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

No. 1 Workshop, M-10, Middle section, Science & Technology Park,
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Cover Page

TEST REPORT

Application No.: SZEM1710010744CR
Applicant:
Address of Applicant:

Manufacturer:
Address of Manufacturer:

Factory:
Address of Factory:

Equipment Under Test (EUT):

EUT Name:	WIRELESS CHARGER, Wireless charging pad with quick charger
Model No.:	AC51100S, AC52100S, 5458-2, P308.96, OMWLAC52BK ♣
♣	Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Trade mark:	Please refer to section 2
Standard(s) :	EN 301 489-1 V2.1.1
	Final draft EN 301 489-3 V2.1.1
Date of Receipt:	2017-10-19
Date of Test:	2017-11-09 to 2017-11-15
Date of Issue:	2017-11-17
Test Result:	**Pass***

* 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.

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2017-11-17		Original

Authorized for issue by:

Peter Geng

Peter Geng /Project Engineer

Eric Fu

Eric Fu /Reviewer

1 Test Summary

Emission Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Emissions at Mains Terminals (150kHz-30MHz)	EN 301 489-1 V2.1.1	EN 55032:2015	Class B	Pass
Radiated Emissions (30MHz-1GHz)	EN 301 489-1 V2.1.1	EN 55032:2015	Class B	Pass
Harmonic Current Emission	EN 301 489-1 V2.1.1	EN 61000-3-2:2014	Class A	Pass
Voltage Fluctuations and Flicker	EN 301 489-1 V2.1.1	EN 61000-3-3:2013	Clause 5 of EN 61000-3-3	Pass

Immunity Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Electrostatic Discharge	EN 301 489-1 V2.1.1	EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
Electrical Fast Transients/Burst at Power Port	EN 301 489-1 V2.1.1	EN 61000-4-4:2012	1kV 5/50ns Tr/Td 5kHz Repetition Frequency	Pass
Surge at Power Port	EN 301 489-1 V2.1.1	EN 61000-4-5:2014	1.2/50μs Tr/Td 1kV Line to Line 2kV Line to Ground	Pass
Conducted Immunity at Power Port (150kHz-80MHz)	EN 301 489-1 V2.1.1	EN 61000-4-6:2014	3Vrms (emf),80%,1kHz Amp. Mod.	Pass
Voltage Dips and Interruptions	EN 301 489-1 V2.1.1	EN 61000-4-11:2004	0 % UT for 0.5per 0 % UT for 250per 70 % UT for 25per UT is Supply Voltage	Pass
Radiated Immunity (80MHz-6GHz)	EN 301 489-1 V2.1.1	EN 61000-4-3:2006 +A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod.	Pass

Declaration of EUT Family Grouping:

Model No.: AC51100S, AC52100S, 5458-2, P308.96, OMWLAC52BK

Only the model AC51100S was tested fully, and the model AC52100S was performed the Radiated Emissions test for discrepancy, since the electrical circuit design, PCB layout, components used and internal wiring were identical for the above models, only different on model number and appearance.

Trade mark	Model number	Description
DNS, LBT, IHOME Owltech, nexxtech, iHope ATIVA® Leplus, VIBE, AmazonBasics	AC52100S	 rectangles appearance
	AC51100S	 Square appearance
Tzumi	5458-2	rectangles appearance
Xindao	P308.96	Square appearance
omars	OMWLAC52BK	rectangles appearance

2 Contents

3 General Information

3.1 Details of E.U.T.

Power supply:	Input: DC 5V/3A, DC 9V/2A Output: DC 5V/1A, DC 9V/1.1A
The highest frequency from internal source:	Below 108MHz

3.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Micro USB Cable	PHILIPS	SWR2101	REF. No.SEA0700
AC charger	provided by client	N/A	
mobile phone	Samsung	Galaxy S6 Edge+	N/A

3.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction emission	3.0dB (150kHz to 30MHz)
2	Radiated emission	4.5dB (30MHz-1GHz)
3	Radiated Immunity	1.64dB
4	Conducted Immunity	0.96dB
5	ESD	6 %
6	EFT (Electrical Fast Transients)	5 %
7	Surge Immunity	5 %
8	Voltage Dips and Interruptions	4 %
9	Temperature test	1℃
10	Humidity test	3%

3.4 Test Location

All tests were performed at:

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

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.

3.5 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 –Designation Number: CN1178

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

• 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.

3.6 Deviation from Standards

None

3.7 Abnormalities from Standard Conditions

None

3.8 Monitoring of EUT for All Immunity Test

Visual: monitor the working status of the EUT

Audio: none

4 Equipment List

Conducted Emissions at Mains Terminals (150kHz-30MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	ChangZhou ZhongYu	GB-88	SEM001-06	2017-05-10	2018-05-09
Measurement Software	AUDIX	e3 V5.4.1221d	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2017-07-13	2018-07-12
LISN	Rohde & Schwarz	ENV216	SEM007-01	2017-09-27	2018-09-26
LISN	ETS-LINDGREN	3816/2	SEM007-02	2017-04-14	2018-04-13
EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2017-04-14	2018-04-13

Radiated Emissions (30MHz-1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2017-05-10	2018-05-09
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM029-01	2017-07-13	2018-07-12
EMI Test Receiver (9kHz-3GHz)	Rohde & Schwarz	ESR	SEM004-03	2017-04-14	2018-04-13
Trilog-Broadband Antenna (30MHz-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-06-29	2019-06-28
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2017-06-05	2018-06-04

Voltage Fluctuations and Flicker					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
AC Power Source	California Instruments	5001ix	SEM016-02	2017-04-14	2018-04-13
Power Analyzer	California Instruments	PACS-1	SEM016-01	2017-04-14	2018-04-13
Measurement Software	California Instruments	CTS 3.0 V3.2.0.6	N/A	N/A	N/A

Electrostatic Discharge					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
ESD Ground Plane	SGS(3m*3m)	N/A	SEN006-01	N/A	N/A
ESD Generator	TESEQ AG	NSG 437	SEM019-02	2017-06-08	2018-06-07

Electrical Fast Transients/Burst at Power Port					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Ultra Compact Simulator	EM TEST	UCS 500N7	SEM018-02	2017-07-17	2018-07-16

Measurement Software	EM TEST	IEC CONTROL V6.0.1	N/A	N/A	N/A

Surge at Power Port					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Ultra Compact Simulator	EM TEST	UCS 500N7	SEM018-02	2017-07-17	2018-07-16
Measurement Software	EM TEST	IEC CONTROL V6.0.1	N/A	N/A	N/A

Conducted Immunity at Power Port (150kHz-80MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	AUDIX	N/A	SEM001-08	2017-05-10	2018-05-10
RF-Generator	SCHAFFNER	NSG 2070	SEM006-01	2017-09-27	2018-09-26
Coupling/Decoupling Network	SCHAFFNER	CDN M016	SEM007-03	2017-07-17	2018-07-16

Voltage Dips and Interruptions					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Ultra Compact Simulator	EM TEST	UCS 500N7	SEM018-02	2017-07-17	2018-07-16
Measurement Software	EM TEST	IEC CONTROL V6.0.1	N/A	N/A	N/A

Radiated Immunity (80MHz-6GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Fully-Anechoic Chamber 2	Chang Zhou Zhong Shuo	854	SEM001-05	2015-05-13	2018-05-12
Measurement Software	Rohde & Schwarz	EMC32 V9.25.00	N/A	N/A	N/A
Signal Generator	Rohde & Schwarz	SMB100A	SEM006-11	2017-04-14	2018-04-13
Broadband Amplifier (80MHz-1GHz)	Rohde & Schwarz	BBA150-BC250	SEM005-12	2017-09-27	2018-09-26
Broadband Amplifier (800MHz-3GHz)	Rohde & Schwarz	BBA150	EMC2092	2017-01-20	2018-01-19
Broadband Amplifier (2.5GHz-6GHz)	Rohde & Schwarz	BBA150-E60	SEM005-16	2017-07-17	2018-07-16
Power Sensor	Rohde & Schwarz	NRP-Z91	SEM009-09	2017-04-14	2018-04-13
Power Sensor	Rohde & Schwarz	NRP-Z91	SEM009-08	2017-04-14	2018-04-13
Stacked Log.-Per.-Broadband Antenna (70MHz-10GHz)	Schwarzbeck	STLP 9129	SEM003-25	N/A	N/A
Universal Radio Communication Tester	Rohde & Schwarz	CMU 200	SEM010-01	2017-09-27	2018-09-26
Universal Radio Communication Tester	Rohde & Schwarz	CMW 500	SEM010-03	2017-04-14	2018-04-13
Conditioning Amplifier	Brüel & Kjaer	2690-OS2	SEM005-10	2017-06-19	2018-06-18
Mouth Simulator	Brüel & Kjaer	4227	SEM017-01	2017-04-21	2018-04-20
Signal Source	Brüel & Kjaer	4231	SEM017-02	2017-06-19	2018-06-18
Audio Analyzer	Rohde & Schwarz	UPV	SEM008-03	2017-09-27	2018-09-26

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-03	2017-09-29	2018-09-28
Humidity/ Temperature Indicator	Shanghai Meteorological Industry Factory	ZJ1-2B	SEM002-04	2017-09-29	2018-09-28
Humidity/ Temperature Indicator	Mingle	N/A	SEM002-08	2017-09-29	2018-09-28
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2017-04-18	2018-04-17

5 Emission Test Results

5.1 Conducted Emissions at Mains Terminals (150kHz-30MHz)

Test Requirement:	EN 301 489-1 V2.1.1
Test Method:	EN 55032:2015
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

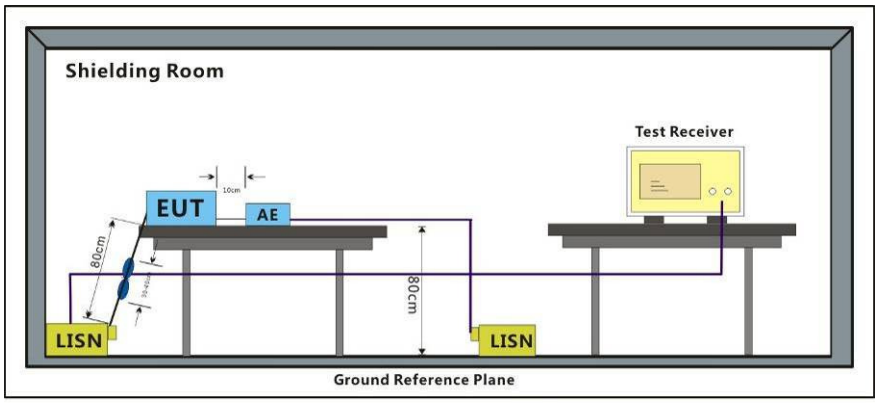
5.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 45 % RH Atmospheric Pressure: 1015 mbar

Pretest these mode to find the worst case:	a:Idle_Keep the EUT standby. b:Operation(wireless)_Keep the EUT pairing with other devices
The worst case for final test:	b:Operation(wireless)_Keep the EUT pairing with other devices

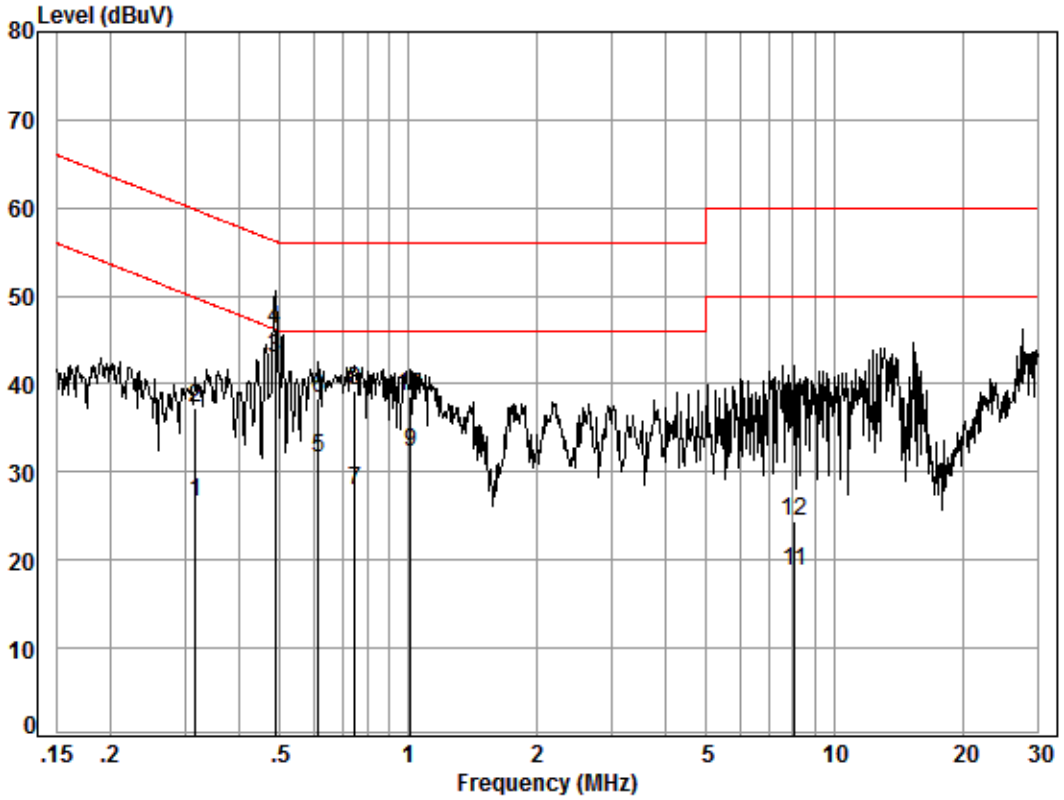
5.1.2 Test Setup Diagram



5.1.3 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.

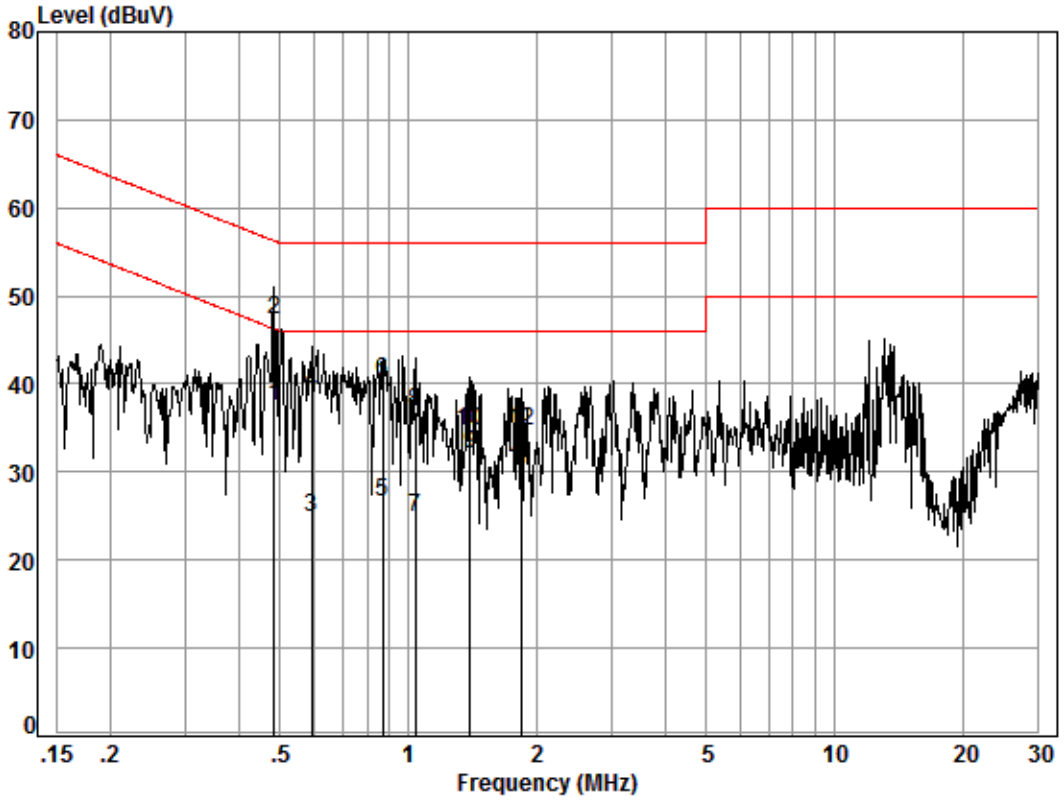
Mode:b; Line:Live Line



Site : Shielding Room
Condition: Line
Job No. : 10744CR
Test mode: b S6

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.32	0.01	9.51	17.17	26.69	49.80	-23.11	Average
2	0.32	0.01	9.51	27.77	37.29	59.80	-22.51	QP
3	0.49	0.01	9.49	33.53	43.03	46.23	-3.20	Average
4	0.49	0.01	9.49	36.64	46.14	56.23	-10.09	QP
5	0.61	0.02	9.52	22.12	31.66	46.00	-14.34	Average
6	0.61	0.02	9.52	28.85	38.39	56.00	-17.61	QP
7	0.75	0.02	9.50	18.42	27.94	46.00	-18.06	Average
8	0.75	0.02	9.50	29.70	39.22	56.00	-16.78	QP
9	1.01	0.02	9.50	22.80	32.32	46.00	-13.68	Average
10	1.01	0.02	9.50	29.14	38.66	56.00	-17.34	QP
11	8.06	0.01	9.61	9.08	18.70	50.00	-31.30	Average
12	8.06	0.01	9.61	14.89	24.51	60.00	-35.49	QP

Mode:b; Line:Neutral Line



Site : Shielding Room
Condition: Neutral
Job No. : 10744CR
Test mode: b S6

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.48	0.01	9.60	27.95	37.56	46.27	-8.71	Average
2	0.48	0.01	9.60	37.60	47.21	56.27	-9.06	QP
3	0.59	0.02	9.62	15.17	24.81	46.00	-21.19	Average
4	0.59	0.02	9.62	29.30	38.94	56.00	-17.06	QP
5	0.87	0.02	9.61	17.01	26.64	46.00	-19.36	Average
6	0.87	0.02	9.61	30.64	40.27	56.00	-15.73	QP
7	1.04	0.02	9.63	15.21	24.86	46.00	-21.14	Average
8	1.04	0.02	9.63	27.18	36.83	56.00	-19.17	QP
9	1.40	0.02	9.63	22.33	31.98	46.00	-14.02	Average
10	1.40	0.02	9.63	24.95	34.60	56.00	-21.40	QP
11	1.84	0.02	9.64	20.67	30.33	46.00	-15.67	Average
12	1.84	0.02	9.64	25.00	34.66	56.00	-21.34	QP

5.2 Radiated Emissions (30MHz-1GHz)

Test Requirement:	EN 301 489-1 V2.1.1
Test Method:	EN 55032:2015
Frequency Range:	30MHz to 1GHz
Measurement Distance:	10m
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

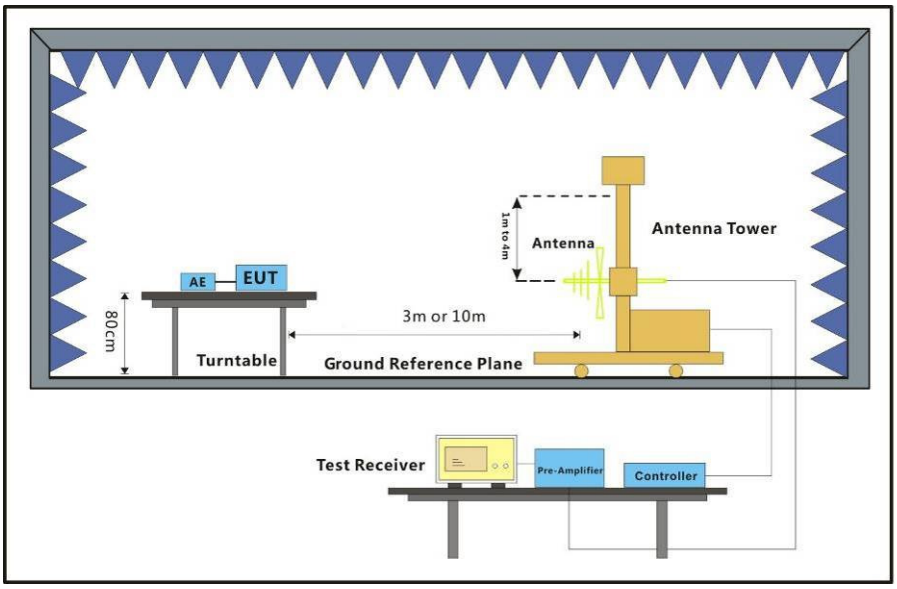
5.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 54 % RH Atmospheric Pressure: 1015 mbar

Pretest these mode to find the worst case:	a:Idle_Keep the EUT standby. b:Operation(wireless)_Keep the EUT pairing with other devices
The worst case for final test:	b:Operation(wireless)_Keep the EUT pairing with other devices

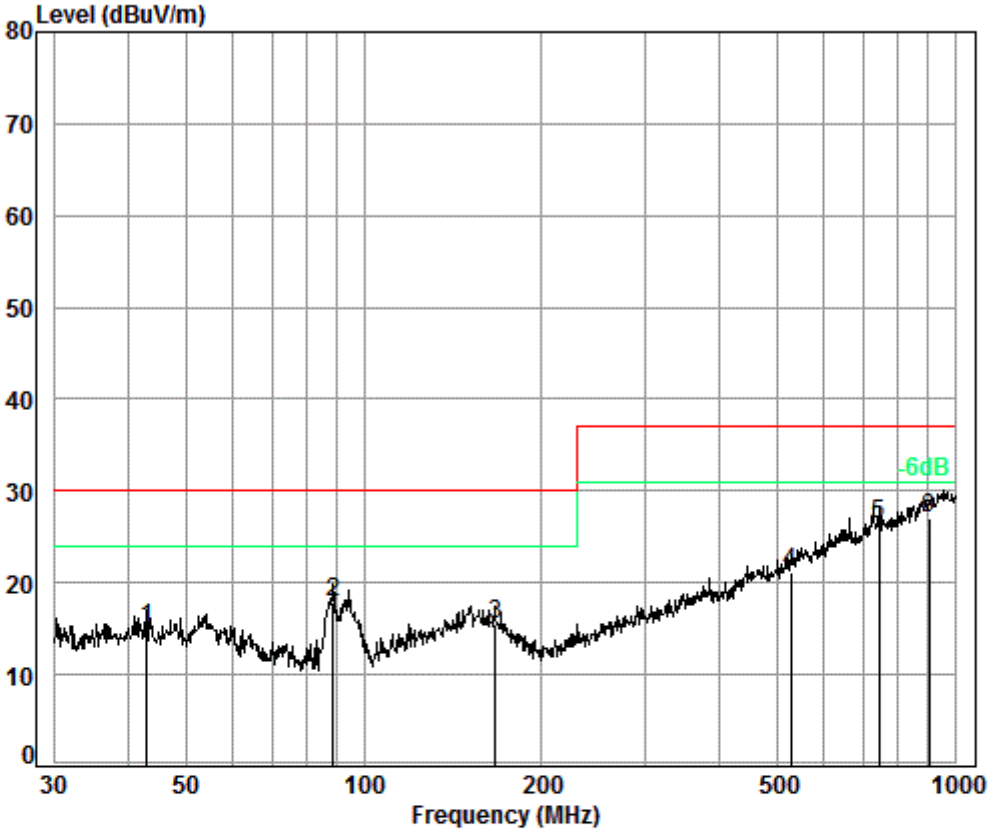
5.2.2 Test Setup Diagram



5.2.3 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.

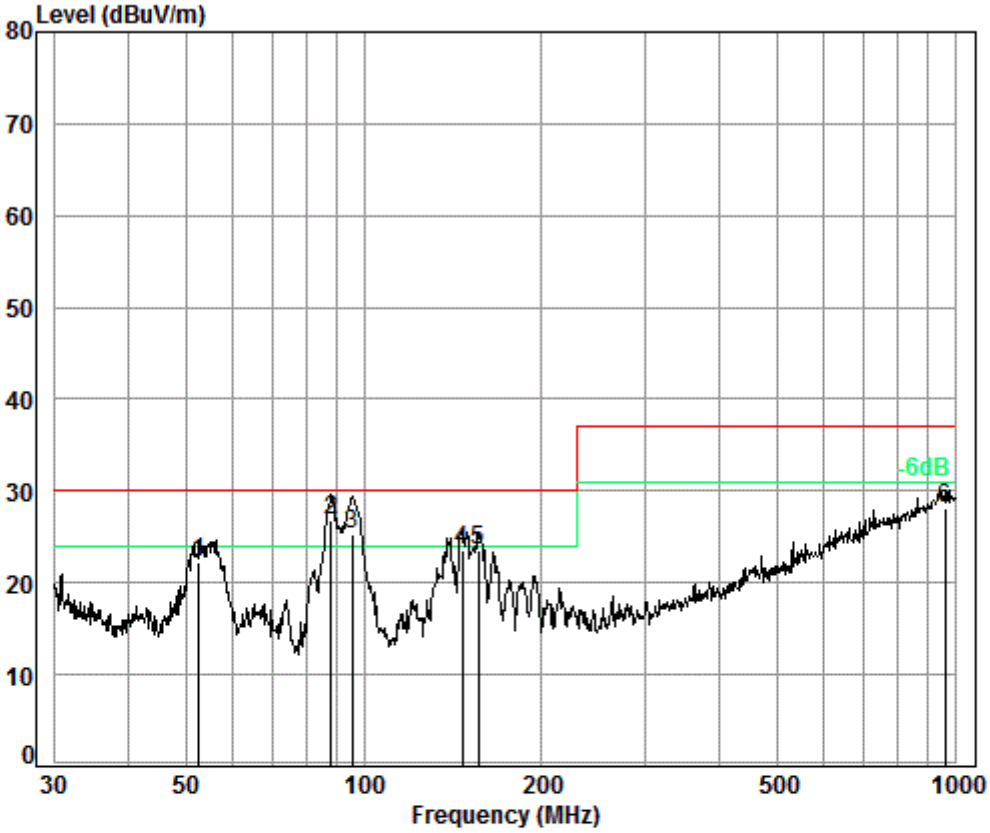
Model: AC51100
Mode:b; Polarization:Horizontal



Condition: 10m HORIZONTAL
Job No. : 10744CR
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	43.05	6.80	13.06	32.45	27.60	15.01	30.00	-14.99
2	88.65	7.19	8.67	32.52	34.53	17.87	30.00	-12.13
3	166.65	7.50	12.74	32.44	27.74	15.54	30.00	-14.46
4	526.40	8.72	17.30	32.29	27.37	21.10	37.00	-15.90
5	742.26	9.20	20.68	32.26	28.67	26.29	37.00	-10.71
6 pp	903.31	9.50	22.27	31.37	26.58	26.98	37.00	-10.02

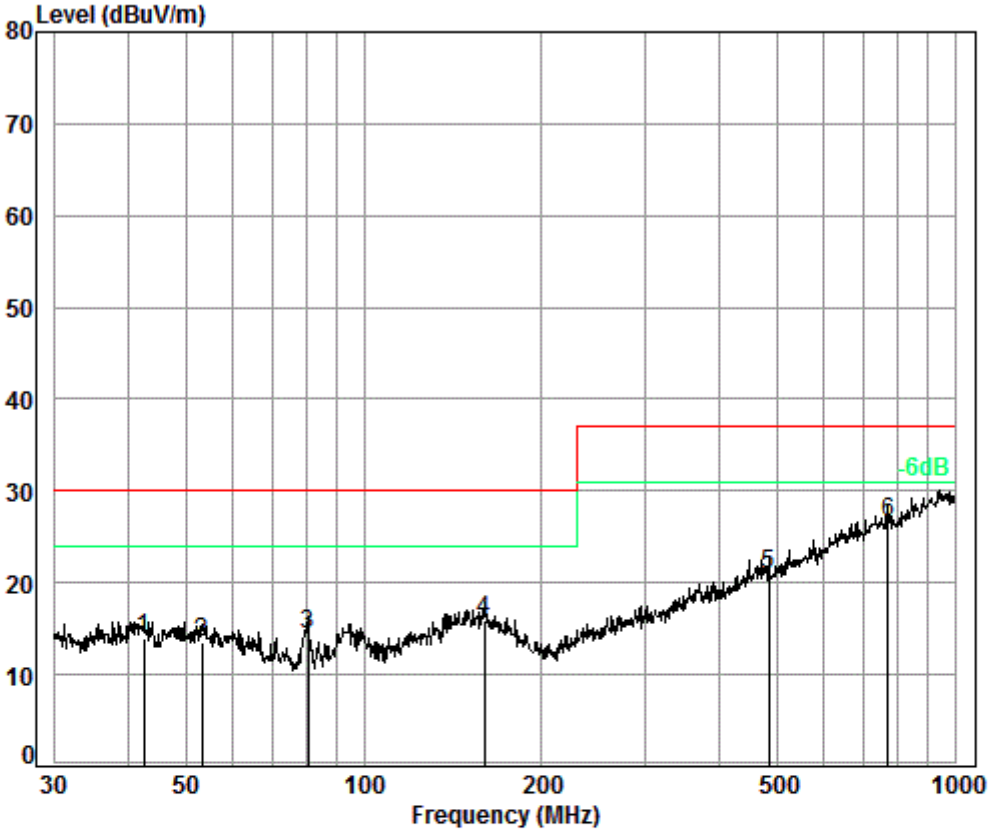
Mode:b; Polarization:Vertical



Condition: 10m VERTICAL
Job No. : 10744CR
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	52.76	6.96	12.55	32.43	35.23	22.31	30.00	-7.69
2 pp	88.03	7.18	8.66	32.52	43.51	26.83	30.00	-3.17
3	95.76	7.20	9.10	32.54	41.60	25.36	30.00	-4.64
4	146.89	7.44	13.21	32.44	35.42	23.63	30.00	-6.37
5	156.46	7.48	13.40	32.43	35.13	23.58	30.00	-6.42
6	958.79	9.60	22.76	30.93	26.71	28.14	37.00	-8.86

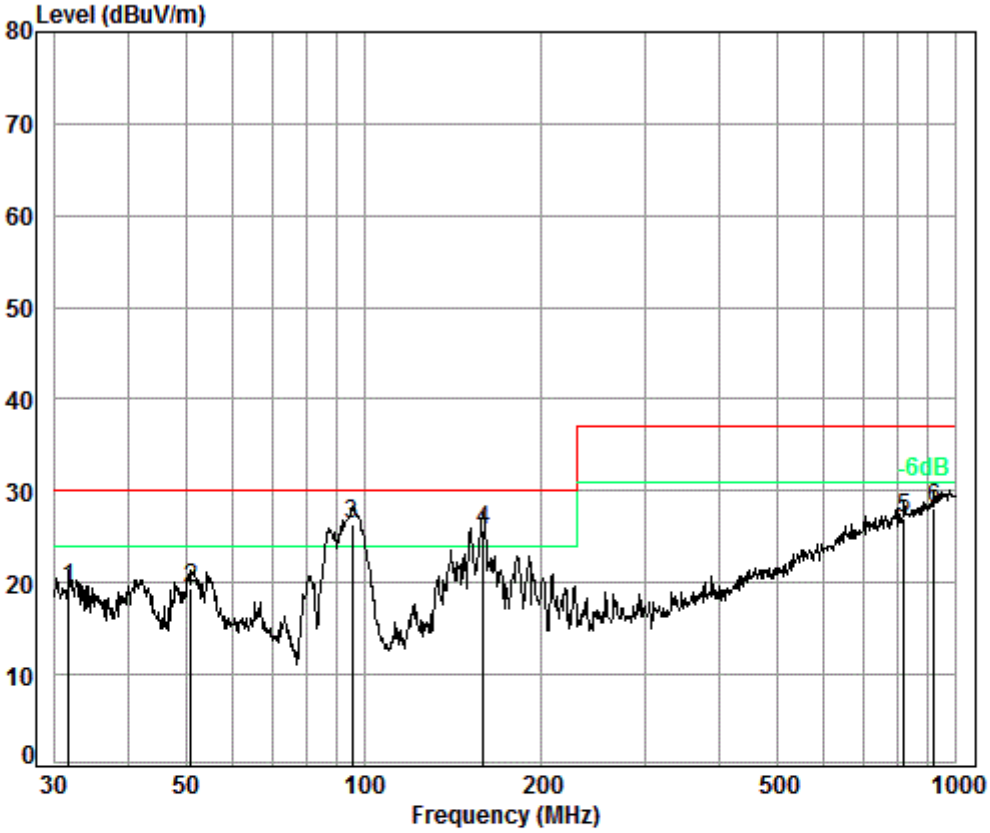
Model: AC52100
Mode:b; Polarization:Horizontal



Condition: 10m HORIZONTAL
Job No. : 10744CR
Test Mode: b
: AC52100

	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	42.60	6.80	13.10	32.45	26.49	13.94	30.00	-16.06
2	53.32	6.97	12.51	32.43	26.42	13.47	30.00	-16.53
3	80.64	7.11	8.55	32.49	31.15	14.32	30.00	-15.68
4	159.78	7.50	13.39	32.44	27.39	15.84	30.00	-14.16
5	483.91	8.52	16.57	32.30	28.11	20.90	37.00	-16.10
6 pp	768.75	9.22	20.99	32.26	28.57	26.52	37.00	-10.48

Mode:b; Polarization:Vertical



Condition: 10m VERTICAL
Job No. : 10744CR
Test Mode: b
: AC52100

	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	31.73	6.70	12.53	32.51	32.63	19.35	30.00	-10.65
2	51.12	6.92	12.69	32.42	32.18	19.37	30.00	-10.63
3 pp	95.76	7.20	9.10	32.54	42.59	26.35	30.00	-3.65
4	159.23	7.50	13.39	32.44	37.25	25.70	30.00	-4.30
5	818.83	9.30	21.37	32.09	28.36	26.94	37.00	-10.06
6	919.29	9.50	22.48	31.24	27.40	28.14	37.00	-8.86

5.3 Harmonic Current Emission

Test Requirement: EN 301 489-1 V2.1.1

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 61000-3-2:2014.

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."

5.4 Voltage Fluctuations and Flicker

Test Requirement: EN 301 489-1 V2.1.1

Test Method: EN 61000-3-3:2013

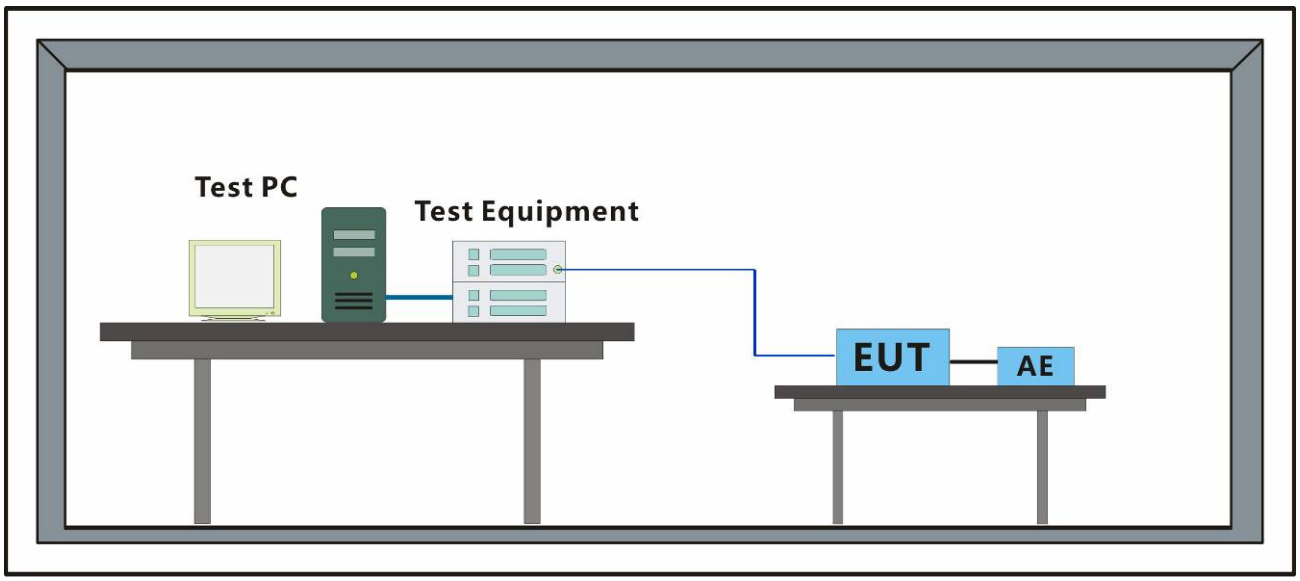
5.4.1 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1015 mbar

Pretest these mode to find the worst case:	a:Idle_Keep the EUT standby. b:Operation(wireless)_Keep the EUT pairing with other devices
The worst case for final test:	b:Operation(wireless)_Keep the EUT pairing with other devices

5.4.2 Test Setup Diagram

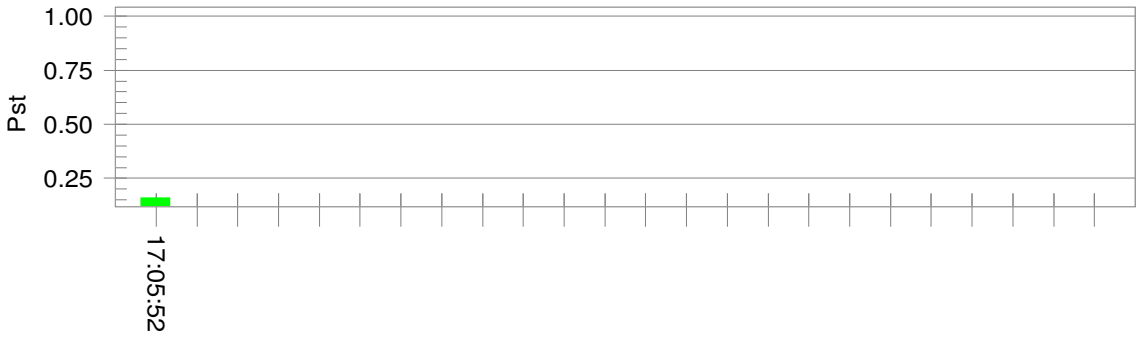


5.4.3 Measurement Data

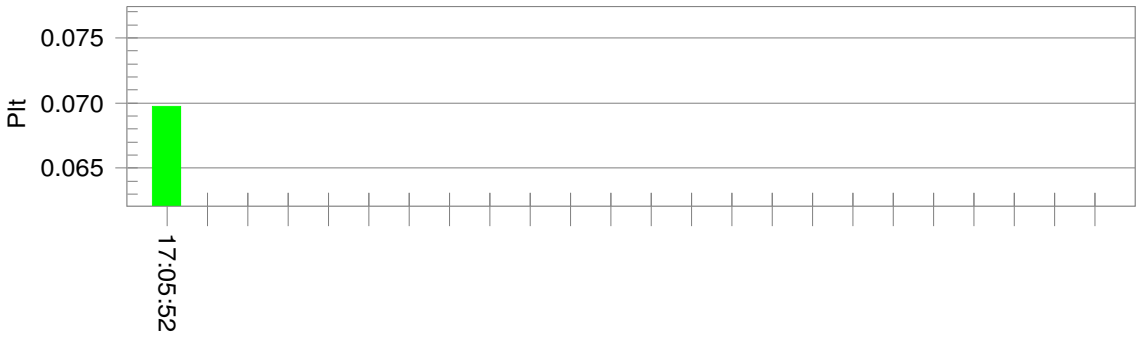
Mode:b

Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	**230.03**			
Highest dt (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Time(mS) > dt:	**0.0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.00**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.160**	**Test limit:**	**1.000**	**Pass**

6 Immunity Test Results

6.1 Performance Criteria Description in EN 301 489-1 V2.1.1

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.

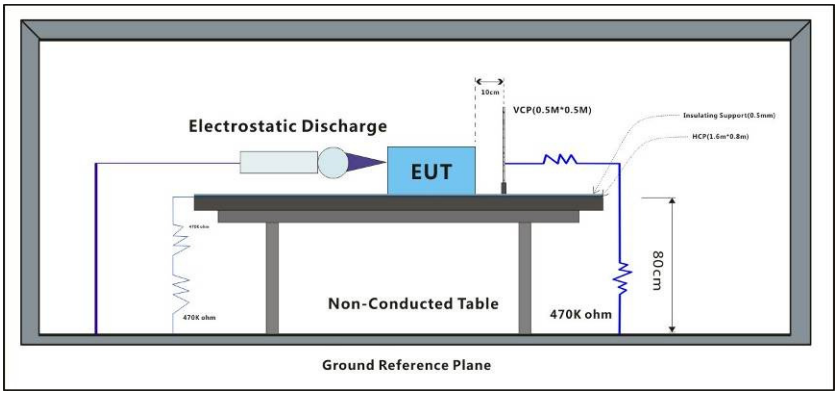
Criterion C Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.

Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

6.2 Electrostatic Discharge

Test Requirement: EN 301 489-1 V2.1.1
Test Method: EN 61000-4-2:2009
Performance Criterion: B
Discharge Impedance: 330Ω/150pF
Number of Discharge: Minimum 10 times at each test point
Discharge Mode: Single Discharge
Discharge Period: 1 second minimum

6.2.1 Test Setup Diagram



6.2.2 E.U.T. Operation

Operating Environment:
Temperature: 21 °C Humidity: 48 % RH Atmospheric Pressure: 1015 mbar
Test mode: a:Idle_Keep the EUT standby.
b:Operation(wireless)_Keep the EUT pairing with other devices

6.2.3 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	A
Contact Discharge	4	-	2	A
Horizontal Coupling	4	+	3	A
Horizontal Coupling	4	-	3	A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A

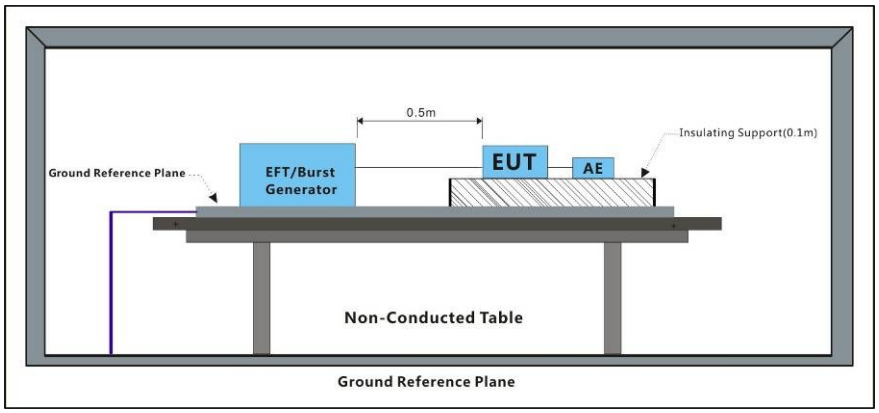
Results:

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

6.3 Electrical Fast Transients/Burst at Power Port

Test Requirement: EN 301 489-1 V2.1.1
Test Method: EN 61000-4-4:2012
Performance Criterion: B
Repetition Frequency: 5kHz
Burst Period: 300ms

6.3.1 Test Setup Diagram



6.3.2 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1015 mbar
Test mode: a:Idle_Keep the EUT standby.
b:Operation(wireless)_Keep the EUT pairing with other devices

6.3.3 Test Results:

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

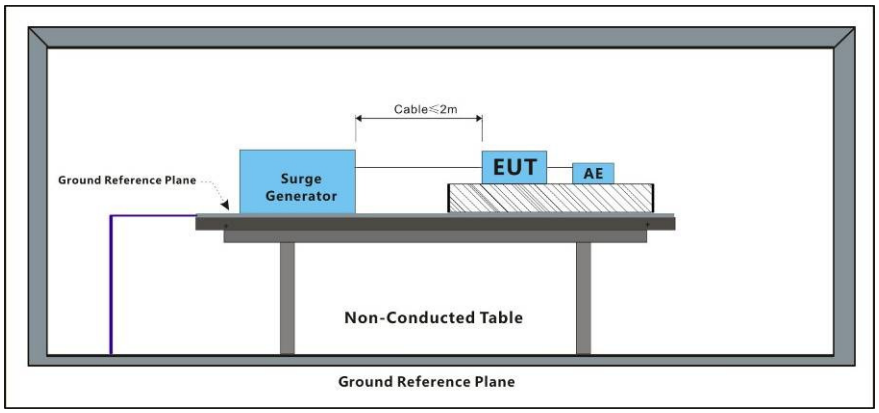
Results:

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

6.4 Surge at Power Port

Test Requirement: EN 301 489-1 V2.1.1
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°.

6.4.1 Test Setup Diagram



6.4.2 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1015 mbar
Test mode: a:Idle_Keep the EUT standby.
b:Operation(wireless)_Keep the EUT pairing with other devices

6.4.3 Test Results:

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

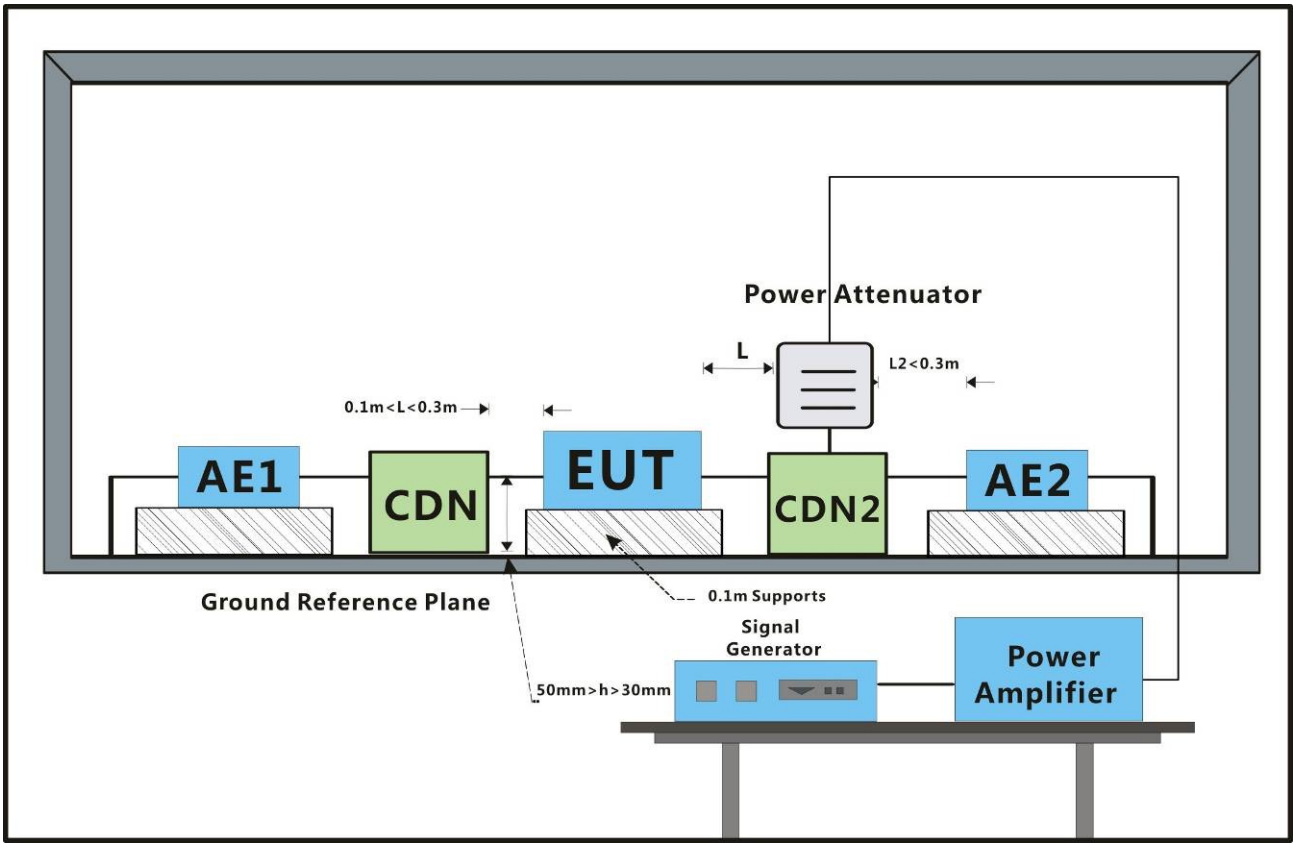
Results:

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

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

Test Requirement: EN 301 489-1 V2.1.1
Test Method: EN 61000-4-6:2014
Performance Criterion: A
Frequency Range: 0.15MHz to 80MHz
Modulation: 80%, 1kHz Amplitude Modulation
Step Size 1%

6.5.1 Test Setup Diagram



6.5.2 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1015 mbar
Test mode: a:Idle_Keep the EUT standby.
b:Operation(wireless)_Keep the EUT pairing with other devices

6.5.3 Test Results:

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

Results:

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

6.6 Voltage Dips and Interruptions

Test Requirement: EN 301 489-1 V2.1.1

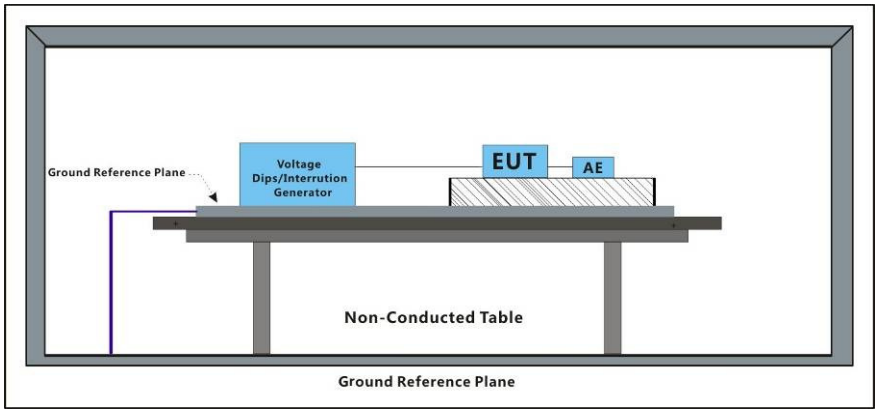
Test Method: EN 61000-4-11:2004

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

6.6.1 Test Setup Diagram



6.6.2 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 51 % RH Atmospheric Pressure: 1015 mbar

Test mode: a:Idle_Keep the EUT standby.

b:Operation(wireless)_Keep the EUT pairing with other devices

6.6.3 Test Results:

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

Results:

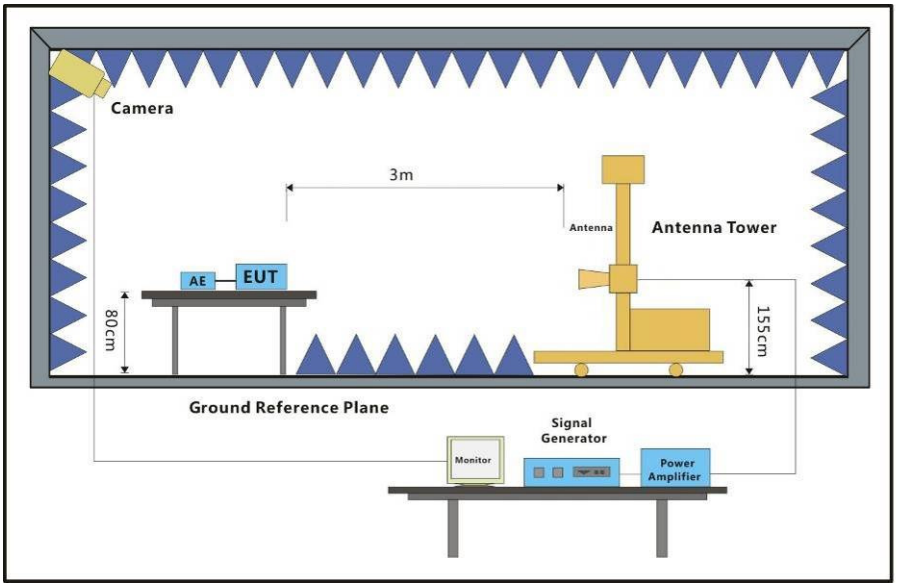
A: No degradation in the performance of the EUT was observed.

B: The EUT stops working during the test, but can recover automatically after the test.

6.7 Radiated Immunity (80MHz-6GHz)

Test Requirement: EN 301 489-1 V2.1.1
Test Method: EN 61000-4-3:2006 +A1:2008+A2:2010
Performance Criterion: A
Frequency Range: 80MHz to 6GHz
Antenna Polarisation: Vertical and Horizontal
Modulation: 1kHz,80% Amp. Mod,1% increment

6.7.1 Test Setup Diagram



6.7.2 E.U.T. Operation

Operating Environment:
Temperature: 22 °C Humidity: 56 % RH Atmospheric Pressure: 1015 mbar
Test mode: a:Idle_Keep the EUT standby.
b:Operation(wireless)_Keep the EUT pairing with other devices

6.7.3 Test Results:

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-6GHz	3	Front	2s	A
80MHz-6GHz	3	Back	2s	A
80MHz-6GHz	3	Left	2s	A
80MHz-6GHz	3	Right	2s	A
80MHz-6GHz	3	Top	2s	A
80MHz-6GHz	3	Underside	2s	A

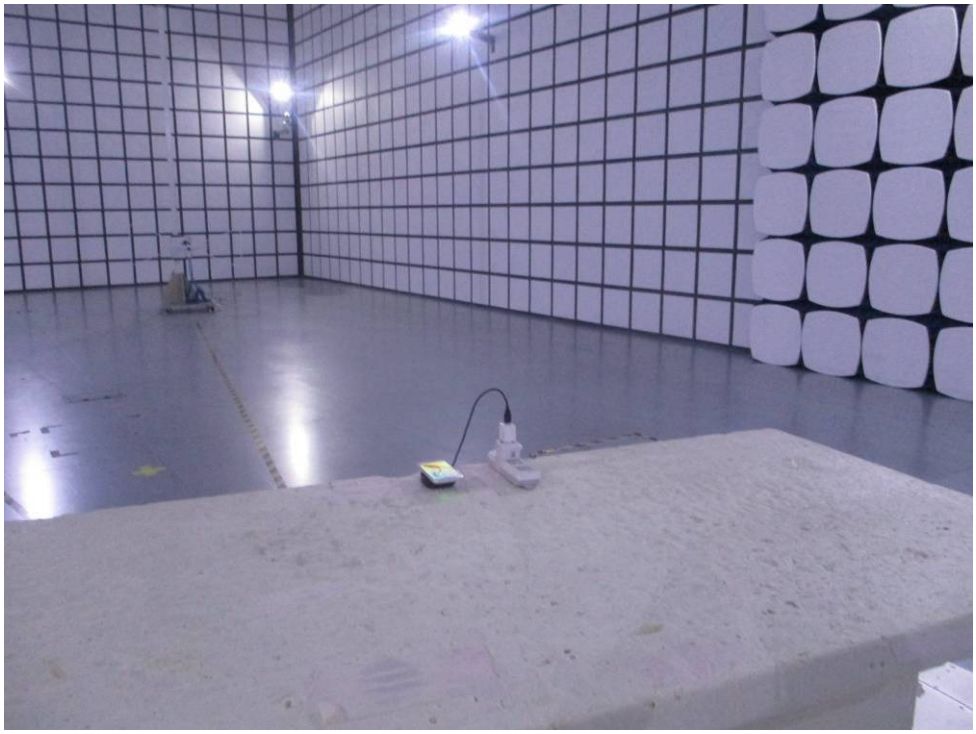
Results:

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

7 Photographs

7.1 Conducted Emissions at Mains Terminals (150kHz-30MHz) Test Setup

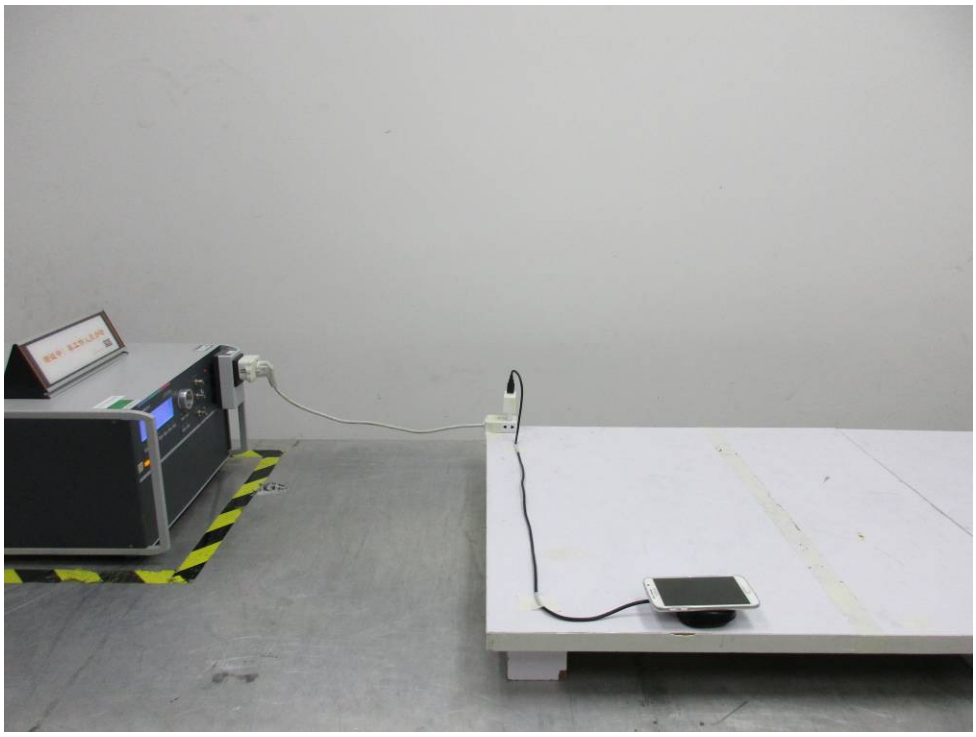
7.2 Radiated Emissions (30MHz-1GHz) Test Setup



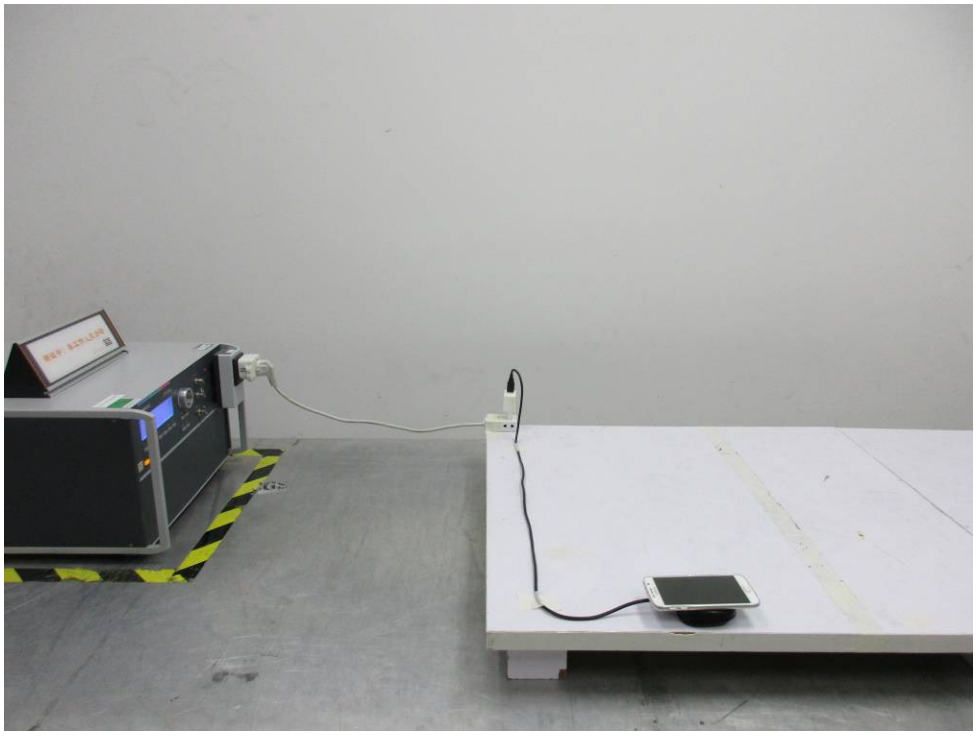
7.3 Voltage Fluctuations and Flicker Test Setup

7.4 Electrostatic Discharge Test Setup

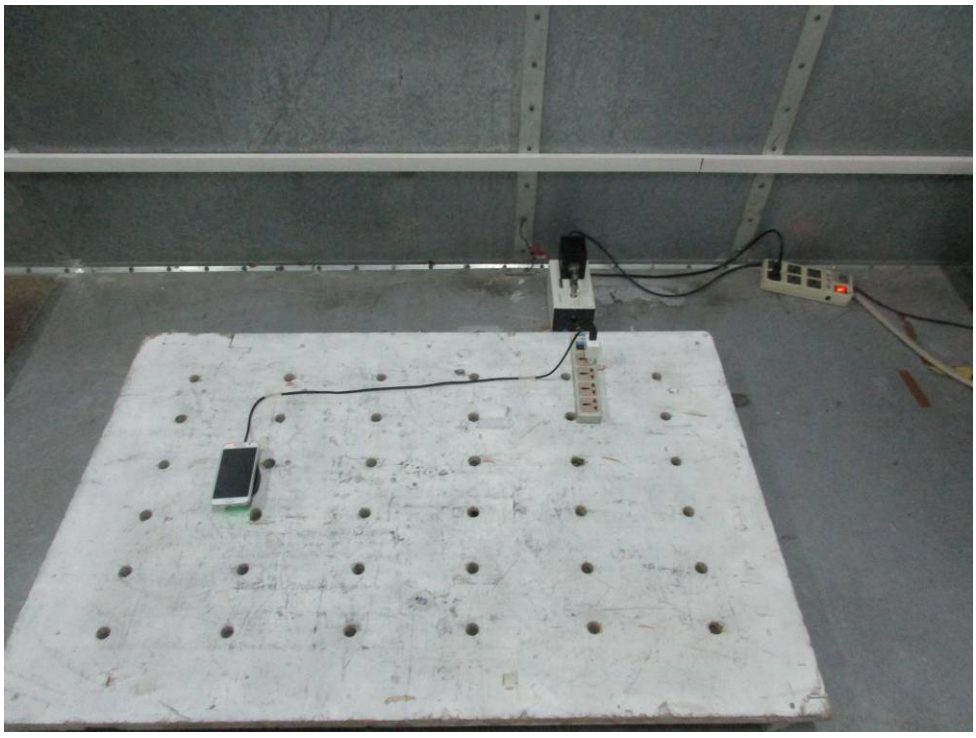
7.5 Electrical Fast Transients/Burst at Power Port Test Setup



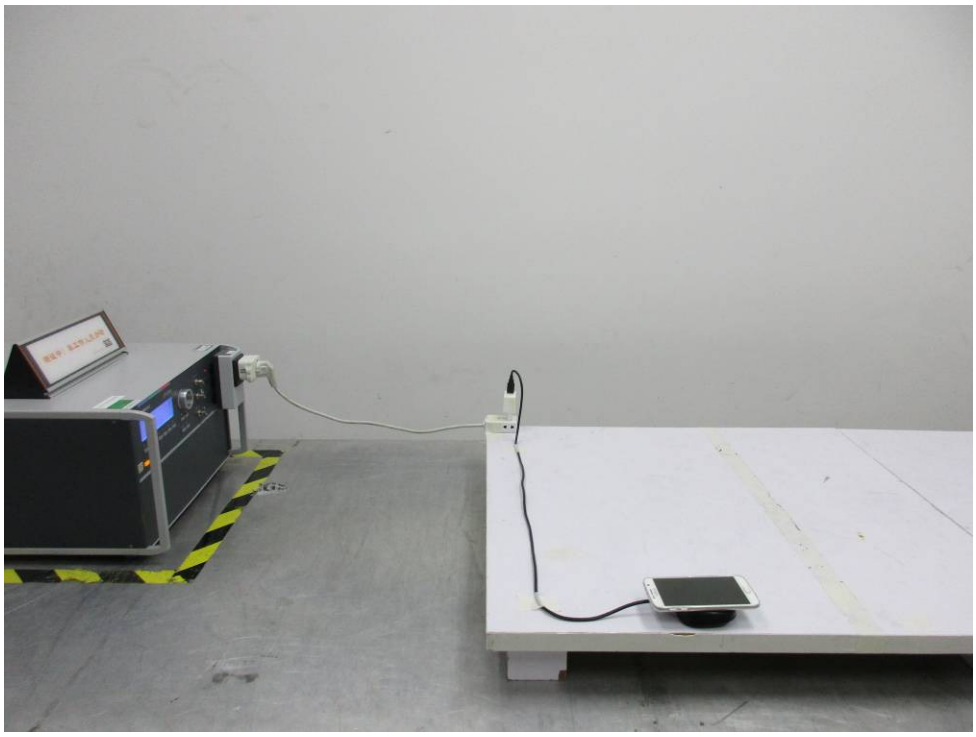
7.6 Surge at Power Port Test Setup



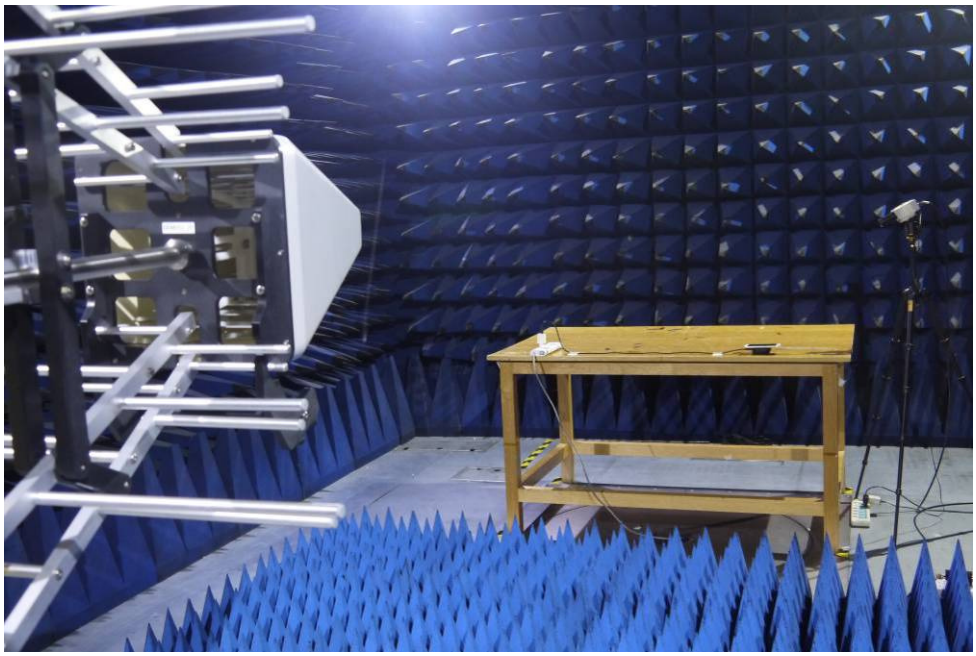
7.7 Conducted Immunity at Power Port (150kHz-80MHz) Test Setup



7.8 Voltage Dips and Interruptions Test Setup



7.9 Radiated Immunity (80MHz-6GHz) Test Setup



7.10 EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1710010744CR.

- End of the Report -