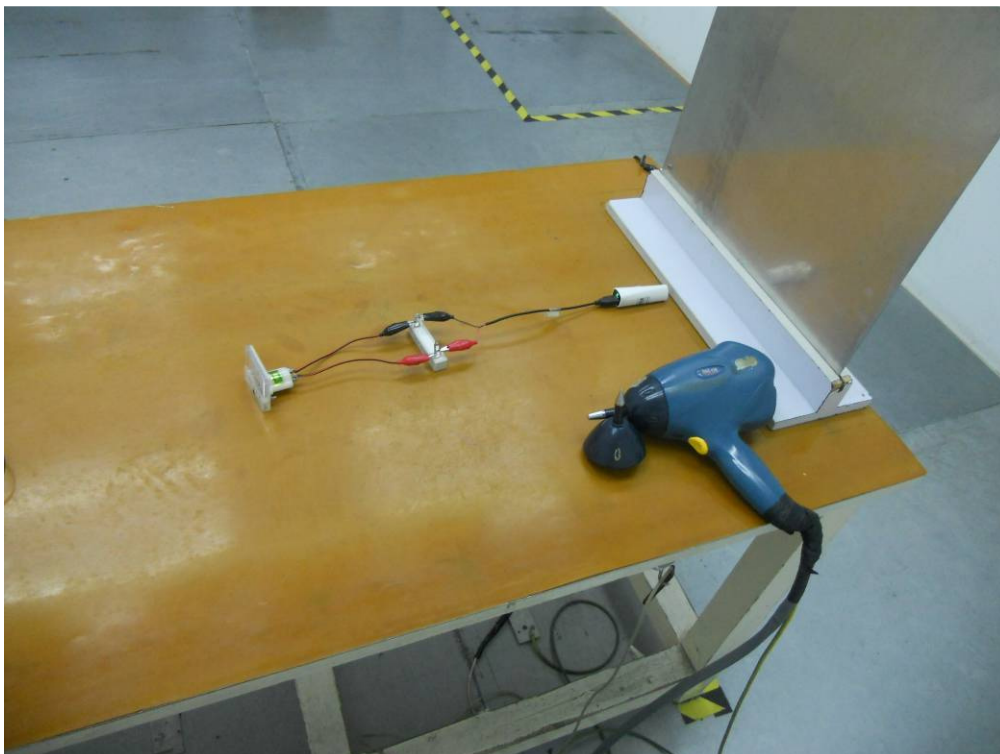
### 8.1 Conducted Disturbance at Mains Terminals(150kHz-30MHz) Test Setup



### 8.2 Radiated Disturbance(30MHz-1GHz) Test Setup

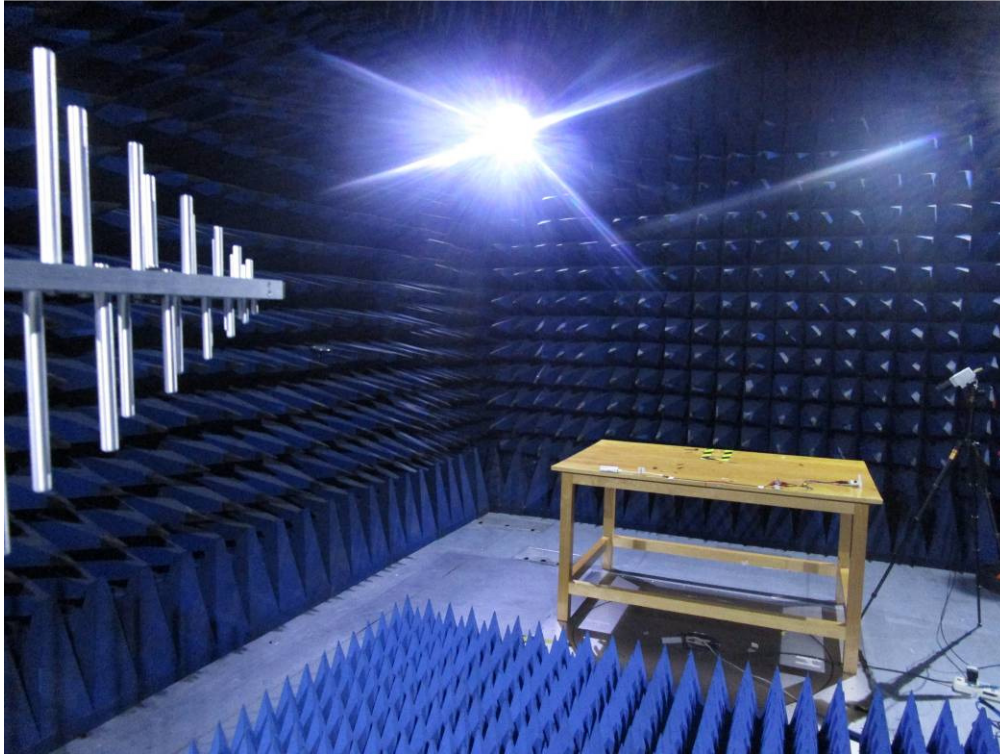


### 8.3 Electrostatic Discharge Test Setup





### 8.4 Radiated Immunity(80MHz-1GHz) Test Setup



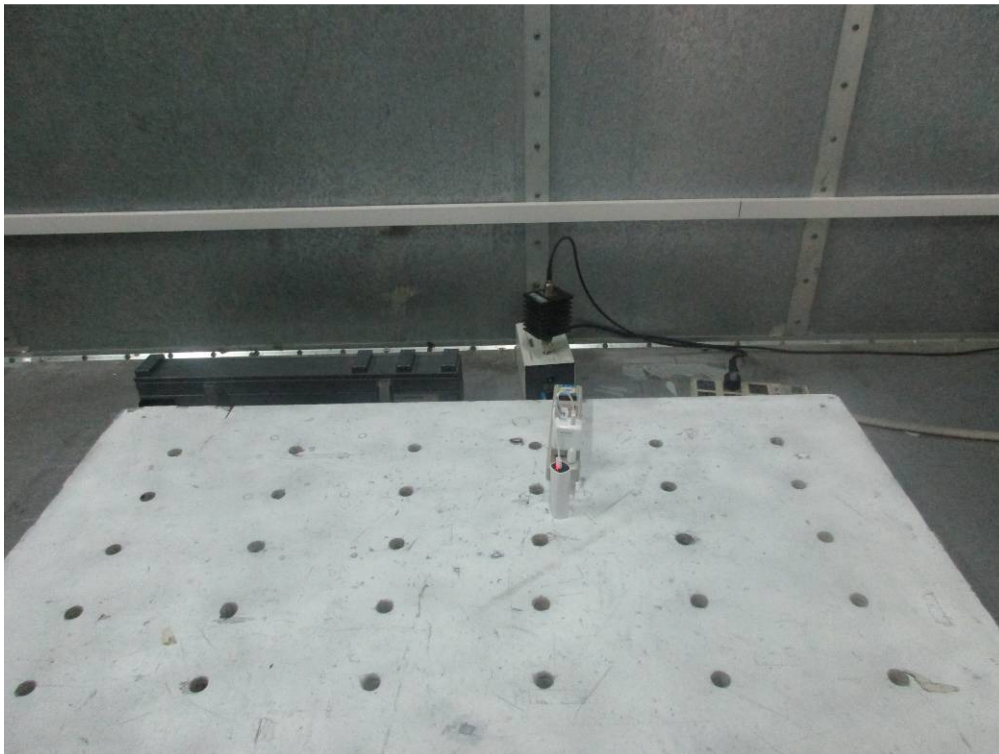
### 8.5 Electrical Fast Transients/Burst at Power Port Test Setup



### 8.6 Surge at Power Port Test Setup



### 8.7 Conducted Immunity at Power Port(150kHz-80MHz) Test Setup



### 8.8 Voltage Dips and Interruptions Test Setup



### 8.9 Voltage Fluctuations and Flicker Test Setup





### 8.10 EUT Constructional Details





