



SHENZHEN SUNRICHER TECHNOLOGY CO.,LTD

CE EMC REPORT

Prepared For :	SHENZHEN SUNRICHER TECHNOLOGY CO.,LTD 310, Longtaili Building No.30, Avenue 4 th , High Tech Science Park, Shenzhen
Product Name:	FULL TOUCH LED CONTROLLER
Model :	REMOTE: SR-2818, SR-2819, SR-2819S RECEIVER: SR-2818WITR, SR-1009FAWI, SR-1009FA, S R-1009EA
Prepared By :	Shenzhen BST Technology Co., Ltd. Building No.23-24, Zhiheng Industrial Park, Guankouer Road, Nantou,Nanshan District,Shenzhen,Guangdong,China
Test Date:	Oct. 21-22, 2013
Date of Report :	Oct. 23, 2013
Report No.:	BST13100328ER-1



TABLE OF CONTENT

Description	Page
Test Report Declaration	
1.GENERAL INFORMATION.....	5
1.1. Description of Device (EUT).....	5
1.2. Test Facility	6
1.3. Test Uncertainty.....	6
2. TEST INSTRUMENT USED	7
2.1. For Conducted Emission Test.....	7
2.2. For Radiated Emission Measurement	7
2.3. For Harmonic / Flicker Test.....	7
2.4. For Electrostatic Discharge Immunity Test.....	7
2.5. For RF Strength Susceptibility Test.....	8
2.6. For Electrical Fast Transient/Burst Immunity Test.....	8
2.7. For Surge Test.....	8
2.8. For Injected Currents Susceptibility Test.....	8
2.9. For Magnetic Field Immunity Test.....	8
2.10. For Voltage Dips and Interruptions Test.....	8
3. POWER LINE CONDUCTED EMISSION TEST.....	9
3.1. Block Diagram of Test Setup.....	9
3.2. Test Standard	9
3.3. Power Line Conducted Emission Limit.....	9
3.4. EUT Configuration on Test	9
3.5. Operating Condition of EUT	10
3.6. Test Procedure	10
3.7. Test result.....	10
4. RADIATED EMISSION TEST	11
4.1. Block Diagram of Test Setup.....	11
4.2. Test Standard	11
4.3. Radiated Emission Limit.....	12
4.4. EUT Configuration on Test	12
4.5. Operating Condition of EUT	12
4.6. Test Procedure	12
4.7. Test result.....	12
5. HARMONIC CURRENT EMISSION TEST	13
5.1. Block Diagram of Test Setup.....	13
5.2. Test Standard	13
5.3. Operating Condition of EUT	13
5.4. Test Procedure	14
5.5. Test Data.....	14
5.6. Test Results.....	14
6. VOLTAGE FLUCTUATIONS & FLICKER TEST.....	15
6.1. Block Diagram of Test Setup.....	15
6.2. Test Standard	15
6.3. Operating Condition of EUT	15
6.4. Test Results.....	15



7. ELECTROSTATIC DISCHARGE TEST	16
7.1. Block Diagram of Test Setup.....	16
7.2. Test Standard	16
7.3. Severity Levels and Performance Criterion.....	16
7.4. EUT Configuration on Test	16
7.5. Operating Condition of EUT	17
7.6. Test Procedure	17
7.7. Test Results.....	17
8. RF FIELD STRENGTH SUSCEPTIBILITY TEST	19
8.1. Block Diagram of Test Setup.....	19
8.2. Test Standard	19
8.3. Severity Levels and Performance Criterion.....	19
8.4. EUT Configuration on Test	20
8.5. Operating Condition of EUT	20
8.7. Test Results.....	20
9. ELECTRICAL FAST TRANSIENT/BURST TEST	22
9.1. Block Diagram of Test Setup.....	22
9.2. Test Standard	22
9.3. Severity Levels and Performance Criterion.....	22
9.4. EUT Configuration on Test	22
9.5. Operating Condition of EUT	23
9.6. Test Procedure	23
9.7. Test Results.....	23
10. SURGE TEST	25
10.1. Block Diagram of Test Setup.....	25
10.2. Test Standard	25
10.3. Severity Levels and Performance Criterion.....	25
10.4. EUT Configuration on Test	25
10.5. Operating Condition of EUT	26
10.6. Test Procedure	26
10.7. Test Results.....	26
11. INJECTED CURRENTS SUSCEPTIBILITY TEST	28
11.1. Block Diagram of Test Setup.....	28
11.2. Test Standard	28
11.3. Severity Levels and Performance Criterion.....	29
11.4. EUT Configuration on Test	29
11.5. Operating Condition of EUT	29
11.6. Test Procedure	29
11.7. Test Results.....	29
12. VOLTAGE DIPS AND INTERRUPTIONS TEST	31
12.1. Block Diagram of Test Setup.....	31
12.2. Test Standard	31
12.3. Severity Levels and Performance Criterion.....	32
12.4. EUT Configuration on Test	32
12.5. Operating Condition of EUT	32
12.6. Test Procedure	32
12.7. Test Result	32

APPENDIX I

(Photos of the EUT)



TEST REPORT DECLARATION

Applicant : SHENZHEN SUNRICHER TECHNOLOGY CO.,LTD
Manufacturer : SHENZHEN SUNRICHER TECHNOLOGY CO.,LTD
EUT Description : FULL TOUCH LED CONTROLLER
MODEL NO : REMOTE: SR-2818, SR-2819, SR-2819S
RECEIVER: SR-2818WITR, SR-1009FAWI, SR-1009FA,
S R-1009EA

(A) SERIAL NO. : N/A
(B) Remark : N/A

Test Procedure Used:
ETSI EN301 489-3 V1.4.1:2002
ETSI EN301 489-1 V1.9.2:2011

The device described above is tested by us to determine the maximum emission levels emanating from the device, the severe levels which the device can endure and EUT's performance criterion. The test results are contained in this test report. Shenzhen BST Technology Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests. Also, this report shows that the EUT is technically compliant with the ETSI EN301 489-3 :2002 ,ETSI EN301 489-1 :2011 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen BST Technology Co., Ltd.

Prepared by :

sun chen

Assistant

Tested by :

Aidan zhu

Test Engineer

Reviewer :

sky zhang

Supervisor

Approved & Authorized Signer :

Christina

Christina / Manager



1.GENERAL INFORMATION

1.1.Description of Device (EUT)

Description	:	FULL TOUCH LED CONTROLLER
Model Number	:	REMOTE: SR-2818, SR-2819, SR-2819S RECEIVER: SR-2818WITR, SR-1009FAWI, SR-1009FA, S R-1009EA
Applicant	:	SHENZHEN SUNRICHER TECHNOLOGY CO.,LTD 310, Longtaili Building No.30, Avenue 4 th , High Tech Sience Park, Shenzhen
Manufacturer	:	SHENZHEN SUNRICHER TECHNOLOGY CO.,LTD 310, Longtaili Building No.30, Avenue 4 th , High Tech Sience Park, Shenzhen
Date of Test	:	Oct. 21-22, 2013



1.2. Test Facility

Site Description

EMC Lab.	:	Certificated by TUV, TIMCO
Name of Firm	:	Shenzhen BST Technology Co., Ltd.
Site Location	:	Building No.23-24, Zhiheng Industrial Park, Guankouer Road, Nantou, Nanshan District, Shenzhen, Guangdong, China

1.3. Test Uncertainty

Conducted Emission Uncertainty = $\pm 2.66\text{dB}$

Radiated Emission Uncertainty = $\pm 4.26\text{dB}$



2. TEST INSTRUMENT USED

2.1.For Conducted Emission Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS30	828985/018	Jun. 01, 13	1 Year
2.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	Jun. 01, 13	1 Year
3.	L.I.S.N.	Rohde & Schwarz	ESH2-Z5	834549/005	Jun. 01, 13	1 Year
4.	Conical	Emtek	N/A	N/A	N/A	N/A
5.	Voltage Probe	Schwarzbeck	TK9416	N/A	Jun. 01.13	1 Year
6.	Coaxial Switch	Anritsu	MP59B	6100214550	Jun. 01, 13	1 Year

2.2.For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	ANRITSU	MS2661C	6200140915	Jun 01,13	1 Year
2.	Test Receiver	Rohde&Schwarz	ESC830	828982/018	Jun 01,13	1 Year
3.	Bilog Antenna	Schwarzbeck	VULB9163	142	Jun 01,13	1 Year
4.	50 Coaxial Switch	Anritsu Corp	MP59B	6100237248	Jun 01,13	1 Year
5.	Cable	Schwarzbeck	AK9513	ACRX1	Jun 01,13	1 Year
6.	Cable	Rosenberger	N/A	FR2RX2	Jun 01,13	1 Year
7.	Cable	Schwarzbeck	AK9513	CRRX2	Jun 01,13	1 Year
8.	Cable	Schwarzbeck	AK9513	CRRX2	Jun 01,13	1 Year
9.	Signal Generator	HP	864A	3625U00573	Jun 01,13	1 Year

2.3.For Harmonic / Flicker Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Power Frequency test system	HAEFELY	PHF555	080419-03	Jun. 01, 13	1 Year

2.4.For Electrostatic Discharge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	HAEFELY	PSD 1600	H911'292	Jun. 02, 13	1 Year



2.5. For RF Strength Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal Generator	HP	8648A	3633A02081	Jun. 03, 13	1 Year
2.	Amplifier	A&R	500A100	17034	NCR	NCR
3.	Amplifier	A&R	100W/1000M1	17028	NCR	NCR
4.	Isotropic Field Monitor	A&R	FM2000	16829	NCR	NCR
5.	Isotropic Field Probe	A&R	FP2000	16755	Jun. 03, 13	1 Year
6.	Biconic Antenna	EMCO	3108	9507-2534	NCR	NCR
7.	Log-periodic Antenna	A&R	AT1080	16812	NCR	NCR
8.	PC	N/A	486DX2	N/A	N/A	N/A

2.6. For Electrical Fast Transient/Burst Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Burst Tester	HAEFELY	PEFT 4010	080981-16	Jun. 01, 13	1 Year

2.7. For Surge Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Surge Tester	HAEFELY	PSURGE4.1	080107-04	Jun. 01, 13	1 Year

2.8. For Injected Currents Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Simulator	EMTEST	CWS 500C	0900-12	Jun. 01, 13	1 Year
2.	CDN	EMTEST	CDN-M2	510010010010	Jun. 01, 13	1 Year
3.	VDN	EMTEST	CDN-M3	0900-11	Jun. 01, 13	1 Year
4.	Injection Clamp	EMTEST	F-2031-23MM	368	Jun. 01, 13	1 Year
5.	Attenuator	EMTEST	ATT6	0010222a	Jun. 01, 13	1 Year

2.9. For Magnetic Field Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Magnetic Field Tester	HEAFELY	MAG100.1	083858-10	Jun. 01, 13	1 Year

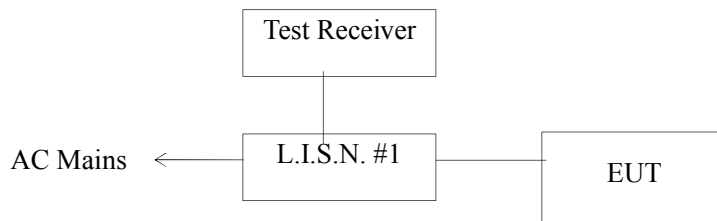
2.10. For Voltage Dips and Interruptions Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
2.	Dips Tester	HEAFELY	PLINE 1610	083732-18	Jun. 01, 13	1 Year



3. POWER LINE CONDUCTED EMISSION TEST

3.1. Block Diagram of Test Setup



(EUT: FULL TOUCH LED CONTROLLER)

3.2. Test Standard

ETSI EN301 489-3 V1.4.1:2002

3.3. Power Line Conducted Emission Limit

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3.4. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet ETSI EN301 489-3 requirement and operating in a manner, which tends to maximize its emission characteristics in a normal application.

3.4.1. EUT Information

Model Number : REMOTE: SR-2818
RECEIVER: SR-2818WITR
Serial Number : N/A
Manufacturer : SHENZHEN SUNRICHER TECHNOLOGY
CO.,LTD



3.5. Operating Condition of EUT

- 3.5.1. Setup the EUT and simulators as shown in Section 3.1.
- 3.5.2. Turn on the power of all equipments.
- 3.5.3. Let the EUT work in test modes (ON) and test it.

3.6. Test Procedure

The EUT is put on the ground and connected to the AC mains through a Artificial Mains Network (AMN). This provided 50ohm-coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the ETSI EN301 489-3 regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESHS30) is set at 10KHz.
The EUT is tested in Anechoic Chamber.

3.7. Test result

N/A.



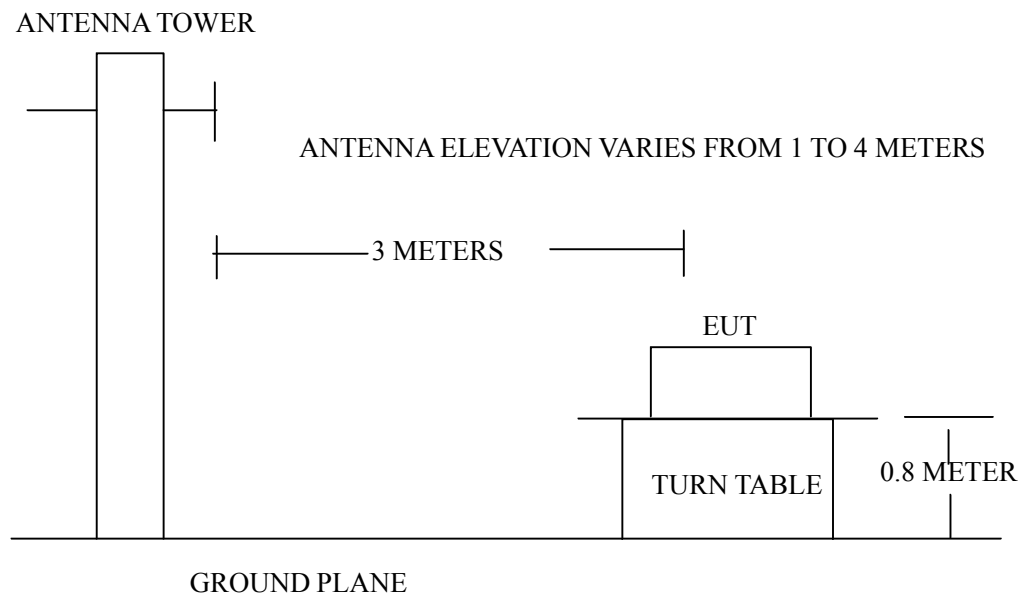
4. RADIATED EMISSION TEST

4.1. Block Diagram of Test Setup



(EUT: FULL TOUCH LED CONTROLLER)

4.1.1. Open Site Setup Diagram



4.2. Test Standard

ETSI EN301 489-3 V1.4.1:2002



4.3. Radiated Emission Limit

All emanations from a Class B computing devices or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dB μ V/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Note:(1) The tighter limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

4.4. EUT Configuration on Test

Class B regulations test method must be used to find the maximum emission during radiated emission test.

4.5. Operating Condition of EUT

- 4.5.1. Setup the EUT as shown on Section 3.1.
- 4.5.2. Turn on the power of all equipments.
- 4.5.3. Let the EUT work in test mode and measure it.

4.6. Test Procedure

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can move up and down between 1 to 4 meters to find out the maximum emission level. Broadband antenna (calibrated by dipole antenna) are used as a receiving antenna. Both horizontal and vertical polarization of the antenna are set on test.

The bandwidth setting on the test receiver (R&S TEST RECEIVER ESCS20) is 120 KHz.

The EUT is tested in Anechoic Chamber. All the test results are listed in Section 4.7.

4.7. Test result

N/A



5. HARMONIC CURRENT EMISSION TEST

5.1. Block Diagram of Test Setup



(EUT: FULL TOUCH LED CONTROLLER)

5.2. Test Standard

ETSI EN301 489-3 V1.4.1:2002

5.3. Operating Condition of EUT

Same as Section 3.4. except the test set up replaced by Section 5.1..

5.3.1. Limits

Harmonic Current Test Limit (Class A)

Harmonic order (n)	Maximum permissible harmonic current (A)
Odd harmonics	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
$15 \leq n \leq 39$	$0.15 \times 15/n$
Even harmonics	
2	1.08
4	0.43
6	0.30
$8 \leq n \leq 40$	$0.23 \times 8/n$



5.4. Test Procedure

The power cord of the EUT is connected to the output of the test system. Turn on the Power of the EUT and use the test system to test the harmonic current level.

5.5. Test Data

There are Active input power is 2.5 W

The active input power of this EUT is lower than 75W. Therefore, according to EN 61000-3-2, no limits are necessary.

5.6. Test Results

N/A.



6. VOLTAGE FLUCTUATIONS & FLICKER TEST

6.1. Block Diagram of Test Setup

Same as Section 5.1..

6.2. Test Standard

ETSI EN301 489-3 V1.4.1:2002

6.3. Operating Condition of EUT

Same as Section 5.3.. The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

Flicker Test Limit

Test items	Limits
Pst	1.0
dc	3.3%
dmax	4.0%
dt	Not exceed 3.3% for 500ms

6.4. Test Results

N/A.

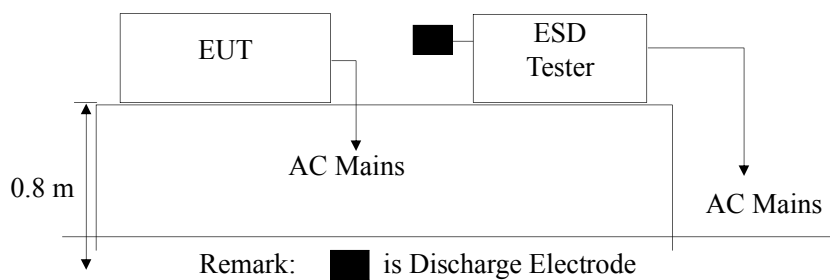


7. ELECTROSTATIC DISCHARGE TEST

7.1. Block Diagram of Test Setup

Same as Section 5.1

7.1.1. Block Diagram of ESD Test Setup



7.2. Test Standard

ETSI EN301 489-3 V1.4.1:2002

(EN61000-4-2:2009)

Severity Level 3 for Air Discharge at 8KV

Severity Level 2 for Contact Discharge at 4KV

7.3. Severity Levels and Performance Criterion

7.3.1. Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	2	2
2.	4	4
3.	6	8
4.	8	15
X.	Special	Special

7.3.2. Performance criterion: **B**

7.4. EUT Configuration on Test

The configuration of EUT are listed in Section 3.4..



7.5. Operating Condition of EUT

- 7.5.1. Setup the EUT as shown in Section 7.1..
- 7.5.2. Turn on the power of all equipments.
- 7.5.3. Let the EUT work in test mode (on) and test it.

7.6. Test Procedure

7.6.1. Air Discharge:

This test is done on a non-conductive surfaces. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT.

After each discharge, the discharge electrode shall be removed from the EUT.

The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

7.6.2. Contact Discharge:

All the procedure shall be same as Section 7.6.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

7.6.3. Indirect discharge for horizontal coupling plane

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

7.6.4. Indirect discharge for vertical coupling plane

At least 20 single discharge shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

7.7. Test Results

PASS

Please refer to the following page.



Electrostatic Discharge Test Results

Shenzhen BST Technology Co., Ltd.

Date :10/22/2013

<i>Applicant</i> : SHENZHEN SUNRICHER TECHNOLOGY CO.,LTD	<i>Test Date</i> : Oct. 22, 2013	
<i>EUT</i> : FULL TOUCH LED CONTROLLER	<i>Temperature</i> : 22 °C	
<i>M/N</i> : REMOTE: SR-2818 RECEIVER: SR-2818WTR	<i>Humidity</i> : 50 %	
<i>Power Supply</i> : --	<i>Test Mode</i> : on	
<i>Air Discharge: ±8KV For each point positive 10 times and negative 10 times discharge.</i>		
<i>Contact Discharge: ±4KV</i>		
<i>Location</i>	<i>Kind</i> <i>A-Air Discharge</i> <i>C-Contact Discharge</i>	<i>Result</i>
<i>Slots</i>	<i>A</i>	<i>PASS</i>
<i>Metal parts</i>	<i>C</i>	<i>PASS</i>
<i>HCP</i>	<i>C</i>	<i>PASS</i>
<i>VCP</i>	<i>C</i>	<i>PASS</i>

Discharge should be considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).



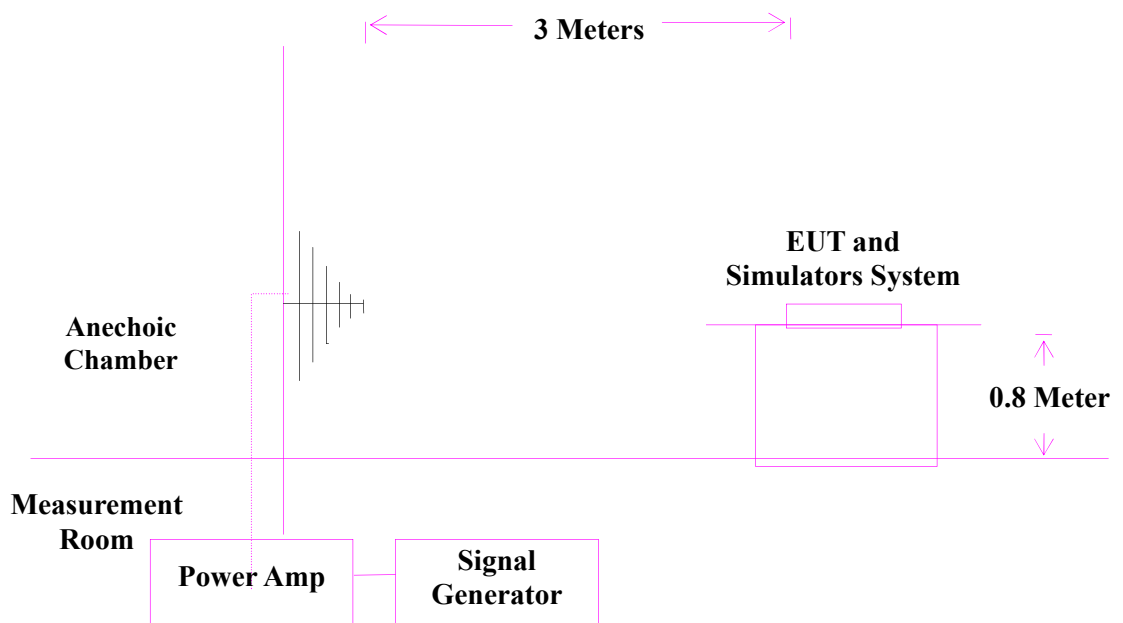
8. RF FIELD STRENGTH SUSCEPTIBILITY TEST

8.1. Block Diagram of Test Setup

8.1.1. Block Diagram of the EUT and the simulators

Same as Section 5.1.

8.1.2. R/S Test Setup



8.2. Test Standard

ETSI EN301 489-3 V1.4.1:2002 (EN61000-4-3:2006+A1:2008)
Severity Level 2 at 3V / m

8.3. Severity Levels and Performance Criterion

8.3.1. Severity level

Level	Field Strength V/m
1.	1
2.	3
3.	10
X.	Special



8.3.2. Performance criterion : A

8.4.EUT Configuration on Test

The configuration of EUT are listed in Section 3.4..

8.5.Operating Condition of EUT

Setup the EUT as shown in Section 8.1.. The operating condition of EUT are listed in section 3.5.

8.6. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually.

In order to judge the EUT performance, a CCD camera is used to monitor the EUT. All the scanning conditions are as follows :

Condition of Test	Remarks
1. Fielded Strength	3 V/m (Severity Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80 - 1000 MHz, 1.4GHz-2.7GHz
4. Sweeping time of radiated	0.0015 decade/s
5. Dwell Time	1 Sec.

8.7. Test Results

PASS

Please refer to the following page.



RF Field Strength Susceptibility Test Results

Shenzhen BST Technology Co., Ltd.

Date :10/22/2013

<i>Applicant</i>	SHENZHEN SUNRICHER TECHNOLOGY : CO.,LTD	<i>Test Date</i>	: Oct. 22, 2013
<i>EUT</i>	: FULL TOUCH LED CONTROLLER	<i>Temperature</i>	: 22 °C
<i>M/N</i>	: REMOTE: SR-2818 RECEIVER: SR-2818WITR	<i>Humidity</i>	: 50 %
<i>Power Supply</i>	: -	<i>Test Mode</i>	: ON
<i>Frequency Range</i>	: 80 MHz to 1000 MHz, 1.4GHz-2.7GHz		
<i>Modulation:</i>	<input checked="" type="checkbox"/> AM <input type="checkbox"/> Pulse <input type="checkbox"/> none 1 KHz 80%		
<i>Criterion : A</i>			
	<i>Frequency Rang :</i> 80 MHz to 1000 MHz, 1.4GHz-2.7GHz		
<i>Steps</i>	1%	1%	
	<i>Horizontal</i>	<i>Vertical</i>	
<i>Front</i>	Pass	Pass	
<i>Right</i>	Pass	Pass	
<i>Rear</i>	Pass	Pass	
<i>Left</i>	Pass	Pass	



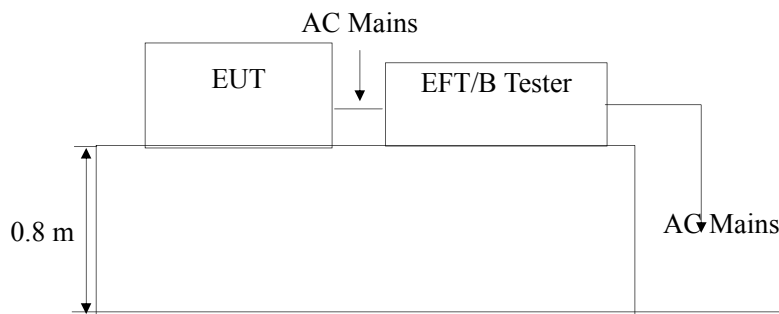
9. ELECTRICAL FAST TRANSIENT/BURST TEST

9.1. Block Diagram of Test Setup

9.1.1. Block Diagram of the EUT

Same as Section 5.1.

9.1.2. EFT Test Setup



9.2. Test Standard

ETSI EN301 489-3 V1.4.1:2002 (EN61000-4-4:2004)
Severity Level 2 at 1KV

9.3. Severity Levels and Performance Criterion

9.3.1. Severity level

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 KV	0.25 KV
2.	1 KV	0.5 KV
3.	2 KV	1 KV
4.	4 KV	2 KV
X	Special	Special

9.3.2. Performance criterion : B

9.4. EUT Configuration on Test

The configuration of EUT are listed in Section 3.4..



9.5. Operating Condition of EUT

Setup the EUT as shown in Section 10.1.. The operating condition of EUT are listed in section 3.5.

9.6. Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between the EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

9.6.1. For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

9.6.2. For signal lines and control lines ports:

It's necessary to test.

9.6.3. For DC output line ports:

It's unnecessary to test.

9.7. Test Results

N/A.



Electrical Fast Transient/Burst Test Results

Shenzhen BST Technology Co., Ltd.

Date :10/22/2013

<i>Applicant</i> : SHENZHEN SUNRICHER TECHNOLOGY : CO.,LTD					<i>Test Date</i> : Oct. 22, 2013				
<i>EUT</i> : FULL TOUCH LED CONTROLLER					<i>Temperature</i> : 22 °C				
<i>M/N</i> : REMOTE: SR-2818 RECEIVER: SR-2818WITR					<i>Humidity</i> : 50 %				
<i>Power Supply</i> : -					<i>Test Mode</i> : ON				
<i>Inject Place</i> : AC Mains									
Inject Line	Voltage KV	Inject Time(s)	Inject Method	Results	Inject Line	Voltage KV	Inject Time(s)	Inject Method	Results
L	±1	120	Direct	-					
N	±1	120	Direct	-					
L N	±1	120	Direct	-					
L-PE	±2	120	Direct	-					
N-PE	±2	120	Direct	-					



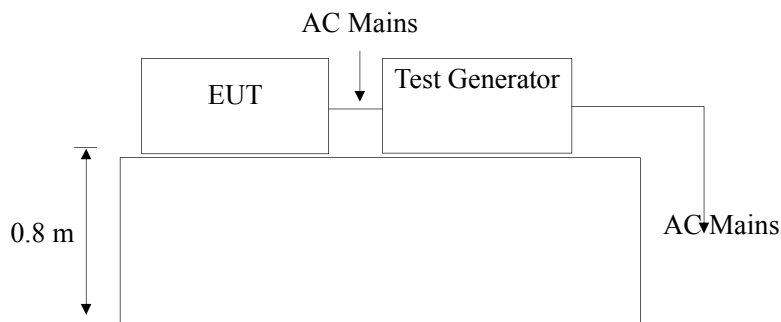
10.SURGE TEST

10.1.Block Diagram of Test Setup

10.1.1. Block Diagram of the EUT

Same as Section 5.1.

10.1.2. Surge Test Setup



10.2.Test Standard

ETSI EN301 489-3 V1.4.1:2002 (EN61000-4-5: 2006)
Severity Level 2 for Line to Neutral at 1.0KV

10.3.Severity Levels and Performance Criterion

10.3.1. Severity level

Severity Level	Open-Circuit Test Voltage KV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

Performance criterion : **B**

10.4.EUT Configuration on Test

The configuration of EUT are listed in Section 3.4..



10.5. Operating Condition of EUT

- 10.5.1. Setup the EUT as shown in Section 11.1..
- 10.5.2. Turn on the power of all equipments.
- 10.5.3. Let the EUT work in test mode (ON) and test it.

10.6. Test Procedure

- 1) Set up the EUT and test generator as shown on Section 11.1.2.
- 2) For line to line coupling mode, provide a 0.5KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 4) Different phase angles are done individually.
- 5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

10.7. Test Results

N/A.



Surge Immunity Test Results

Shenzhen BST Technology Co., Ltd.

Date :10/22/2013

<i>Applicant</i> : SHENZHEN SUNRICHER TECHNOLOGY CO.,LTD		<i>Test Date</i> : Oct. 22, 2013			
<i>EUT</i> : FULL TOUCH LED CONTROLLER		<i>Temperature</i> : 22 °C			
<i>M/N</i> : REMOTE: SR-2818 RECEIVER: SR-2818WITR		<i>Humidity</i> : 50 %			
<i>Power Supply</i> : -		<i>Test Mode</i> : -			
Location	Polarity	Phase Angle	No of Pulse	Pulse Voltage (KV)	Result
L-N	+	0	5	1.0	-
L-PE N-PE	+	90	5	1.0	-
	+	180	5	1.0	-
	+	270	5	1.0	-
	-	0	5	1.0	-
	-	90	5	1.0	-
	-	180	5	1.0	-
	-	270	5	1.0	-



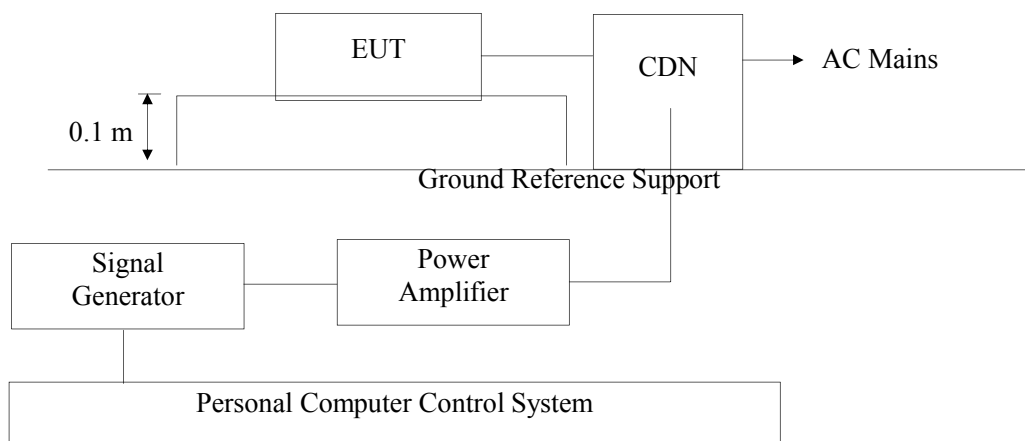
11. INJECTED CURRENTS SUSCEPTIBILITY TEST

11.1. Block Diagram of Test Setup

11.1.1. Block Diagram of Test AC Mains

Same as Section 5.1.

11.1.2. Block Diagram of Test AC Mains Setup



11.2. Test Standard

ETSI EN301 489-3 V1.4.1:2002 (EN61000-4-6:2009)
Severity Level 2 at 3 V (rms), 0.15MHz ~ 80MHz



11.3. Severity Levels and Performance Criterion

11.3.1. Severity level

Level	Field Strength V/m
1.	1
2.	3
3.	10
X	Special

11.3.2. Performance criterion: A

11.4. EUT Configuration on Test

The configuration of EUT are listed in Section 3.4..

11.5. Operating Condition of EUT

Setup the EUT as shown in Section 12.1.. The operating condition of EUT are listed in section 3.5.

11.6. Test Procedure

- 1) Set up the EUT, CDN and test generators as shown on Section 12.1.2..
- 2) Let the EUT work in test mode and test it.
- 3) The EUT are placed on an insulating support 0.8m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 4) The disturbance signal described below is injected to EUT through CDN.
- 5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 6) The frequency range is swept from 150KHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
- 7) The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

11.7. Test Results

N/A.



Injected Currents Susceptibility Test Results

Shenzhen BST Technology Co., Ltd.

Date :10/22/2013

<i>Applicant</i> : SHENZHEN SUNRICHER TECHNOLOGY : CO.,LTD			<i>Test Date</i> : Oct. 22, 2013	
<i>EUT</i> : FULL TOUCH LED CONTROLLER			<i>Temperature</i> : 22 °C	
<i>M/N</i> : REMOTE: SR-2818 RECEIVER: SR-2818WITR			<i>Humidity</i> : 50 %	
<i>Power Supply</i> : -			<i>Test Mode</i> : -	
<i>Frequency Range (MHz)</i>	<i>Injected Position</i>	<i>Strength</i>	<i>Criterion</i>	<i>Result</i>
0.15 ~ 20	AC Line	3V(rms), Unmodulated	A	-
20 ~ 80	AC Line	3V(rms), Unmodulated	A	-



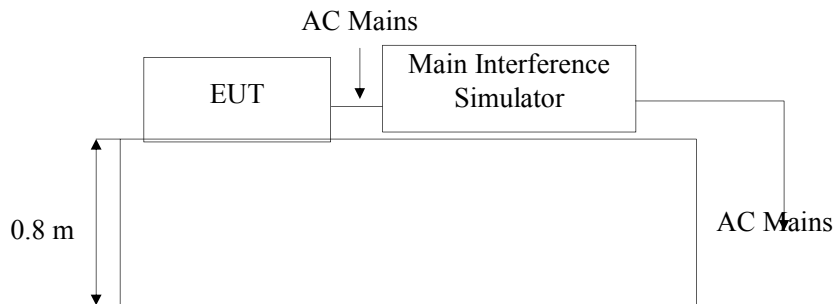
12. VOLTAGE DIPS AND INTERRUPTIONS TEST

12.1. Block Diagram of Test Setup

12.1.1. Block Diagram of the EUT

Same as Section 5.1.

12.1.2. Voltage Dips and Interruptions Test Setup



Remark: Combination wave generator and decoupling network are included in test generator.

12.2. Test Standard

ETSI EN301 489-3 V1.4.1:2002 (EN61000-4-11: 2004)



12.3. Severity Levels and Performance Criterion

12.3.1. Severity level

Test Level %U _T	Voltage dip and short interruptions %U _T	Duration (in period)
0	100	250p
40	60	5p
70	30	0.5p

12.3.2. Performance criterion : **C & B**

12.4. EUT Configuration on Test

The configuration of EUT are listed in Section 3.4..

12.5. Operating Condition of EUT

12.5.1. Setup the EUT as shown in Section 14.1..

12.5.2. Turn on the power of all equipments.

12.5.3. Let the EUT work in test mode (ON) and test it.

12.6. Test Procedure

- 1) Set up the EUT and test generator as shown on Section 14.1.2.
- 2) The interruptions is introduced at selected phase angles with specified duration.
- 3) Record any degradation of performance.

12.7. Test Result

N/A.



Voltage Dips And Interruptions Test Results

Shenzhen BST Technology Co., Ltd

Date :10/22/2013

<i>Applicant</i> : SHENZHEN SUNRICHER TECHNOLOGY CO.,LTD		<i>Test Date</i> : Oct. 22, 2013			
<i>EUT</i> : FULL TOUCH LED CONTROLLER		<i>Temperature</i> : 22 °C			
<i>M/N</i> : REMOTE: SR-2818 RECEIVER: SR-2818WTR		<i>Humidity</i> : 50 %			
<i>Power Supply</i> : -		<i>Test Mode</i> : -			
<i>Test Level</i> % U_T	<i>Voltage Dips & Short Interruptions</i> % U_T	<i>Duration (in period)</i>	<i>Phase Angle</i>	<i>Criterion</i>	<i>Result</i>
0	100	250P	$0^\circ \sim 360^\circ$	C	-
40	60	5P	$0^\circ \sim 360^\circ$	C	-
70	30	0.5P	$0^\circ \sim 360^\circ$	B	-



APPENDIX I

(Photos of the EUT)



Photo 1 General Appearance of the EUT



Photo 2 General Appearance of the EUT





Photo 3 General Appearance of the EUT



Photo 4 General Appearance of the EUT (Inside)

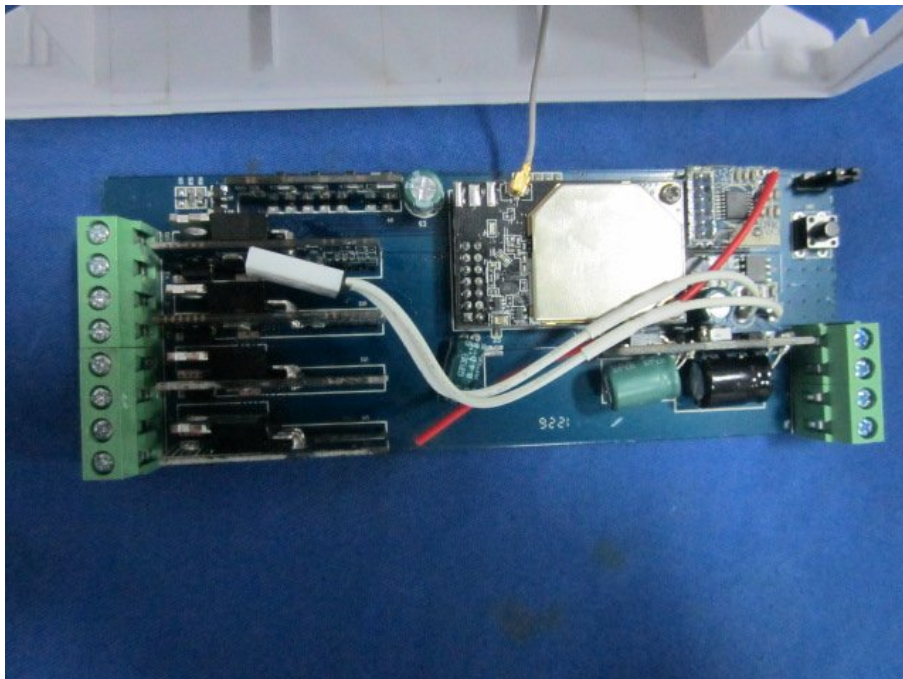




Photo 5 General Appearance of the EUT (Inside)

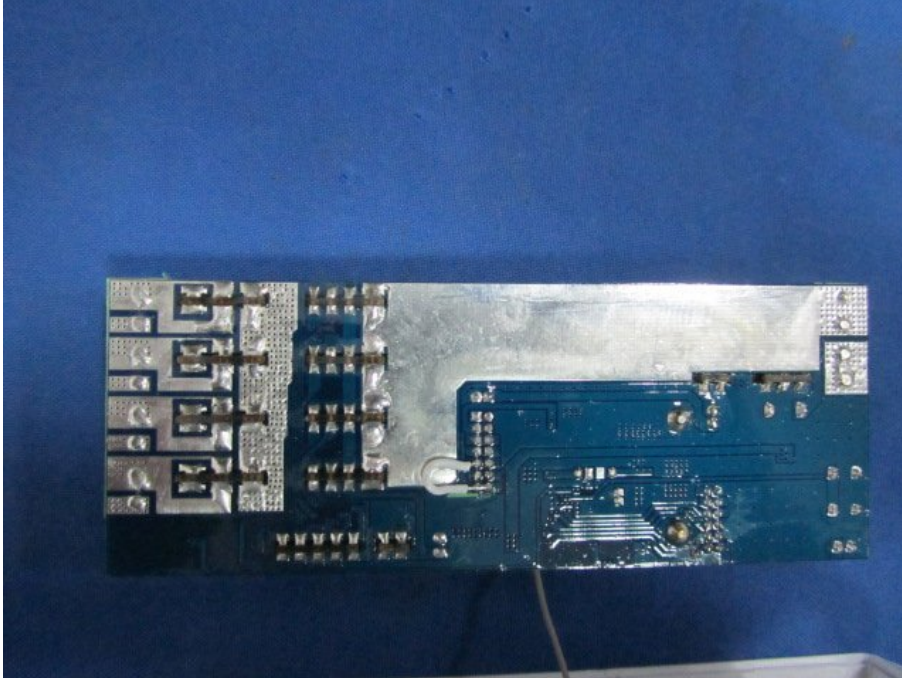


Photo 6 General Appearance of the EUT(Inside)





Photo 7 General Appearance of the EUT(Inside)

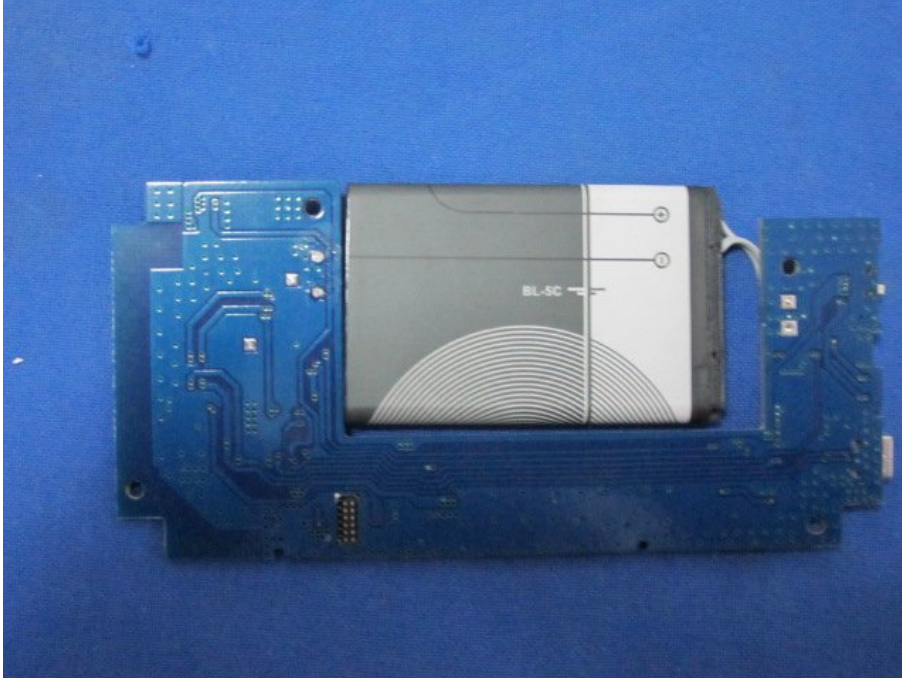


Photo 8 General Appearance of the EUT(Inside)





Photo 9 General Appearance of the EUT(Inside)

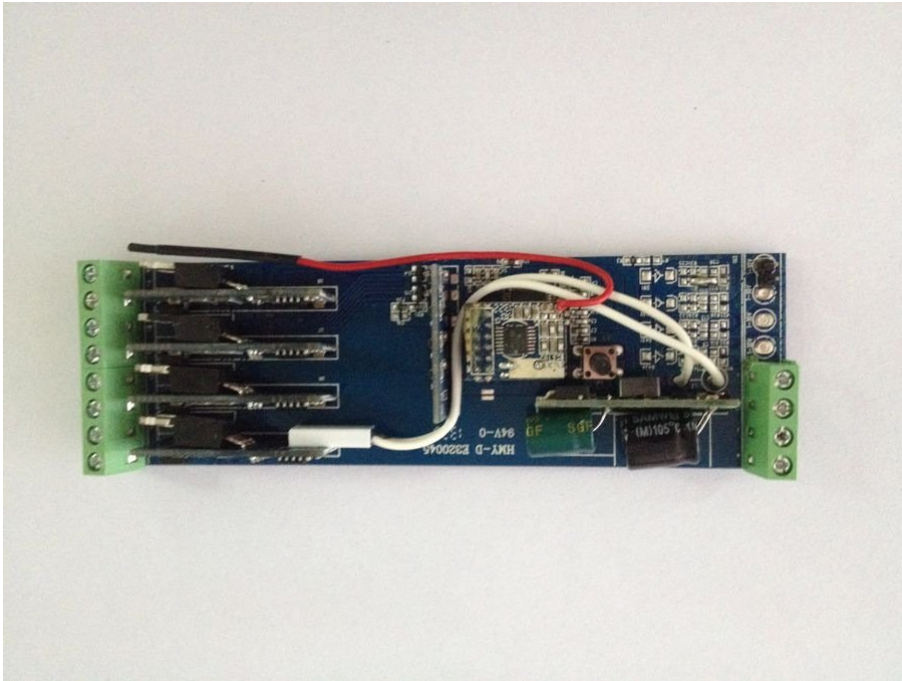


Photo 10 General Appearance of the EUT(Inside)

