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EMC TEST REPORT

Product name	:	5v2a active poe splitter
Trademark	:	
Model no.	:	ZQ-AF-5V10W
Adding Model	:	WT-AF-5V10W,WT-AF-5V10W-USB,WT-AF-5V10W-USB-RA, WT-AF-5V10W-LA,WT-AF-12V12W,WT-AF-12V24W , ZQ-AF-5V10W-USB,ZQ-AF-5V10W-USB-RA,ZQ-AF-5V10W-LA, ZQ-AF-12V12W,ZQ-AF12V24W,ZQ-GAF-24V15W, ZQ-GAT-24V15W,ZC-GAF-24V15W,ZQ-GAF-24V24W, WT-GAF-5V12W,WT-GAF-12V30W,WS-GPOE-12V30W, WT-USBC-30W,WS-POE-5V10W,WS-POE-5.2V10W, WS-POE-12V12W,WS-POE-12V10W,WS-POE-48V10W, WS-POE-48V15W, ZQ-GAT-28V24W
Test Standards	:	**EN 55032: 2015** **EN 55024: 2010+A1: 2015** **EN 61000-3-2:2014** **EN 61000-3-3:2013**
Applicant	:	ShenZhen ZhangQing Electronic LTD
Address of applicant	:	No 622 HuaYuan Commercial Center, No 347 XiXiang Road, XiXiang Town, Bao'An District, ShenZhen City
Date of Receipt	:	September 19, 2017
Date of Test Date	:	September 19, 2017 - September 22, 2017
Date of issue.	:	September 22, 2017
Report No.	:	YRT201709219E

Test result	**Pass ***

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

The CE mark as shown above can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives. The protection requirements with respect to electromagnetic compatibility contained in Directive 2014/30/EU are considered.

GENERAL DESCRIPTION OF EUT

Equipment	5v2a active poe splitter
Model Name	ZQ-AF-5V10W
Adding Models:	WT-AF-5V10W,WT-AF-5V10W-USB,WT-AF-5V10W-USB-RA, WT-AF-5V10W-LA,WT-AF-12V12W,WT-AF-12V24W , ZQ-AF-5V10W-USB,ZQ-AF-5V10W-USB-RA,ZQ-AF-5V10W-LA, ZQ-AF-12V12W,ZQ-AF12V24W,ZQ-GAF-24V15W, ZQ-GAT-24V15W,ZC-GAF-24V15W,ZQ-GAF-24V24W, WT-GAF-5V12W,WT-GAF-12V30W,WS-GPOE-12V30W, WT-USBC-30W,WS-POE-5V10W,WS-POE-5.2V10W, WS-POE-12V12W,WS-POE-12V10W,WS-POE-48V10W, WS-POE-48V15W, ZQ-GAT-28V24W
Manufacturer	ShenZhen ZhangQing Electronic LTD
Manufacturer Address	No 622 HuaYuan Commercial Center, No 347 XiXiang Road, XiXiang Town, Bao'An District, ShenZhen City
Product Description	The EUT is a 5v2a active poe splitter Operating frequency: N/A Connecting I/O port: N/A Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification please refer to the User's Manual.
Power Source	DC Voltage
Power Rating	DC5V,50/60Hz, 10W

Testing Engineer (Tim Huang)

Reviewed By: (Tony Wang)

Approved Signatory (Walter Chen)

SHENZHEN YARUI TESTING CO.,LTD. APPROVED

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1. TEST SUMMARY

1.1.Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION (EN 55032: 2015)			
Description of Test Item	**Standard**	**Limits**	**Results**
Conducted disturbance at mains terminals	EN 55032: 2015	Class B	N/A
Conducted disturbance at telecommunication port	EN 55032: 2015	Class B	N/A
Radiated disturbance	EN 55032: 2015	Class B	PASS
Harmonic current emissions	EN 61000-3-2: 2014	Class A	PASS
Voltage fluctuations & flicker	EN 61000-3-3: 2013	---	PASS

IMMUNITY (EN 55024: 2010+A1: 2015)			
Description of Test Item	**Basic Standard**	**Performance Criteria**	**Results**
Electrostatic discharge (ESD)	EN 61000-4-2: 2009	B	PASS
Radio-frequency, Continuous radiated disturbance	EN 61000-4-3: 2006+A1: 2010	A	PASS
Electrical fast transient (EFT)	EN 61000-4-4: 2012	B	PASS
Surge (Input a.c. power ports)	EN 61000-4-5: 2014	B	PASS
Surge (Telecommunication ports)		B	N/A
Radio-frequency, Continuous conducted disturbance	EN 61000-4-6: 2014	A	PASS
Power frequency magnetic field	EN 61000-4-8: 2010	A	PASS
Voltage dips, >95% reduction	EN 61000-4-11: 2004	B	PASS
Voltage dips, 30% reduction		C	PASS
Voltage interruptions		C	PASS
N/A is an abbreviation for Not Applicable.			

1.2.Description of Performance Criteria

General Performance Criteria

Examples of functions defined by the manufacturer to be evaluated during testing include, but are not limited to, the following:

— essential operational modes and states;
— tests of all peripheral access (hard disks, floppy disks, printers, keyboard, mouse, etc.);
— quality of software execution;
— quality of data display and transmission;
— quality of speech transmission.

1.2.1.Performance 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 manufacture 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 deriver from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

1.2.2.Performance 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 manufacture, 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 operation 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 deriver from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

1.2.3.Performance 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 manufacture's instructions.

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

2.Measurement Uncertainty

Test	Parameters	Expanded uncertainty (Ulab)	Expanded uncertainty (Ucispr)
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	± 2.63 dB ± 2.35 dB	± 4.0 dB ± 3.6 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.2 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	N/A
Mains Harmonic	Voltage	± 0.510%	N/A
Voltage Fluctuations & Flicker	Voltage	± 0.510%	N/A

(1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.
(2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

3 .MEASUREMENT INSTRUMENTS EQUIPMENTS LIST

3.1 CONDUCTED EMISSION

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	LISN	R&S	ENV216	101112	Dec. 26, 2017
2	LISN	R&S	ENV216	101113	Dec. 26, 2017
3	EMI Test Receiver	R&S	ESCI	100920	Dec. 26, 2017

3.2 RADIATED EMISSION（3M）

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Log-Bicon Antenna	Schwarzbeck	CBL6141A	4180	Dec. 27, 2017
2	Spectrum Analyzer	HP	8563E	02052	Dec. 27, 2017
3	Horn Antenna	Schwarzbeck	BBHA 9120D	648	Dec. 27, 2017
4	Pre-Amplifier	HP	8447D	1937A03050	Dec. 26, 2017
5	Pre-Amplifier	EMCI	EMC051835	980075	Dec. 27, 2017
6	EMI Test Receiver	R&S	ESCI	100658	Dec. 26, 2017
7	Antenna Mast	UC	UC3000	N/A	N/A
8	Turn Table	UC	UC3000	N/A	N/A

3.3 RADIATED EMISSION（10M）

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Log-Bicon Antenna	R&S	HL562	100384	Dec. 27, 2017
2	Pre-Amplifier	HP	8447D	1937A03050	Dec. 26, 2017
3	EMI Test Receiver	R&S	ESCI	100658	Dec. 26, 2017
4	Antenna Mast	FRANKONIA	FAM4	N/A	N/A
5	Turn Table	FRANKONIA	FC02	N/A	N/A

3.4 HARMONICS AND FILCK

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Universal Power Analyzer	Voltech	PM6000	71906	Dec. 28, 2017
2	Programmable AC Power Source	Mtoni	PHF1530	62158	Dec. 28, 2017

3.5 ESD

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	ESD Simulator	EM TEST	DITO	N/A	Dec. 26, 2017

3.6 RS

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	INTEGRATED MEASUREMENT SYSTEM	R&S	IMS	100008	Dec. 28, 2017
2	Antenna	R&S	HL046Z1	100063	Dec. 28, 2017
3	Power Amplifier	BONN	BLWA	076788	Dec. 28, 2017

		ELEKTRONIK	0830-160/100/40D		
4	Microwave Horn Antenna	ETS	HI-6005	00089587	Dec. 28, 2017

3.7 EFT/BURST

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Electrical fast transient generator	3ctest	EFT-4003G	EC0471140	Dec. 26, 2017

3.8 SURGE

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Surge generator	3ctest	SG-5006G	EC5581149	Dec. 26, 2017
2	Surge CDN	3ctest	SGN-20G	EC5551128	Dec. 26, 2017

3.9 INJECTION CURRENT

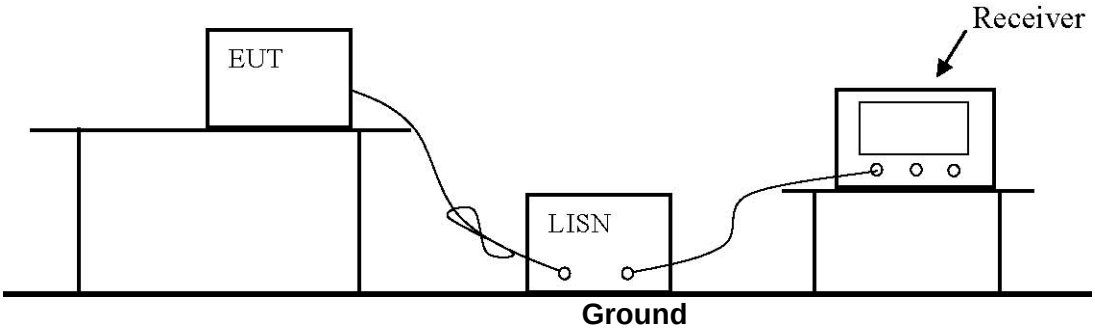
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Conducted Disturbances Test System	Schloder	CDG 6000	126A1266/2013	Dec. 27, 2017
2	Coupling/Decoupling	Schloder	CDN-M2+3	A2210251/2013	Dec. 27, 2017

3.10 VOLTAGE INTERRUPTION/DIPS

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	Voltage dips and up generator	3ctest	VDG-1105G	EC0171116	Dec. 26, 2017

4. POWER LINE CONDUCTED EMISSION MEASUREMENT

4.1 Block Diagram of Test Setup



4.2.Test Standard

EN 55032: 2015
Power Line Conducted Emission Limits (Class B)

Frequency (MHz)	Limit (dBμV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0
NOTE1-The lower limit shall apply at the transition frequencies. NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

4.3.EUT Configuration on Test

The following equipments are installed on Conducted Emission Measurement to see EN 55032 requirements and operating in a manner which tends to maximize its emission characteristics in ON application.

4.4.Operating Condition of EUT

4.4.1.Setup the EUT as shown on Section 4.1.
4.4.2.Turn on the power of all equipments.
4.4.3.Let the EUT work in measuring (Mode 1) and measure it.

4.5.Test Procedure

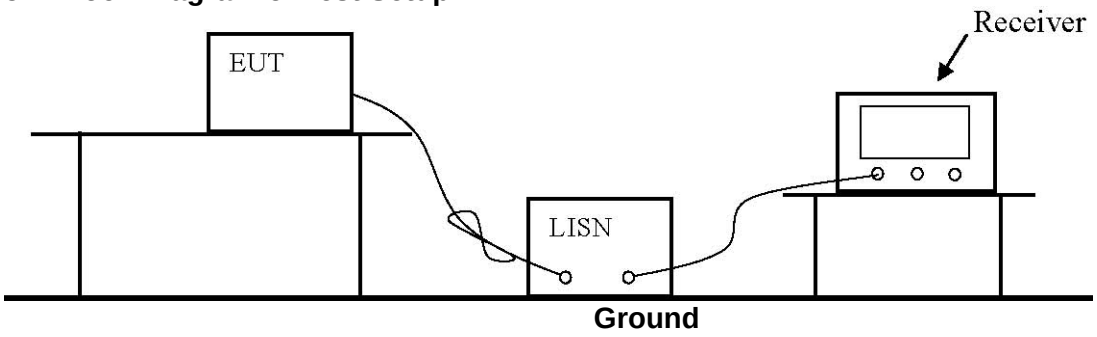
The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided 50-ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN 55032 regulations during conducted emission measurement.
The bandwidth of the field strength meter is set at 9kHz in 150kHz~30MHz.
The frequency range from 150kHz to 30MHz is investigated

4.6.Test Results

N/A

5 TELECOMMUNICATION LINE CONDUCTED EMISSION MEASUREMENT

5.1.Block Diagram of Test Setup



5.2.Test Standard

EN 55032: 2015
Telecommunication Line Conducted Emission Limits (Class B)

Frequency (MHz)	Voltage Limit (dBμV)		Current Limit(dBμV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 ~ 0.50	84.0 ~74	74~64	40~30	30~20
0.50 ~ 30.00	74	64	30	20
NOTE 1-The limits decrease linearly with the logarithm of the frequency in the range 0,15 MHz to 0,5 MHz. NOTE 2-The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150 7 to the telecommunication port under test (conversion factor is 20 log10 150 / I = 44 dB).				

5.3.EUT Configuration on Test

The following equipments are installed on Conducted Emission Measurement to see EN 55032 requirements and operating in a manner which tends to maximize its emission characteristics in normal application.

5.4.Operating Condition of EUT

5.4.1.Setup the EUT as shown on Section 5.1.
5.4.2.Turn on the power of all equipments.
5.4.3.Let the EUT work in measuring (Mode 1) and measure it.

5.5.Test Procedure

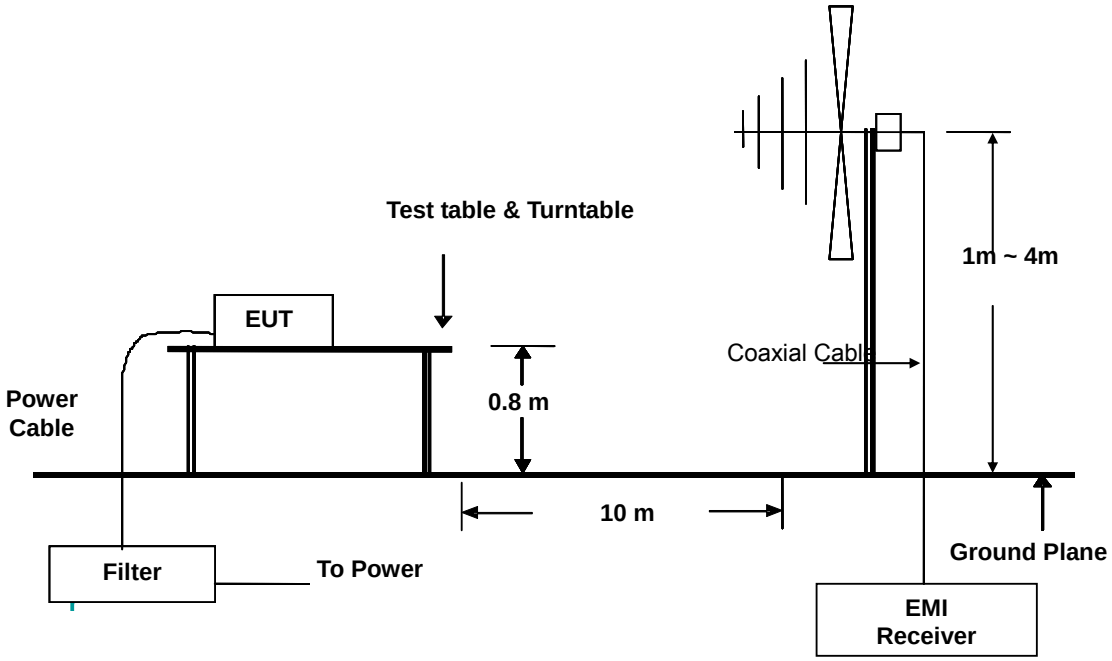
The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the ISN through Line Impedance Stability Network (L.I.S.N). This provided 50-ohm coupling impedance for the tested equipments. Both sides of ISN are investigated to find out the maximum conducted emission according to the EN 55032 regulations during conducted emission measurement.
The bandwidth of the field strength meter is set at 9kHz in 150kHz~30MHz.

5.6.Test Results

N/A

6. RADIATED EMISSION MEASUREMENT

6.1.Block Diagram of Test Setup



6.2.Measuring Standard

EN 55032: 2015

6.3.Radiated Emission Limits

EN 55032 Limits:

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

Limits for radiated disturbance Blow 1GHz

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dBμV/m)
30 ~ 230	10	40
230 ~ 1000	10	47
Note:(1)The smaller limit shall apply at the combination point 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.		

6.4.EUT Configuration on Test

The EN 55032 regulations test method must be used to find the maximum emission during radiated emission measurement.

6.5.Operating Condition of EUT

6.5.1.Turn on the power.

6.5.2.After that, let the EUT work in test (Mode 1) and measure it.

6.6.Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable 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 be moved up and down from 1 to 4 meters to find out the maximum emission level. By-log antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth of the Receiver is set at 120kHz.

The frequency range from 30MHz to 1000MHz is investigated.

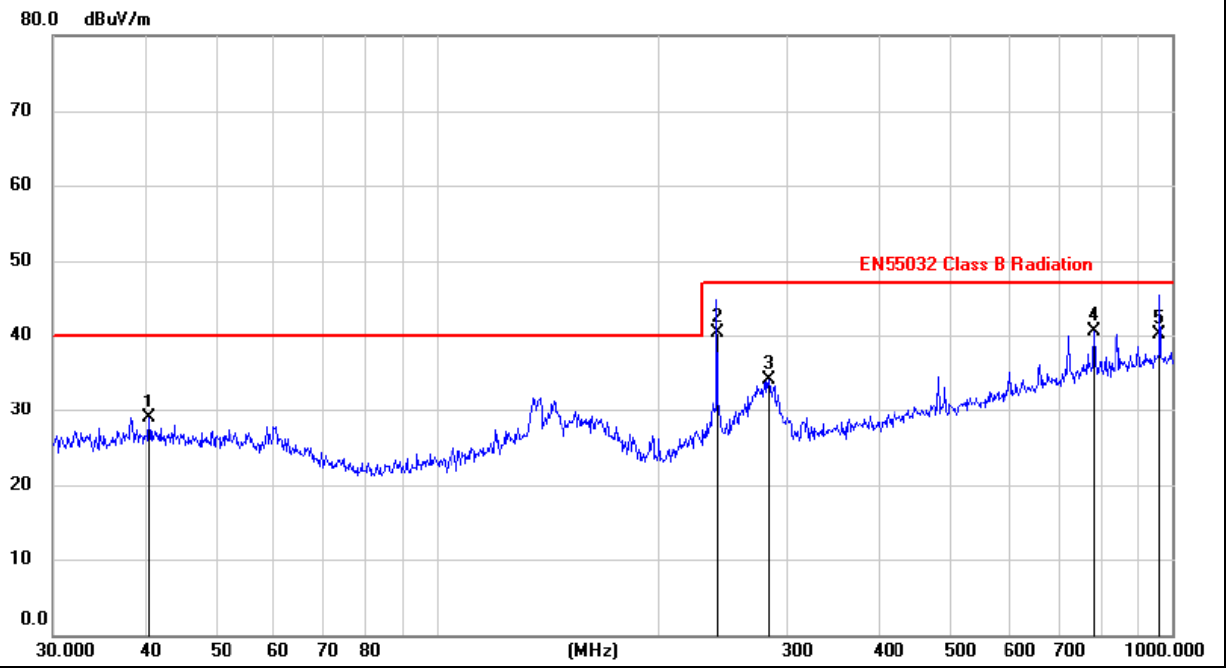
6.7.Test Results

PASS.

The test result please refer to the next page.

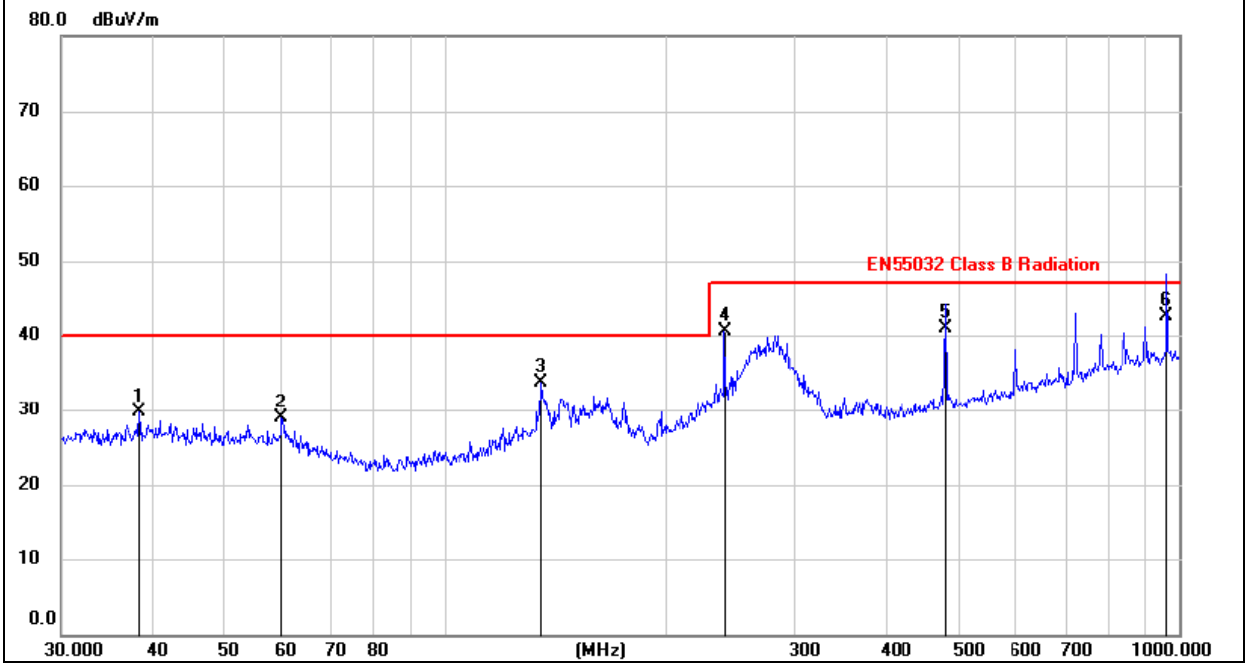
EUT：	5v2a active poe splitter	Model Name. ：	ZQ-AF-5V10W
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101 Kpa	Test Date：	2017-09-21
Test Mode ：	Mode 1	Polarization：	Vertical
Test Power ：	DC 5V		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		40.5591	14.73	14.17	28.90	40.00	-11.10	peak			
2		240.8304	28.41	11.99	40.40	47.00	-6.60	QP			
3		282.9852	21.16	13.01	34.17	47.00	-12.83	peak			
4	*	782.3453	18.74	21.84	40.58	47.00	-6.42	peak			
5		965.5421	16.32	23.88	40.20	47.00	-6.80	QP			



EUT：	5v2a active poe splitter	Model Name. ：	ZQ-AF-5V10W
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101 Kpa	Test Date：	2017-09-21
Test Mode ：	Mode 1	Polarization：	Horizontal
Test Power ：	DC 5V		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		38.3462	15.80	13.95	29.75	40.00	-10.25	peak			
2		59.8588	16.00	13.00	29.00	40.00	-11.00	peak			
3		135.5062	20.19	13.56	33.75	40.00	-6.25	peak			
4		240.8304	28.55	11.99	40.54	47.00	-6.46	peak			
5		480.5276	23.74	17.08	40.82	47.00	-6.18	QP			
6	*	965.5421	18.66	23.88	42.54	47.00	-4.46	QP			



7. HARMONICS CURRENT

7.1 LIMITS OF HARMONICS CURRENT

IEC 555-2					
Table - I			Table - II		
Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in Ampers)	Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in Ampers)
Non Portable Tools or TV Receivers	Odd Harmonics		TV Receivers	Odd Harmonics	
	3	2.30		3	0.80
	5	1.14		5	0.60
	7	0.77		7	0.45
	9	0.40		9	0.30
	11	0.33		11	0.17
	13	0.21		13	0.12
	15≤n≤39	0.15 · 15/n		15≤n≤39	0.10 · 15/n
	Even Harmonics			Even Harmonics	
	2	1.08		2	0.30
	4	0.43		4	0.15
	8	0.30			
	8≤n≤40	0.23 · 8/n		DC	0.05

EN 61000-3-2/IEC 61000-3-2					
Equipment Category	Max. Permissible Harmonic Current (in Ampers)	Equipment Category	Harmonic Order n	Max. Permissible Harmonic Current (in A)	(mA/w)
Class A	Same as Limits Specified in 4-2.1, Table - I, but only odd harmonics required	Class D	3	2.30	3.4
			5	1.14	1.9
			7	0.77	1.0
			9	0.40	0.5
			11	0.33	0.35
			13≤n≤39	see Table I	3.85/n
			only odd harmonics required		

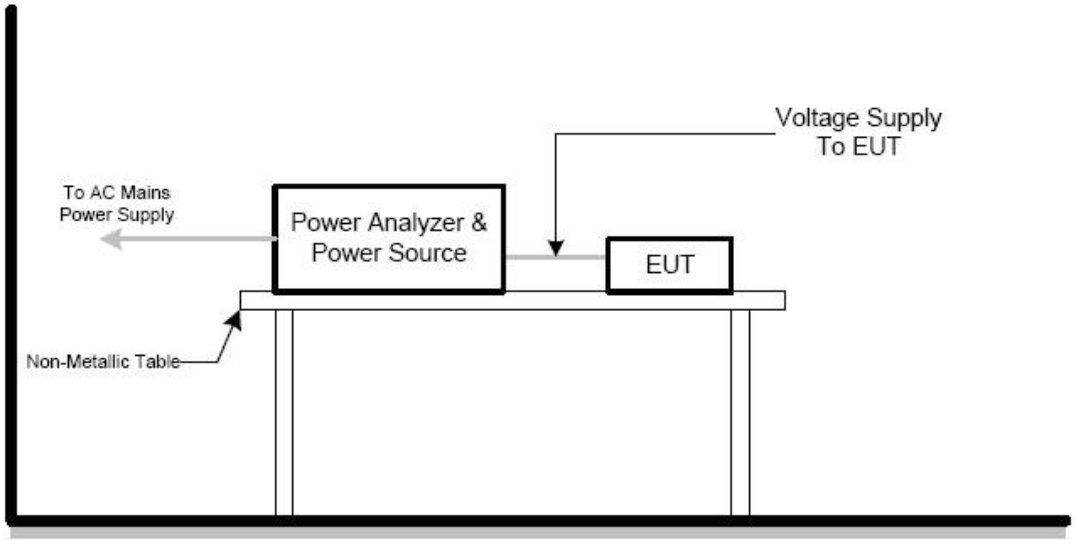
7.2 TEST PROCEDURE

a. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions.
b. The classification of EUT is according to section 5 of EN 61000-3-2: 2014.The EUT is classified as follows:
Class A: Balanced three-phase equipment, Household appliances excluding equipment as Class D, Tools excluding portable tools, Dimmers for incandescent lamps, audio equipment, equipment not specified in one of the three other classes.
Class B: Portable tools. Portable tools.; Arc welding equipment which is not professional equipment.
Class C: Lighting equipment.
Class D: Equipment having a specified power less than or equal to600 W of the following types: Personal computers and personal computer monitors and television receivers.
c. The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the time necessary for the EUT to be exercised.

7.3 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.1** Unless otherwise a special operating condition is specified in the follows during the testing.

7.4 TEST SETUP



7.5 TEST RESULTS

This Max power of EUT is less than 75W, so this test not to apply.

8. VOLTAGE FLUCTUATION AND FLICKERS

8.1 LIMITS OF VOLTAGE FLUCTUATION AND FLICKERS

Tests	Limits		Descriptions
	IEC555-3	IEC/EN 61000-3-3	
Pst	≤ 1.0, Tp= 10 min.	≤ 1.0, Tp= 10 min.	Short Term Flicker Indicator
Plt	N/A	≤ 0.65, Tp=2 hr.	Long Term Flicker Indicator
dc	≤ 3%	≤ 3.3%	Relative Steady-State V-Chang
dmax	≤ 4%	≤ 4%	Maximum Relative V-change
d (t)	N/A	≤ 3.3% for > 500 ms	Relative V-change characteristic

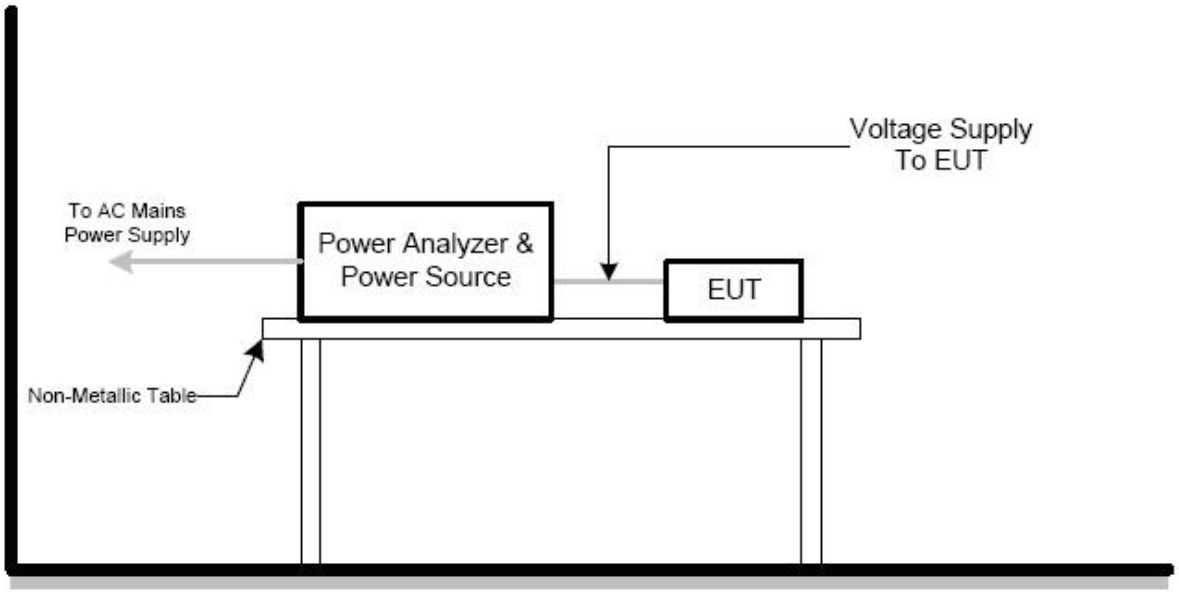
8.2 TEST PROCEDURE

a. Harmonic Current Test:
Test was performed according to the procedures specified in Clause 5.0 of IEC555-2 and/or Sub-clause 6.2 of IEC/EN 61000-3-2 depend on which standard adopted for compliance measurement.
b. Fluctuation and Flickers Test:
Tests was performed according to the Test Conditions/Assessment of Voltage Fluctuations specified in Clause 5.0/6.0 of IEC555-3 and/or Clause 6.0/4.0 of IEC/EN 61000-3-3 depend on which standard adopted for compliance measurement.
c. All types of harmonic current and/or voltage fluctuation in this report are assessed by direct measurement using flicker-meter.

8.3 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of **2.1** Unless otherwise a special operating condition is specified in the follows during the testing.

8.4 TEST SETUP



9. EMC IMMUNITY TEST

9.1 STANDARD COMPLIANCE/SERVRITY LEVEL/CRITERIA

Tests Standard No.	TEST SPECIFICATION Level	Test Mode Test Ports	Perform. Criteria	Remark
1. ESD IEC/EN 61000-4-2	8KV air discharge 4KV contact discharge	Direct Mode	B	
	4KV HCP discharge 4KV VCP discharge	Indirect Mode	B	
2. RS IEC/EN 61000-4-3	80 MHz to 1000 MHz 3V/m(rms), 1000Hz, 80%, AM modulated	Enclosure	A	
3. EFT/Burst IEC/EN 61000-4-4	1.0KV(peak) 5/50ns Tr/Th 5KHz Repetition Freq.	Power Supply Port	B	
	0.5 KV(peak) 5/50ns Tr/Th 5KHz Repetition Freq.	CTL/Signal Data Line Port	B	N/A
4. Surges IEC/EN 61000-4-5	1 KV(5P/5N) 1.2/50(8/20) Tr/Th us	L-N	B	
	2 KV(5P/5N) 1.2/50(8/20) Tr/Th us	L-PE N-PE	B	N/A
5 Injected Current IEC/EN 61000-4-6	0.15 MHz to 80 MHz 3V(rms), 1000Hz 80% , AM Modulated 150Ω source impedance	CTL/Signal Port	A	N/A
	0.15 MHz to 80 MHz 3V(rms), 1000Hz 80% , AM Modulated 150Ω source impedance	AC Power Port	A	
	0.15 MHz to 80 MHz 3V(rms), 1000Hz 80% , AM Modulated 150Ω source impedance	DC Power Port	A	N/A
6. Volt. Interruptions Volt. Dips IEC/EN 61000-4-11	Voltage dip 0% Voltage dip 70% Interruption 0%	AC Power Port	B C C	

* Remark:

N/A : denotes test is not applicable in this Test Report
(1) : The EUT is a battery operating device and no any other cable connection to PC device.
(2) : Applicable only to cables which according to the manufacturer's specification supports communication on cables lengths greater than 3 m.
(3) : Applicable only to equipment containing devices susceptible to magnetic fields

9.2 GENERAL PERFORMANCE CRITERIA

According to **EN 55024** standard, the general performance criteria as following:

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.
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.

9.3 GENERAL PERFORMANCE CRITERIA TEST SETUP

The EUT tested system was configured as the statements of **2.1** Unless otherwise a special operating condition is specified in the follows during the testing.

9.4 ESD TESTING

9.4.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-2
Discharge Impedance:	330 ohm / 150 pF
Required Performance	B
Discharge Voltage:	Air Discharge：2kV/4kV/8kV (Direct) Contact Discharge：2kV/4kV (Direct/Indirect)
Polarity:	Positive & Negative
Number of Discharge:	Air Discharge: min. 20 times at each test point Contact Discharge: min. 200 times in total
Discharge Mode:	Air and Contact
Discharge Period:	1 second minimum

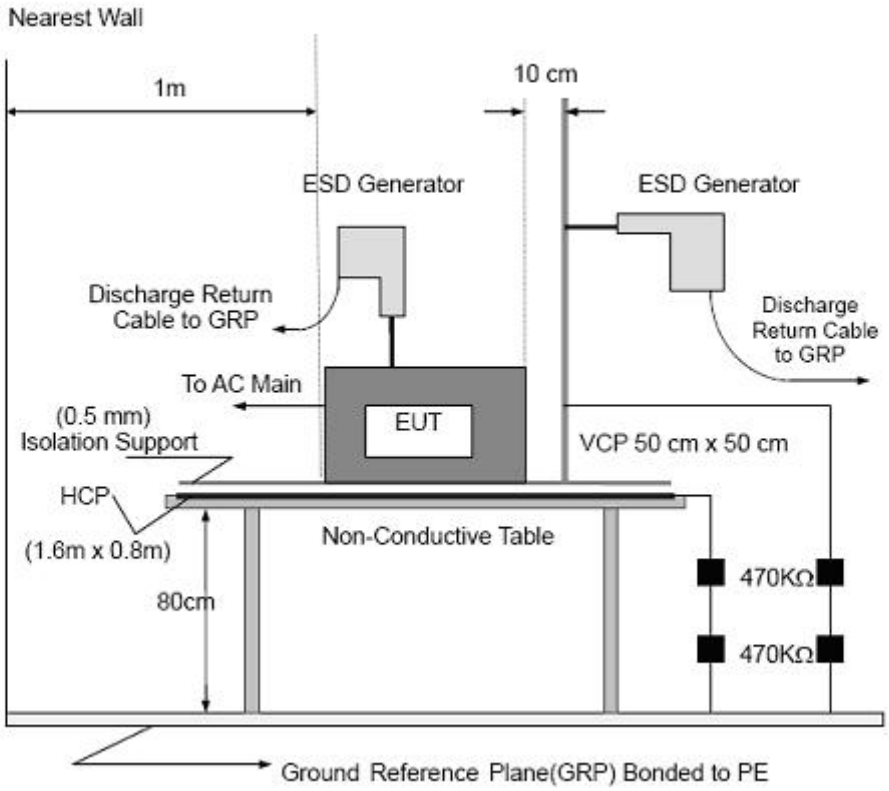
9.4.2 TEST PROCEDURE

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manner:

a. Contact discharge was applied to conductive surfaces and coupling planes of the EUT.
During the test, it was performed with single discharges. For the single discharge time between successive single discharges was at least 1 second. The EUT shall be exposed to at least 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points. One of the test points shall be subjected to at least 50 indirect discharges to the center of the front edge of the horizontal coupling plane. The remaining three test points shall each receive at least 50 direct contact discharges.
If no direct contact test points are available, then at least 200 indirect discharges shall be applied in the indirect mode. Test shall be performed at a maximum repetition rate of one discharge per second.
Vertical Coupling Plane (VCP):
The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.
The four faces of the EUT will be performed with electrostatic discharge.
Horizontal Coupling Plane (HCP):
The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.
The four faces of the EUT will be performed with electrostatic discharge.

b. Air discharges at insulation surfaces of the EUT.
It was at least ten single discharges with positive and negative at the same selected point.

9.4.3 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25mm thick, and 2.5 meters square connected to the protective grounding system. A Horizontal Coupling Plane (1.6m x 0.8m) was placed on the table and attached to the GRP by means of a cable with 940k total impedance. The equipment under test, was installed in a representative system as described in section 7 of IEC /EN 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of1-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of IEC/EN 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of0.1-meter thickness. The GRP consisted of a sheet of aluminum that is at least 0.25mm thick, and 2.5meters square connected to the protective grounding system and extended at least 0.5 meters from the EUT on all sides.

9.5.4 TEST RESULTS

EUT：	5v2a active poe splitter	Model Name. ：	ZQ-AF-5V10W
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101 Kpa	Test Date：	2017-09-21
Test Mode ：	Full Load		
Test Power ：	DC 5V		

Table 1: Electrostatic Discharge Immunity (Air Discharge)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
enclosure	A	A	A	A	A	A	A	A		

Table 2: Electrostatic Discharge Immunity (Direct Contact)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
DC+	A	A	A	A						
DC-	A	A	A	A						

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A						
Top Side	A	A	A	A						
Back Side	A	A	A	A						
Left Side	A	A	A	A						
Right Side	A	A	A	A						

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A						
Top Side	A	A	A	A						
Back Side	A	A	A	A						
Left Side	A	A	A	A						
Right Side	A	A	A	A						

Test Result: Pass

10. RS TESTING

10.1 TEST SPECIFICATION

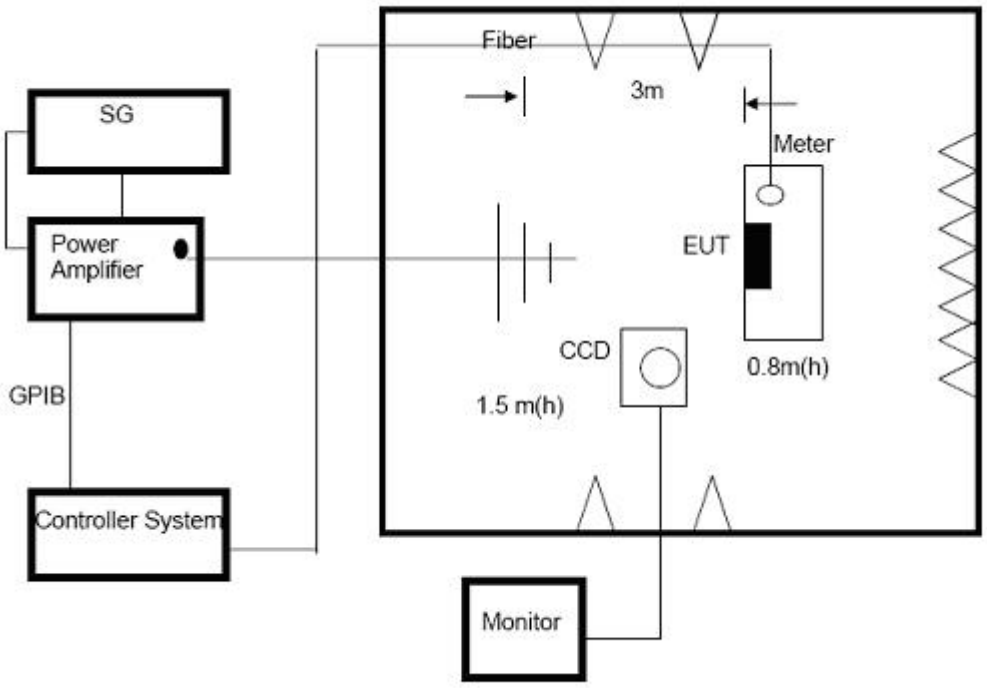
Basic Standard:	IEC/EN 61000-4-3
Required Performance	A
Frequency Range:	80 MHz - 1000 MHz & 1400MHz - 2700MHz
Field Strength:	3 V/m
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Polarity of Antenna:	Horizontal and Vertical
Test Distance:	3 m
Antenna Height:	1.5 m
Dwell Time:	at least 3 seconds

10.2 TEST PROCEDURE

The EUT and support equipment, which are placed on a table that is 0.8 meter above ground and the testing was performed in a fully-anechoic chamber.
The testing distance from antenna to the EUT was 3 meters.
The other condition as following manner:

a. The field strength level was 3V/m.
b. The frequency range is swept from 80 MHz to 1000 MHz, & 1400MHz - 2700MHz with the signal 80%amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5x 10-3 decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
c. Sweep Frequency 900 MHz, with the Duty Cycle:1/8 and Modulation: Pulse 217 Hz(if applicable)
d. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
e. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

10.3 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

10.4 TEST RESULTS

EUT：	5v2a active poe splitter	Model Name. ：	ZQ-AF-5V10W
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101 Kpa	Test Date：	2017-09-21
Test Mode ：	Full Load		
Test Power ：	DC 5V		

Frequency Range (MHz)	RF Field Position	R.F. Field Strength	Azimuth	Perform. Criteria	Results	
80MHz - 1000MHz	H / V	3 V/m (rms) AM Modulated 1000Hz, 80%	Front	**A**	**A**	**PASS**
			Rear			
			Left			
			Right			

Note:

1) P/N denotes the Positive/Negative polarity of the output voltage.
2) N/A - denotes test is not applicable in this test report.
3) Criteria A: There was no change operated with initial operating during the test.
4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
5) Criteria C: The system shut down during the test.

11. EFT/BURST TESTING

11.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-4
Required Performance	B
Test Voltage:	Power Line：1 kV Signal/Control Line：0.5 KV
Polarity:	Positive & Negative
Impulse Frequency:	5 kHz
Impulse Wave shape :	5/50 ns
Burst Duration:	15 ms
Burst Period:	300 ms
Test Duration:	Not less than 1 min.

11.2 TEST PROCEDURE

The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.

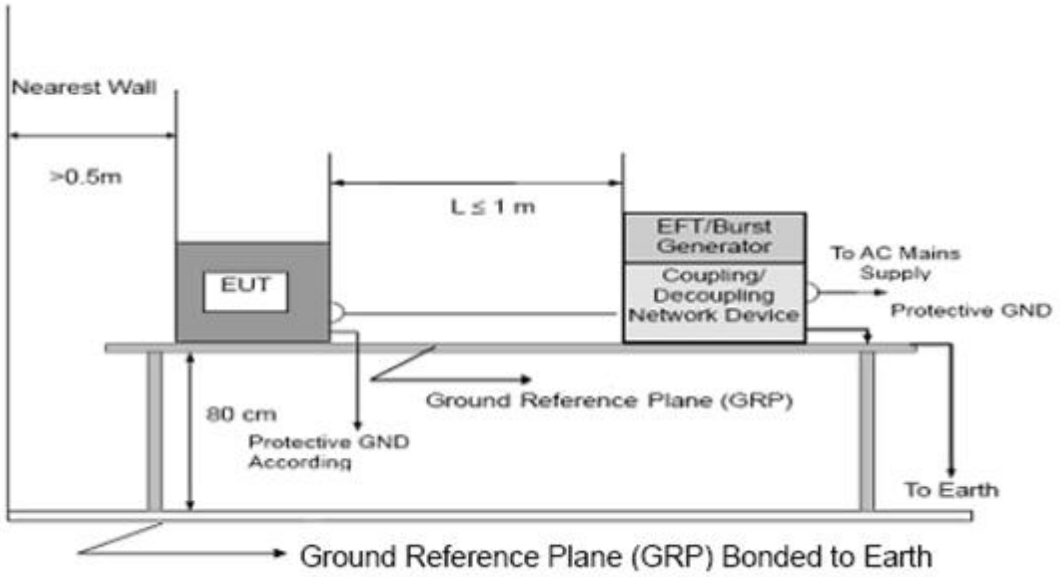
The other condition as following manner:

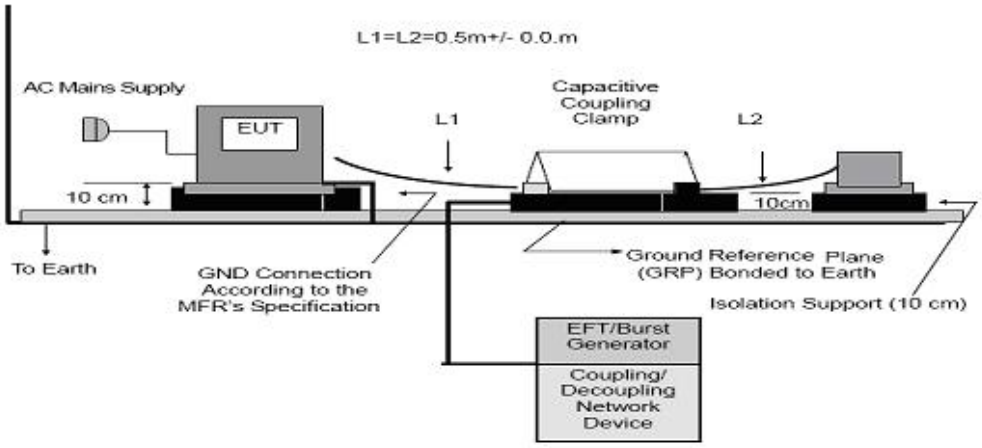
a. The length of power cord between the coupling device and the EUT should not exceed 1 meter.

b. Both positive and negative polarity discharges were applied.

c. The duration time of each test sequential was 1 minute

11.3 TEST SETUP





Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table (0.8m high) standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system. A minimum distance of 0.5m was provided between the EUT and the walls of the laboratory or any other metallic structure.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of IEC/EN 61000-4-4 and its cables, were isolated from the Ground Reference Plane by an insulating support that is 0.1-meter thick. The GRP consisted of a sheet of aluminum (at least 0.25mm thick and 2.5m square) connected to the protective grounding system.

11.4 TEST RESULTS

EUT：	5v2a active poe splitter	Model Name. ：	ZQ-AF-5V10W
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101 Kpa	Test Date：	2017-09-21
Test Mode ：	Full Load		
Test Power ：	DC 5V		

Mode	(■) AC Power Line		( ) DC Power Line		( ) Signal/Control Line	
Test Level	1KV		0.5KV		0.5KV	
Port(s)	Polarity	Results	Polarity	Results	Polarity	Results
Line (L)	P	A	P		P	
	N	A	N		N	
Neutral (N)	P	A	P		P	
	N	A	N		N	
Ground (PE)	P		P		P	
	N		N		N	
Signal/Control Line	P		P		P	
	N		N		N	
Criteria	**B**		**B**		**B**	
Result	**B**		**N/A**		**N/A**	
	PASS		**N/A**		**N/A**	

Note:

1) P/N denotes the Positive/Negative polarity of the output voltage.

2) N/A - denotes test is not applicable in this test report

3) Criteria A: There was no change operated with initial operating during the test.

4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.

5) Criteria C: The system shut down during the test.

12. SURGE TESTING

12.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-5
Required Performance	B
Wave-Shape:	Combination Wave 1.2/50 us Open Circuit Voltage 8 /20 us Short Circuit Current
Test Voltage:	Power Line：0.5 kV, 1 kV, 2 kV
Surge Input/Output:	L-N,
Generator Source:	2 ohm between networks
Impedance:	12 ohm between network and ground
Polarity:	Positive/Negative
Phase Angle:	0 /90/180/270
Pulse Repetition Rate:	1 time / min. (maximum)
Number of Tests:	5 positive and 5 negative at selected points

12.2 TEST PROCEDURE

a. For EUT power supply:

The surge is to be applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks are required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines, and to provide sufficient decoupling impedance to the surge wave. The power cord between the EUT and the coupling/decoupling networks shall be 2meters in length (or shorter).

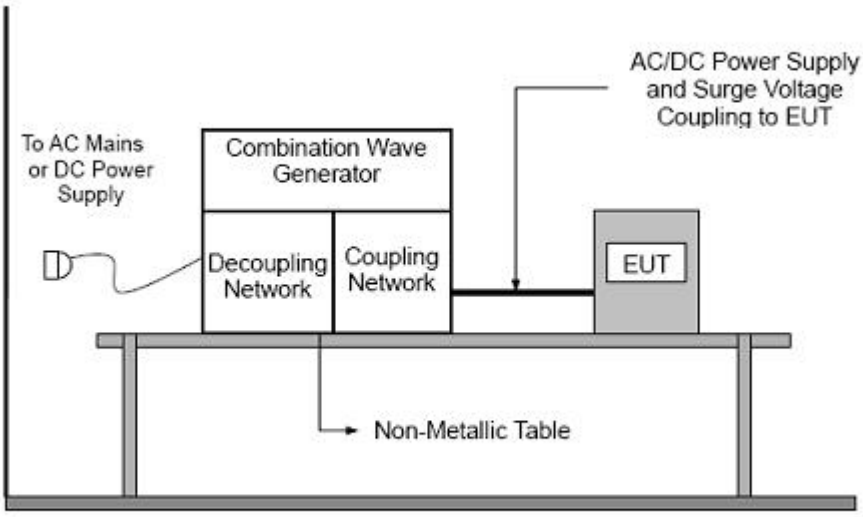
b. For test applied to unshielded unsymmetrically operated interconnection lines of EUT:

The surge is applied to the lines via the capacitive coupling. The coupling /decoupling networks shall not influence the specified functional conditions of the EUT. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

c. For test applied to unshielded symmetrically operated interconnection /telecommunication lines of EUT:

The surge is applied to the lines via gas arrestors coupling. Test levels below the ignition point of the coupling arrestor cannot be specified. The interconnection line between the EUT and the coupling/decoupling networks shall be 2 meters in length (or shorter).

12.3 TEST SETUP



12.4 TEST RESULTS

EUT：	5v2a active poe splitter	Model Name. ：	ZQ-AF-5V10W
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101 Kpa	Test Date：	2017-09-21
Test Mode ：	Full Load		
Test Power ：	DC 5V		

Wave Form / EUT Ports Tested	1.2/50(8/20)Ti/Th us						Criteria	Result
	Polarity	Phase	Voltage					
			0.5kV	1kV	1.5kV	2kV		
L - N	+/-	0°	A	A			**B**	**PASS**
	+/-	90°	A	A				
	+/-	180°	A	A				
	+/-	270°	A	A				
L - PE	+/-	0°	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	+/-	90°	N/A	N/A	N/A	N/A		
	+/-	180°	N/A	N/A	N/A	N/A		
	+/-	270°	N/A	N/A	N/A	N/A		
N - PE	+/-	0°	N/A	N/A	N/A	N/A	**N/A**	**N/A**
	+/-	90°	N/A	N/A	N/A	N/A		
	+/-	180°	N/A	N/A	N/A	N/A		
	+/-	270°	N/A	N/A	N/A	N/A		
Signal Line	+/-	N/A	N/A	N/A	N/A	N/A	**N/A**	**N/A**

Note:

1) Polarity and Numbers of Impulses：5 Pst / Ngt at each tested mode
2) N/A - denotes test is not applicable in this Test Report
3) Criteria A: There was no change operated with initial operating during the test.
4) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
5) Criteria C: The system shut down during the test.

13. INJECTION CURRENT TESTING

13.1 TEST SPECIFICATION

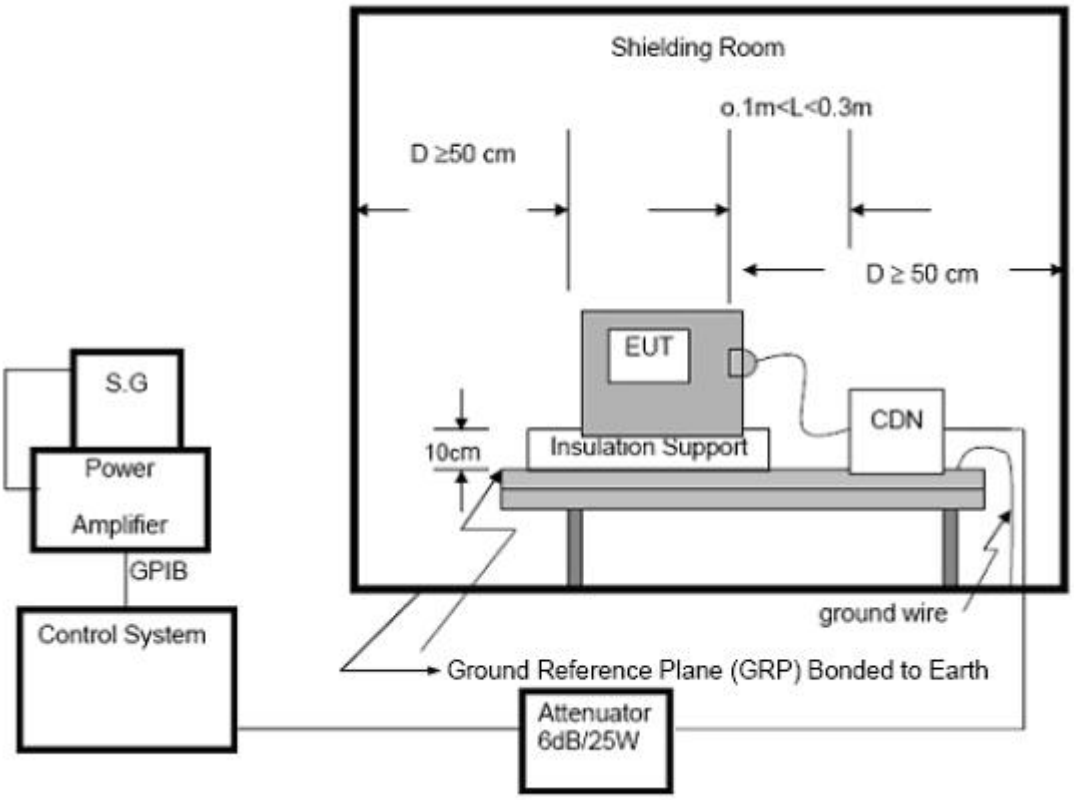
Basic Standard:	IEC/EN 61000-4-6
Required Performance	A
Frequency Range:	0.15 MHz - 80 MHz
Field Strength:	3 Vr.m.s.
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Dwell Time:	at least 3 seconds

13.2 TEST PROCEDURE

The EUT and support equipment, are placed on a table that is 0.8 meter above a metal ground plane measured 1m*1m min. and 0.65mm thick min.
The other condition as following manner:

a. The field strength level was 3V.
b. The frequency range is swept from 150 KHz to 80 MHz, with the signal 80%amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5x 10-3 decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
c. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.

13.3 TEST SETUP



NOTE:

FLOOR-STANDING EQUIPMENT

The equipment to be tested is placed on an insulating support of 0.1 meters height above a ground reference plane. All relevant cables shall be provided with the appropriate coupling and decoupling devices at a distance between 0.1 meters and 0.3 meters from the projected geometry of the EUT on the ground reference plane.

13.4 TEST RESULTS

EUT：	5v2a active poe splitter	Model Name. ：	ZQ-AF-5V10W
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101 Kpa	Test Date：	2017-09-21
Test Mode ：	Full Load		
Test Power ：	DC 5V		

Test Ports (Mode)	Freq. Range MHz)	Field Strength	Perform. Criteria	Results	Judgment
Input/ Output AC. Power Port	0.15 ---80	3V(rms) AM Modulated 1000Hz, 80%	**A**	**A**	**PASS**
Input/ Output DC. Power Port	0.15 --- 80		**N/A**	**N/A**	**N/A**
Signal Line	0.15 --- 80		**N/A**	**N/A**	**N/A**

Note:

1) N/A - denotes test is not applicable in this Test Report.
2) Criteria A: There was no change operated with initial operating during the test.
3) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
4) Criteria C: The system shut down during the test.

14. VOLTAGE INTERRUPTION/DIPS TESTING

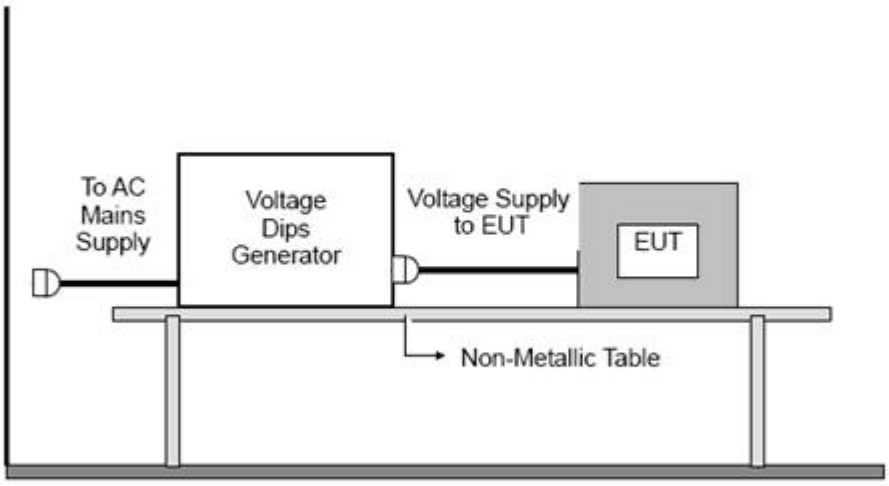
14.1 TEST SPECIFICATION

Basic Standard:	IEC/EN 61000-4-11
Required Performance	B (For 0% Voltage Dips) C (For 70% Voltage Dips) C (For 0% Voltage Interruptions)
Test Duration Time:	Minimum three test events in sequence
Interval between Event:	Minimum ten seconds
Phase Angle:	0°/45°/90°/135°/180°/225°/270°/315°/360°
Test Cycle:	3 times

14.2 TEST PROCEDURE

The EUT shall be tested for each selected combination of test levels and duration with a sequence of three dips/interruptions with intervals of 10 s minimum (between each test event). Each representative mode of operation shall be tested. Abrupt changes in supply voltage shall occur at zero crossings of the voltage waveform.

14.3 TEST SETUP



14.4 TEST RESULTS

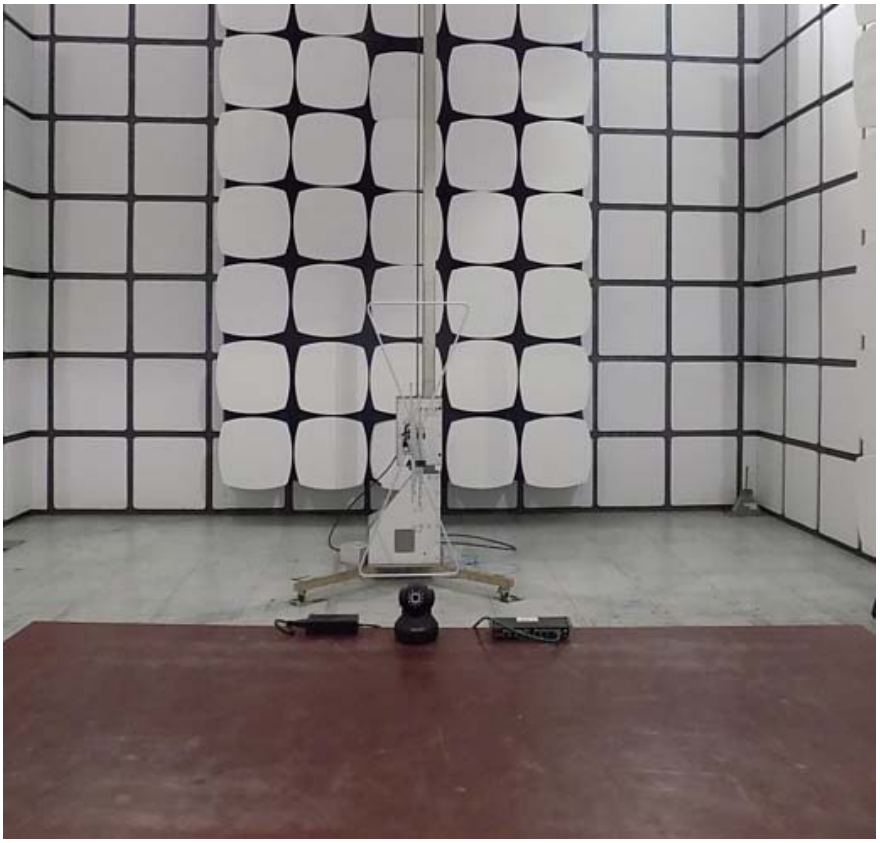
EUT：	5v2a active poe splitter	Model Name. ：	ZQ-AF-5V10W
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	101 Kpa	Test Date：	2017-09-21
Test Mode ：	Full Load		
Test Power ：	DC 5V		

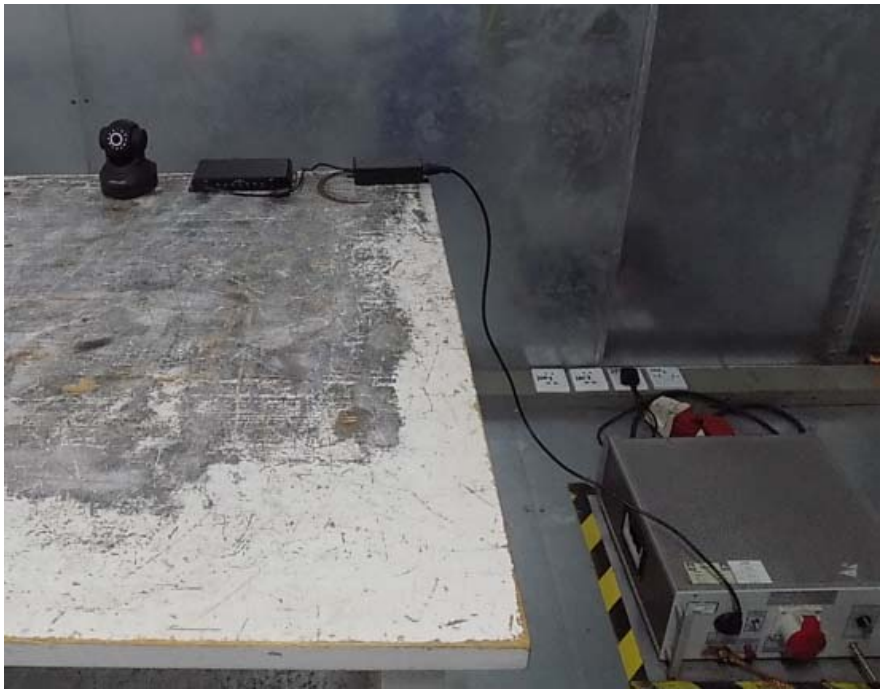
DC 5V				
Voltage Reduction	Duration (s)	Perform Criteria	Results	Judgment
Voltage dip 0%	0.01	**B**	**B**	**PASS**
Voltage dip 70%	0.5	**C**	**C**	**PASS**
Voltage dip 0%	5	**C**	**C**	**PASS**

Note:

1). N/A - denotes test is not applicable in this test report.
2) Criteria A: There was no change operated with initial operating during the test.
3) Criteria B: The EUT function loss during the test, but self-recoverable after the test.
4) Criteria C: The system shut down during the test.

15. PHOTOGRAPHS OF THE TEST CONFIGURATION





16. EUT TEST PHOTO

Photo1

Photo2

Photo3

Photo4

===== End of Report =====