EMC TEST REPORT

Report No. : 08.08.16.0259.01

Applicant : Eastgate Global Holding LTD
Address : DongchuanRoad,Baiyun 1Street,No.6 Office 502

Manufacturer : Eastgate Global Holding LTD
Address : DongchuanRoad,Baiyun 1Street,No.6 Office 502

Factory : Eastgate Global Holding LTD
Address : DongchuanRoad,Baiyun 1Street,No.6 Office 502

Equipment Under Test (EUT) :
Name : Sleeping pod

Model No. : EGO-PZ001, EGO-PZ002, EGO-PZ003, EGO-PZ004, EGO-PZ005, EGO-PZ006, EGO-PZ007, EGO-PZ008

Standards : EN 55014-1:2006 +A1:2009 +A2:2011
EN 55014-2:2015
EN 61000-3-2:2014
EN 61000-3-3:2013

Date of Issue : Oct 20, 2016

Date of Test : Oct 10, 2016

Test Engineer : David Xu

Reviewed By : Frant.Chiu

Test Result :	**PASS ***

* The sample detailed above has been tested to the requirements of the European Community Electromagnetic Compatibility Directive 2014/30/EU. The test results have been reviewed against the Directives above and found to meet their essential requirement.

Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Mains Terminal Disturbance Voltage, 150kHz to 30MHz	EN 55014-1:2006 +A1:2009 +A2:2011	EN 55014-1:2006 +A1:2009 +A2:2011	Table 1 Column 3 & 4	PASS
Radiation Emission, 30MHz to 300MHz	EN 55014-1:2006 +A1:2009 +A2:2011	EN 55014-1:2006 +A1:2009 +A2:2011	Table 1 Column 3 & 4	PASS
Harmonic Emission on AC,100Hz to 2kHz	EN 61000-3-2:2014	EN 61000-3-2:2014	Clause 7 of EN61000-3-2	PASS
Flicker Emission on AC	EN 61000-3-3:2013	EN 61000-3-3:2013	Clause 5 of EN61000-3-3	PASS
ESD	EN 55014-2 2015	EN 61000-4-2: 2009	±4 kV Contact ±8 kV Air	N/A
Electrical Fast Transients (EFT) on AC and DC	EN 55014-2 2015	EN 61000-4-4:2012	AC ±1.0kV DC ±0.5kV	N/A
Surge Immunity on AC	EN 55014-2 2015	EN 61000-4-5:2014	±1kV D.M.† ±2kV C.M.‡	N/A
Injected Currents on AC & DC, 150kHz to 80MHz	EN 55014-2 2015	EN 61000-4-6:2014	3Vrms(emf), 80%, 1kHz Amp. Mod.	N/A
Voltage Dips and Interruptions on AC	EN 55014-2 2015	EN 61000-4-11:2004	0 % U_T* for 250per 40 % U_T* for 5per 70 % U_T* for 0.5per	N/A

Remark:

The EUT was within the minimum performance (e.g., the EUT made disturbance sound) level set by the applicant.

A.M. Amplitude Modulation.

P.M. Pulse Modulation.

† D.M. – Differential Mode

* U_T is the nominal supply voltage

N/A means not applicable.

Contents

Page

TEST SUMMARY 2

CONTENTS 3

1 GENERAL INFORMATION 5

1.1 CLIENT INFORMATION 5
1.2 GENERAL DESCRIPTION OF E.U.T. 5
1.3 DETAILS OF E.U.T. 5
1.4 DESCRIPTION OF SUPPORT UNITS 5
1.5 STANDARDS APPLICABLE FOR TESTING 6
1.6 TEST FACILITY 6
1.7 ABNORMALITIES FROM STANDARD CONDITIONS 6
1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER 6

2 EQUIPMENT USED DURING TEST 7

3 EMISSION TEST RESULTS 9

3.1 MAINS TERMINALS DISTURBANCE VOLTAGE, 150KHZ TO 30MHZ 9
3.1.1 E.U.T. Operation *9*
3.1.2 Measurement Data *9*
3.1.3 Conducted Emissions Test Data *10*
3.1.4 Mains Terminal Disturbance Voltage on AC Test Setup Drawing *11*
3.2 RADIATED DISTURBANCE POWER: 30MHZ TO 300MHZ 12
3.2.1 E.U.T. Operation *12*
3.2.2 Measurement Data *12*
3.2.3 Radiated Disturbance Power Test Data of AC Power Line *13*
3.2.4 Radiated Power Test Setup Drawing *14*
3.3 HARMONICS TEST RESULTS 15
3.4 FLICKER TEST RESULT 20
3.5 HARMONICS AND FLICKER TEST SETUP (DRAWINGS) 21

4 IMMUNITY TEST RESULTS 22

4.1 PERFORMANCE CRITERIA DESCRIPTION 22
4.2 ESD 22
4.2.1 E.U.T. OPERATION 22
4.2.2 DIRECT APPLICATION TEST RESULTS 23
4.2.3 FLICKER TEST RESULTS 23
4.2.4 ESD TEST SETUP DRAWING 24
4.3 RADIATED IMMUNITY 25
4.3.1 E.U.T. OPERATION 25
4.3.2 TEST RESULTS 25
4.3.3 RADIATED IMMUNITY TEST SETUP DRAWING 26
4. 4 ELECTRICAL FAST TRANSIENTS (EFT) 27
4.4.1 TEST RESULTS ON AC CABLE 27
4.4.2 FAST TRANSIENTS (BURST) TEST SETUP DRAWING 28
4.5 SURGE 29
4.5.1 E.U.T. OPERATION 29
4.5.2 TEST RESULTS 29
4.5.3 SURGE TEST SETUP (DRAWINGS) 30
4.6 CONDUCTED IMMUNITY 0.15MHZ TO 80MHZ 31
4.6.1 E.U.T. OPERATION 31
4.6.2 TEST RESULTS 31
4.6.3 CONDUCTED IMMUNITY TEST SETUP DRAWING 32
4.7 VOLTAGE DIPS AND INTERRUPTIONS 33

4.7.1 E.U.T. OPERATION 33
4.7.2 MEASUREMENT DATA 33
4.7.3 VOLTAGE DIPS AND INTERRUPTIONS TEST SETUP 34

5 PHOTOGRAPHS - CONSTRUCTIONAL DETAILS 35

5.1 EUT – GENERAL VIEW EGO-PZ001 35
5.2 EUT – GENERAL VIEW 35
5.3 EUT – GENERAL VIEW 36
5.4 EUT – GENERAL VIEW 36
5.5 EUT – GENERAL VIEW 37
5.6 EUT – GENERAL VIEW 37
5.7 EUT – GENERAL VIEW 38
5.8 EUT – GENERAL VIEW 38
5.9 EUT – GENERAL VIEW 39
5.10 EUT – GENERAL VIEW 39
5.11 EUT – GENERAL VIEW 40
5.12 EUT – GENERAL VIEW 40
5.13 EUT – GENERAL VIEW 41
5.14 EUT – GENERAL VIEW 41
5.15 EUT – GENERAL VIEW 42
5.16 EUT – GENERAL VIEW EGO-PZ002 42
5.17 EUT – GENERAL VIEW EGO-PZ003 43
5.18 EUT – GENERAL VIEW EGO-PZ004 43

General Information

1.1 Client Information

See page 1

1.2 General Description of E.U.T.

Name : Sleeping pod

Model No. : EGO-PZ001, EGO-PZ002, EGO-PZ003, EGO-PZ004, EGO-PZ005, EGO-PZ006, EGO-PZ007, EGO-PZ008

1.3 Details of E.U.T.

Ratings : 220-240V~, 50Hz, Class I, 3A

1.4 Description of Support Units

The EUT has been tested as an independent unit.

1.5 Standards Applicable for Testing

The standards used were EN55014-1 for emissions & EN55014-2 for immunity.

Table 1 : Tests Carried Out Under EN55014-1

Standard	Status
EN 55014-1:2006 +A1:2009 +A2:2011 Radiation Emission, 30MHz to 300MHz	√
EN 55014-1:2006 +A1:2009 +A2:2011 Mains Terminal Disturbance Voltage,150KHz to 30MHz	√

Table 2 : Tests Carried Out Under EN 61000-3-2 & EN61000-3-3

EN 61000-3-2:2014	Harmonic Emissions on AC	√
EN 61000-3-3:2013	Flicker Emissions on AC	√

Table 3 : Tests Carried Out Under EN55014-2: 2015

Standard		Status
EN 61000-4-2:2009	Electro-static discharge	√
EN 61000-4-3:2006 +A2:2010	Radio frequency EM fields (80MHz to 1GHz)	√
EN 61000-4-4:2012	Fast transients	√
EN 61000-4-5:2014	Surges	√
EN 61000-4-6:2014	Radio frequency continuous conducted (150kHz to 80MHz)	√
EN 61000-4-8:2010	Power-frequency magnetic field (50Hz)	√
EN 61000-4-11:2004	Voltage dips & interruptions	√

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

1.6 Test Facility

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

Anxin Product Test Service Co., Ltd

Address.: Floor 2, Yuanjing Building, No.899, Sanyuanli Dadao, Guangzhou

1.7 Abnormalities from Standard Conditions

None.

1.8 Other Information Requested by the Customer

None.

2 Equipment Used during Test

Equipmen name	Model	Series No.	Manufacturer	Technique Description	Calibrate d Date	Calibrated until
ESD Generator	ESD3000	262	EMC PARTNER		2016-5-19	2017-5-18
ESD Discharge Module	ESD3000DM 1	198	EMC PARTNER	EN 61000-4-2 CD 10kV-150pF/330Ohm	2016-5-19	2017-5-18
ESD Discharge Module	ESD3000DN 1	83	EMC PARTNER	EN 61000-4-2/RTCA/DO-160 CD 30kV-150pF/330Ohm	2016-5-19	2017-5-18
ESD Discharge Module	ESD3000RM 32	105	EMC PARTNER	---	2016-7-10	2017-7-9
ESD Discharge Module	ESD3000DN 2	036	EMC PARTNER	ISO TR10605 CD 30kV-330pF/2000Ohm	2016-7-10	2017-7-9
ESD Discharge Module	ESD3000DN 3	033	EMC PARTNER	ISO TR10605 CD 30kV-150pF/2000Ohm	2016-7-10	2017-7-9
Surge Generator	TRA2000	852	EMC PARTNER	250～4100V max.280V/16A	2016-7-2	2017-7-1
Coupling and Decoupling Network	CDN 2000-06-32	110	EMC PARTNER	L-L:420V/32A L-N:240V/32A FUSE:C32 50/60Hz	2016-7-2	2017-7-1
EFT Generator	TRA2000	853	EMC PARTNER	-4.4kV～+4.4kV	2016-7-2	2017-7-1
Coupling and Decoupling Network	CDN 2000-06-32	111	EMC PARTNER	L-L:420V/32A L-N:240V/32A FUSE:C32 50/60Hz	2016-7-2	2017-7-1
Coupling Clamp	CN-EFT1000	521	EMC PARTNER	Base/strasse 160 CH-4242 Laufen	2016-7-2	2017-7-1
Dip Generator	TRA2000	851	EMC PARTNER	0%～100%U	2016-7-2	2017-7-1
Power Frenquency Magnetic Field Coil	MF1000-1	150	EMC PARTNER	MF 50/60Hz 1A/m,10A/m,100A/m SURGE 8/20μS	2016-7-2	2017-7-1
Harmonic and Flicker Analyser	PACS-1	72501	California Instruments	INPUT:230V	2017-7-16	2017-7-15
Power Source	5001ix-400-LF	57549	California Instruments	INPUT:FREQ 50-60Hz VOLTAGE 400-480VAC POWER 8000VA OUTPUT:FREQ 16-500Hz VOLTAGE 0-150-300VAC POWER 5000VA	2016-7-16	2017-7-15

Power Source	5001ix-400-LF	57550	California Instruments	INPUT:FREQ 50-60Hz VOLTAGE 400-480VAC POWER 8000VA OUTPUT:FREQ 16-500Hz VOLTAGE 0-150-300VAC POWER 5000VA	2016-7-16	2017-7-15
Power Source	5001ix-400-LF	57551	California Instruments	INPUT:FREQ 50-60Hz VOLTAGE 400-480VAC POWER 8000VA OUTPUT:FREQ 16-500Hz VOLTAGE 0-150-300VAC POWER 5000VA	2016-7-16	2017-7-15
LISN(3 Phases)	NSLK 8128	8128236	SCHWARZBECK	4×32A(4×50A) 9kHz-30MHz	2016-7-2	2017-7-1
LISN(1 Phase)	NSLK 8127	8127450	SCHWARZBECK	V-NETWORK 2×16Amp. 50Ω//50μH + 5Ω 9kHz-30MHz	2016-7-2	2017-7-1
Absorbing Clamp	MDS21	3637	Elektronik-Feinmechanik	OUTPUT IMPENDANCE 50Ω INSERTION LOSS 17dB	2016-7-2	2017-7-1
Signal Generator	SML03	103002	R&S	9kHz-3.3GHz	2016-6-6	2017-6-5
EMI Test Receiver	ESCI	100529	R&S	9kHz-3GHz	2016-6-20	2017-6-19
Coupling and Decoupling Network	L-801 M2/M3	2265	Liithi	Mains 240V 16A HF-Input 0.15-230MHz HF-Power-Dissipation 6W max.(100ohm)	2016-7-2	2017-7-1
Electromagnetic Clamp	EM 101	35813	Liithi	150kHz-1GHz	2016-7-2	2017-7-1
Power Amplifier	AP32 DT214	0611-768	PRANA R&D	140W 10kHz-1GHz	2016-7-2	2017-7-1
Logarithm periods antenna	3142C	00075971	ETS.LINDGREN	26MHz-3GHz	2016-8-4	2017-8-3
Power meter	4232A	10543	BOOTON		2016-3-9	2017-3-8
Power Amplifier	AP32SV150A	0611-767	PRANA R&D	50W 0.8-3GHz	2016-7-2	2017-7-1
Double Ridge speaker antenna	BBHA 9120 E	BBHA9120E318/0899	SCHWARZBECK	450MHz-6GHz	2016-8-3	2017-8-2
Double Logarithm periods antenna	STLP 9128 E	9128E-029	SCHWARZBECK	80-1700(2700)MHz P< 2kW	2016-8-4	2017-8-3

3 Emission Test Results

3.1 Mains Terminals Disturbance Voltage, 150kHz to 30MHz

Test Requirement:	EN 55014-1
Test Method:	EN 55014-1
Test Date:	Oct 10, 2016
Frequency Range:	150kHz to 30MHz
Class/Severity:	Table 1 of EN55014-1
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

3.1.1 E.U.T. Operation

Operating Environment:

Temperature:	24.0 °C
Humidity:	40 % RH
Atmospheric Pressure:	1012 mbar

EUT Operation :

Compliance test was performed test in on mode.

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

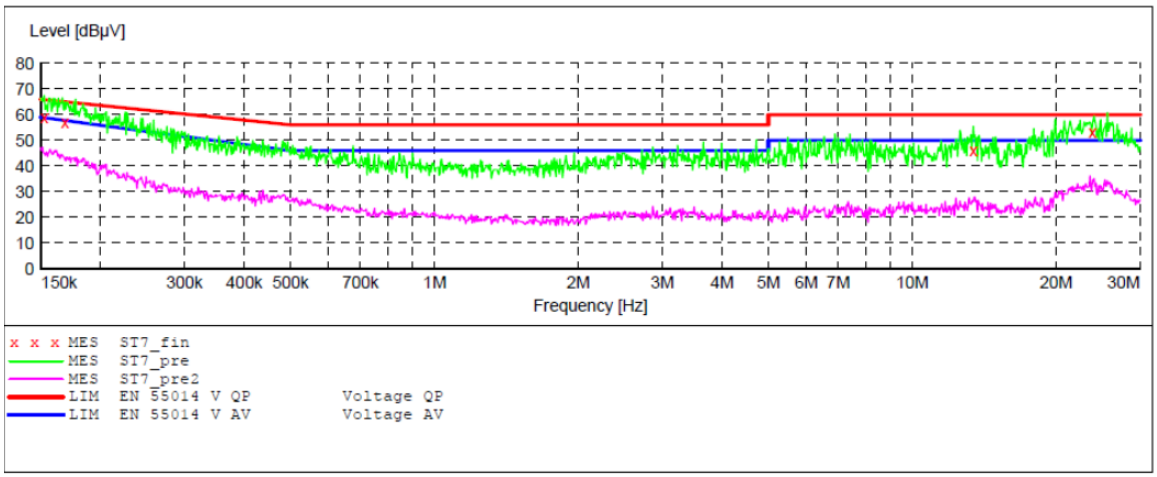
3.1.2 Measurement Data

An initial pre-scan was performed on the live and neutral lines.

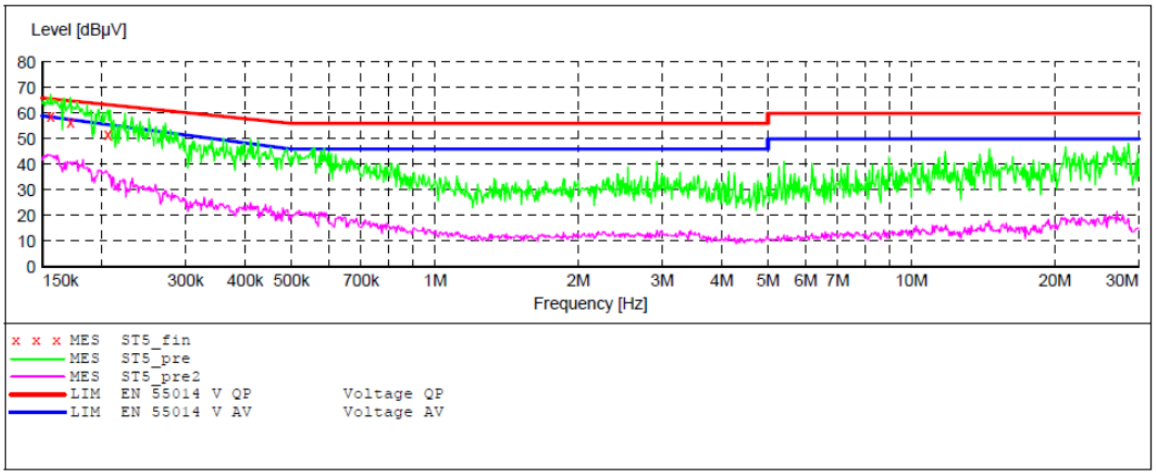
Please refer to the following peak scan graph for reference.

3.1.3 Conducted Emissions Test Data

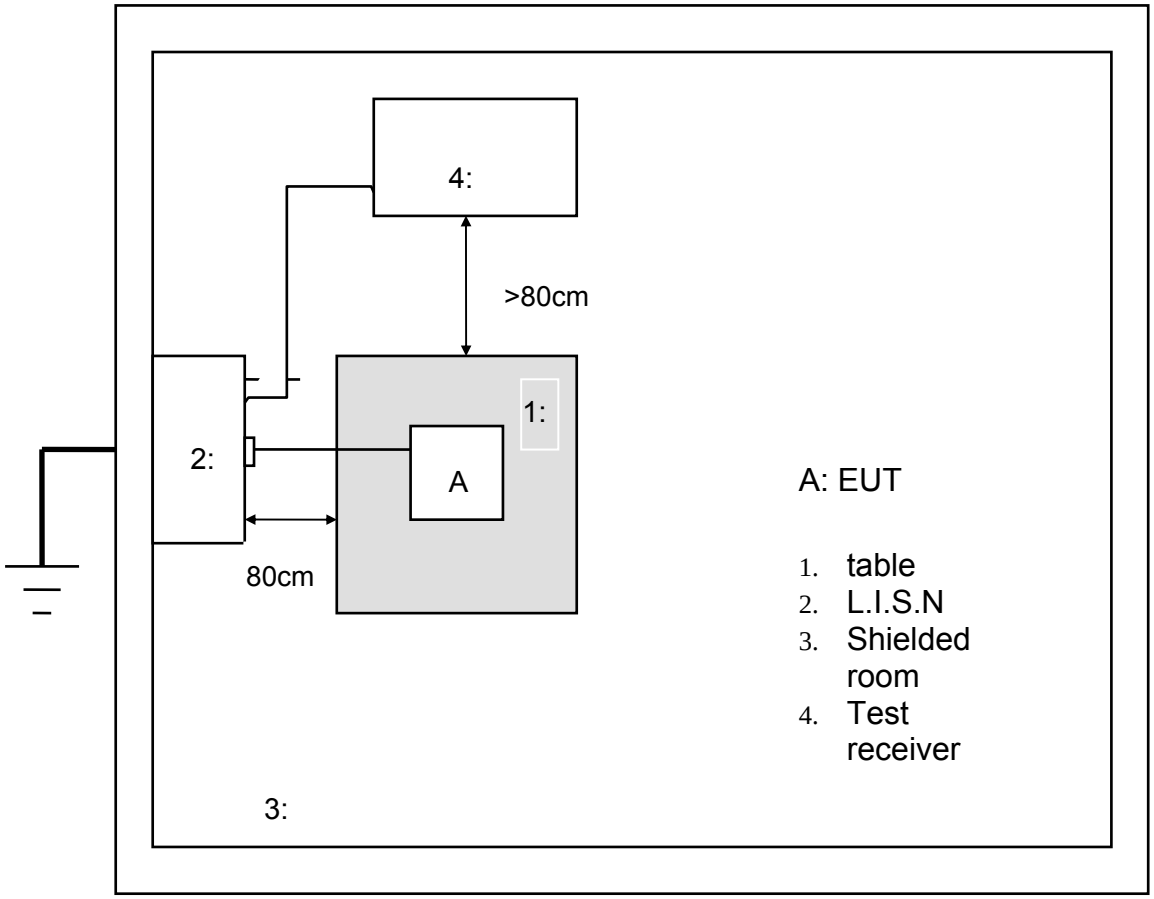
Live Line:



Neutral Line:



3.1.4 Mains Terminal Disturbance Voltage on AC Test Setup Drawing



Test Setup: <u>Conducted Emission 0.1/0.15 - 30MHz</u>

For reference only

Project number not require

3.2 Radiated Disturbance Power: 30MHz to 300MHz

Test Requirement:	EN55014-1
Test Method:	EN55014-1
Test Date:	Oct 10, 2016
Frequency Range:	30MHz to 300MHz
Class/Severity:	Table 4 of EN55014
Detector:	Peak for pre-scan (120kHz resolution bandwidth) Quasi-Peak & average if pre-scan peak within 15dB of average limit.

3.2.1 E.U.T. Operation

Operating Environment:

Temperature:	24.0 °C
Humidity:	40 % RH
Barometric Pressure:	1012 mbar

EUT Operation:

Compliance test was performed in ON mode.

If any maximised peak emissions are detected within 15dB of the average limit line, then:

- Extend the lead to at least 6.2m (i.e. half wavelength at 30MHz plus twice the length of the absorbing clamp) length or keep the original lead length (if no other lead can is connected to the unit at the end of the lead).
- Maximise all peak emissions by moving clamp along cable.
- Perform Quasi-Peak and Average measurements on all maximised peak emissions within 6dB of the average limit line.

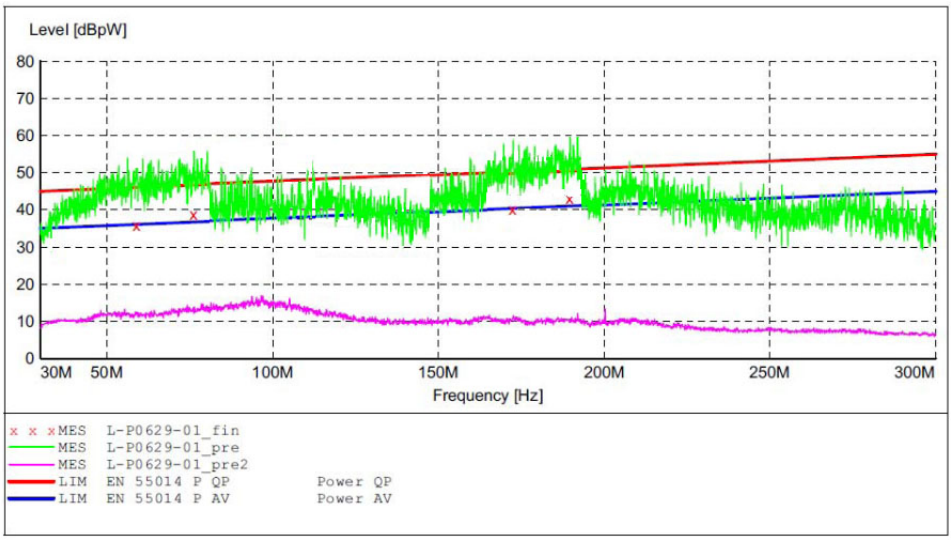
3.2.2 Measurement Data

Extending the cable to 6 meters, performed quasi-peak & average measurements

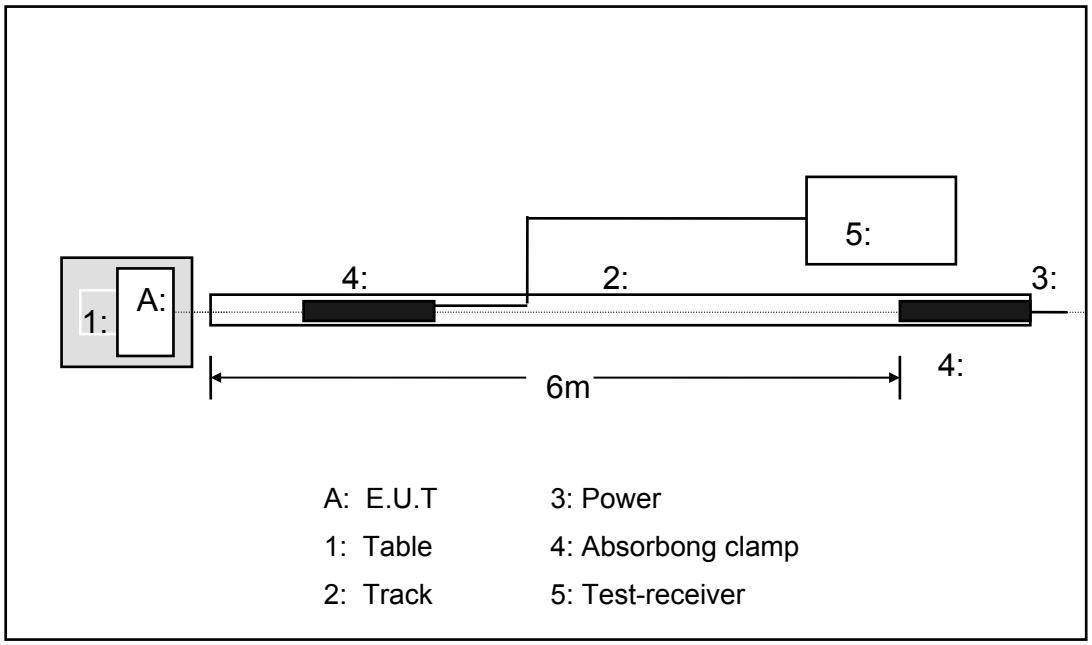
Please see the below Quasi-peak & Average measurement data for reference.

Remarks:No significant emissions above the equipment noise floor were detected.

3.2.3 Radiated Disturbance Power Test Data of AC Power Line



3.2.4 Radiated Power Test Setup Drawing



Test-setup: <u>Interference power 30MHz-300MHz</u>

For reference only
Project number not require

3.3 Harmonics Test Results

Test Requirement: EN61000-3-2
Test Method: EN61000-3-2
Frequency Range: 100Hz to 2kHz
Test Result: PASS

There is no need for Harmonics test to be performed on this product (rated power is less than 75W) in accordance with EN61000-3-2:2014

For further details, please refer to Clause 7, Note 1 of EN61000-3-2 which states: "For the following categories of equipment limits are not specified in this edition of the standard.

Note 1: Equipment with a rated power of 2000W or less, other than lighting equipment."

Report title:	08.08.16.0259.01
Company Name:	Anxin Product Test Service Co., Ltd
Date of test:	Oct 10, 2016
Measurement file name:	D:\data\ H-16101008.cts_data
Tester:	David Xu
Standard used:	EN/IEC 61000-3-2 Quasi-stationary - Equipment class A
Observation time:	150s
Windows width:	10 periods - EN/IEC 61000-4-7
E. U. T.:	EGO-PZ001, EGO-PZ002, EGO-PZ003, EGO-PZ004, EGO-PZ005, EGO-PZ006, EGO-PZ007, EGO-PZ008

E. U. T. Result

Check harmonics 2..40 [exception odd 21..39]:

Harmonic(s) > 150%: Order (n): None
Harmonic(s) with average > 100%: Order (n): None

Check odd harmonics 21..39:

All Partial Odd Harmonics below partial limits.
Harmonic(s) > 150%: Order (n): None
Harmonic(s) with average > 150%: Order (n): None

Power Source Result

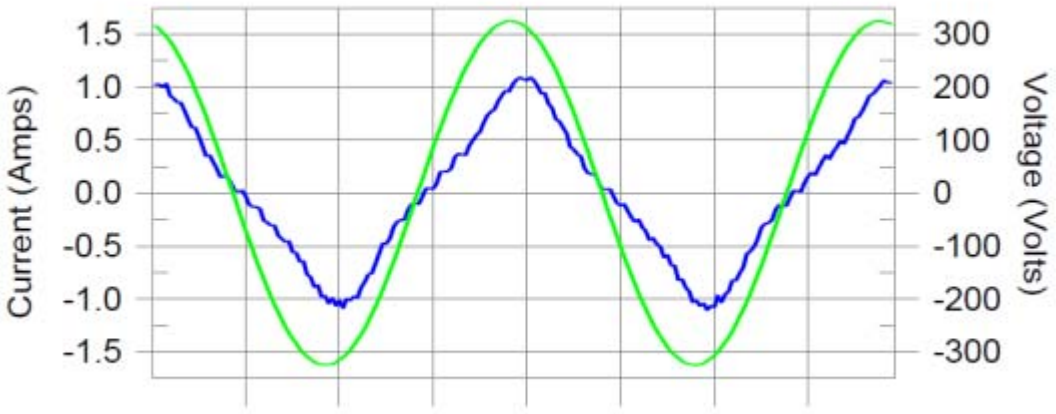
First dataset out of limit: DS (time): None
Harmonic(s) out of limit: Order (n): None

Harmonics – Class-A per A-14(Run time)

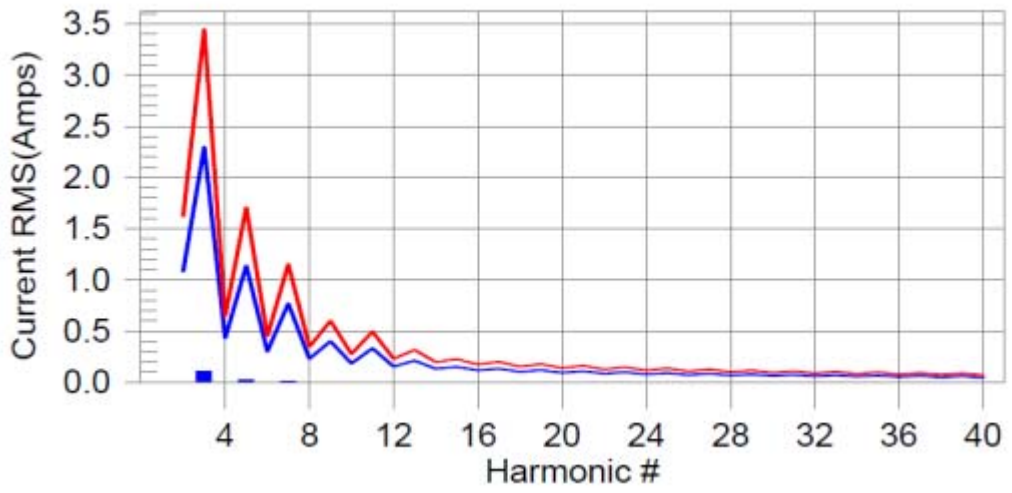
EUT: EGO-PZ001 **Tested by: David Xu**
Test category: Class-A Per Ed.3.0 (European limits) **Test Margin: 100**
Test date: 2016-10-10 **Start time: 10:33:05** **End time: 10:34:48**
Test duration (min): 2.5 **Data file name: H16101008.cts_data**
Comment:

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass Worst harmonic was #15 with 29.88% of the limit.

Current Test Result Summary (Run time)

EUT: EGO-PZ001 **Tested by: David Xu**
Test category: Class-A Per Ed.3.0 (European limits) **Test Margin: 100**
Test date: 2016-10-10 **Start time: 10:33:05** **End time: 10:34:48**
Test duration (min): 2.5 **Data file name: H16101008.cts_data**
Comment:

Test Result: Pass **Source qualification: Normal**
THC(A): 0.07 **I-THD(pk%): 15.73** **POHC(A): 0.000** **POHC Limit(A): 0.251**
Highest parameter values during test:

V_RMS (Volts):	240,0	Frequency(Hz):	50.00
I_Peak (Amps):	0.145	I_RMS (Amps):	0.127
I_Fund (Amps):	0.104	Crest Factor:	1.737
Power (Watts):	30.5W	Power Factor:	0.821

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.010	1.080	0.1	0.011	1.620	0.10	Pass
3	0.030	2.300	3.0	0.031	3.450	2.12	Pass
4	0.012	0.430	0.2	0.013	0.645	0.16	Pass
5	0.005	1.140	0.4	0.006	1.710	0.32	Pass
6	0.002	0.300	0.1	0.003	0.450	0.09	Pass
7	0.006	0.770	0.5	0.007	1.155	0.39	Pass
8	0.011	0.230	0.1	0.012	0.345	0.06	Pass
9	0.015	0.400	0.2	0.016	0.600	0.14	Pass
10	0.010	0.184	0.1	0.011	0.276	0.10	Pass
11	0.001	0.330	0.1	0.002	0.495	0.09	Pass
12	0.008	0.153	0.1	0.009	0.230	0.14	Pass
13	0.004	0.210	0.1	0.005	0.315	0.08	Pass
14	0.010	0.131	0.1	0.011	0.197	0.09	Pass
15	0.012	0.150	0.1	0.013	0.225	0.07	Pass
16	0.009	0.115	0.1	0.010	0.173	0.11	Pass
17	0.008	0.132	0.1	0.009	0.199	0.09	Pass
18	0.012	0.102	0.1	0.013	0.153	0.17	Pass
19	0.010	0.118	0.1	0.011	0.178	0.08	Pass
20	0.002	0.092	0.1	0.003	0.138	0.16	Pass
21	0.018	0.107	0.1	0.019	0.161	0.08	Pass
22	0.001	0.084	0.1	0.002	0.125	0.22	Pass
23	0.018	0.098	0.1	0.019	0.147	0.08	Pass
24	0.003	0.077	0.2	0.004	0.115	0.27	Pass
25	0.002	0.090	0.1	0.003	0.135	0.13	Pass
26	0.019	0.071	0.2	0.020	0.106	0.25	Pass
27	0.005	0.083	0.1	0.006	0.125	0.09	Pass
28	0.002	0.066	0.2	0.003	0.099	0.29	Pass
29	0.007	0.078	0.1	0.008	0.116	0.11	Pass
30	0.008	0.061	0.2	0.009	0.092	0.31	Pass
31	0.020	0.073	0.1	0.021	0.109	0.16	Pass
32	0.005	0.058	0.2	0.006	0.086	0.26	Pass
33	0.003	0.068	0.1	0.004	0.102	0.13	Pass
34	0.004	0.054	0.2	0.005	0.081	0.30	Pass
35	0.002	0.064	0.1	0.000	0.096	0.12	Pass
36	0.018	0.051	0.2	0.019	0.077	0.22	Pass
37	0.002	0.061	0.1	0.003	0.091	0.10	Pass
38	0.005	0.048	0.2	0.006	0.073	0.20	Pass
39	0.001	0.058	0.1	0.001	0.087	0.14	Pass
40	0.001	0.046	0.2	0.001	0.069	0.24	Pass

Current Test Result Summary (Run time)

EUT: EGO-PZ001 **Tested by: David Xu**
Test category: Class-A Per Ed.3.0 (European limits) **Test Margin: 100**
Test date: 2016-10-10 **Start time: 10:33:05** **End time: 10:34:48**
Test duration (min): 2.5 **Data file name: H16101008.cts_data**
Comment:

Test Result: Pass **Source qualification: Normal**
THC(A): 0.07 **I-THD(pk%): 15.73** **POHC(A): 0.000** **POHC Limit(A): 0.251**
Highest parameter values during test:

V_RMS (Volts):	240,0	Frequency(Hz):	50.00
I_Peak (Amps):	0.145	I_RMS (Amps):	0.127
I_Fund (Amps):	0.104	Crest Factor:	1.737
Power (Watts):	30.5W	Power Factor:	0.821

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.065	0.459	35.16	OK
3	0.532	2.066	28.73	OK
4	0.066	0.459	17.47	OK
5	0.020	0.918	4.39	OK
6	0.042	0.459	13.28	OK
7	0.013	0.689	3.84	OK
8	0.038	0.459	8.00	OK
9	0.027	0.459	3.81	OK
10	0.037	0.459	6.27	OK
11	0.036	0.230	9.04	OK
12	0.011	0.230	7.17	OK
13	0.017	0.230	7.67	OK
14	0.011	0.230	3.75	OK
15	0.006	0.230	5.51	OK
16	0.017	0.230	6.98	OK
17	0.014	0.230	5.59	OK
18	0.028	0.230	7.43	OK
19	0.012	0.230	3.79	OK
20	0.017	0.230	6.94	OK
21	0.002	0.230	3.30	OK
22	0.013	0.230	4.33	OK
23	0.007	0.230	2.73	OK
24	0.003	0.230	2.58	OK
25	0.011	0.230	3.12	OK
26	0.014	0.230	4.22	OK
27	0.020	0.230	2.64	OK
28	0.002	0.230	2.55	OK
29	0.008	0.230	2.65	OK
30	0.001	0.230	2.51	OK
31	0.021	0.230	1.93	OK
32	0.011	0.230	1.99	OK
33	0.001	0.230	2.66	OK
34	0.003	0.230	1.00	OK
35	0.010	0.230	1.43	OK
36	0.001	0.230	1.17	OK
37	0.007	0.230	1.82	OK
38	0.011	0.230	1.12	OK
39	0.001	0.230	1.35	OK
40	0.001	0.230	2.87	OK

3.4 Flicker Test Result

Test Requirement: EN61000-3-3
Test Method: EN61000-3-3
Test Result: PASS

Flicker Test Summary per EN/IEC61000-3-3 (Run time)

EUT: EGO-PZ001 **Tested by: David Xu**
Test category: dt,dmax,dc and Pst (European limits) **Test Margin: 100**
Test date: 2016-10-10 Start time: 10:51:42 **End time: 11:07:03**
Test duration (min): 10 Data file name: F-16101008.cts_data
Comment: on/off

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

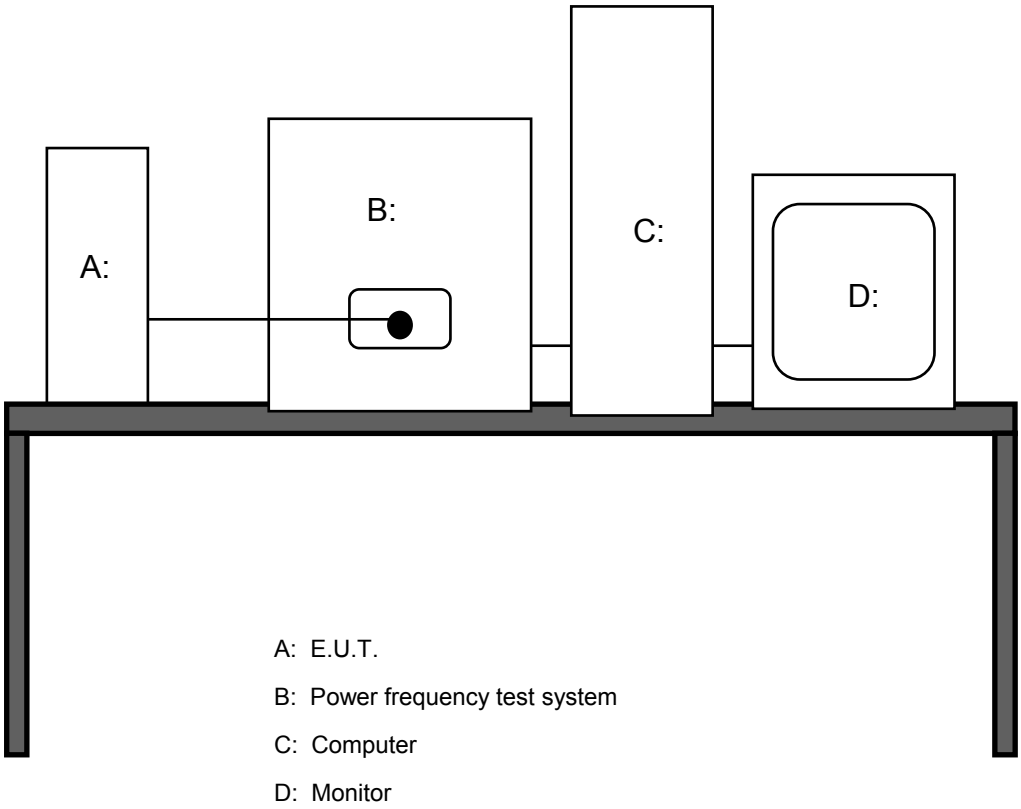
Pst$_i$ and limit line **European Limits**

Time is too short for Plt plot

Parameter values recorded during the test:
Vrms at the end of test (Volt):240,0

Highest dt (%):	**0.242**	**Test limit (%):**	**3.30**	**Pass**
Time(mS) > dt:	**0.1**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.07**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.42**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.062**	**Test limit:**	**1.000**	**Pass**
Highest Plt (2 hr. period):	**0.025**	**Test limit:**	**0.650**	**Pass**

3.5 Harmonics and Flicker Test Setup (Drawings)



Test-setup: <u>Steady State Harmonics Test & Voltage Fluctuations</u> (Flicker Meter Test)

For reference only
Project number not require

4 Immunity Test Results

4.1 Performance Criteria Description

Criterion A: The apparatus shall continue to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion B: The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

Criterion C: Temporary loss of function is allowed, provided the function is self recoverable or can be restored by the operation of the controls.

4.2 ESD

Test Requirement:	EN 55014-2	
Test Method:	EN 61000-4-2	
Test Date:	Oct 10, 2016	
Discharge Impedance:	330 Ω / 150 pF	
Discharge Voltage:	Air Discharge:	8 kV
	Contact Discharge:	4 kV
	HCP & VCP:	4 kV
Polarity:	Positive & Negative	
Number of Discharge:	Minimum 10 times at each test point	
Discharge Mode:	Single Discharge	
Discharge Period:	1 second minimum	

4.2.1 E.U.T. Operation

Operating Environment:

Temperature :	24.0 °C
Humidity :	40 % RH
Barometric Pressure :	1012 mbar

EUT Operation:
Compliance test was performed test in on mode connected with the full load.

4.2.2Direct Application Test Results

Observations : Test points : 1. All Exposed Surface & Seams;
2. All matellic part

Direct Application			Test Results	
Discharge Level (kV)	**Polarity (+/-)**	**Test Point**	**Contact Discharge**	**Air Discharge**
8	+/-	1	N/A	A
4	+/-	2, 3	A	N/A

Results
A: No degradation in the performance of the E.U.T. was observed.
N/A: Not applicable.

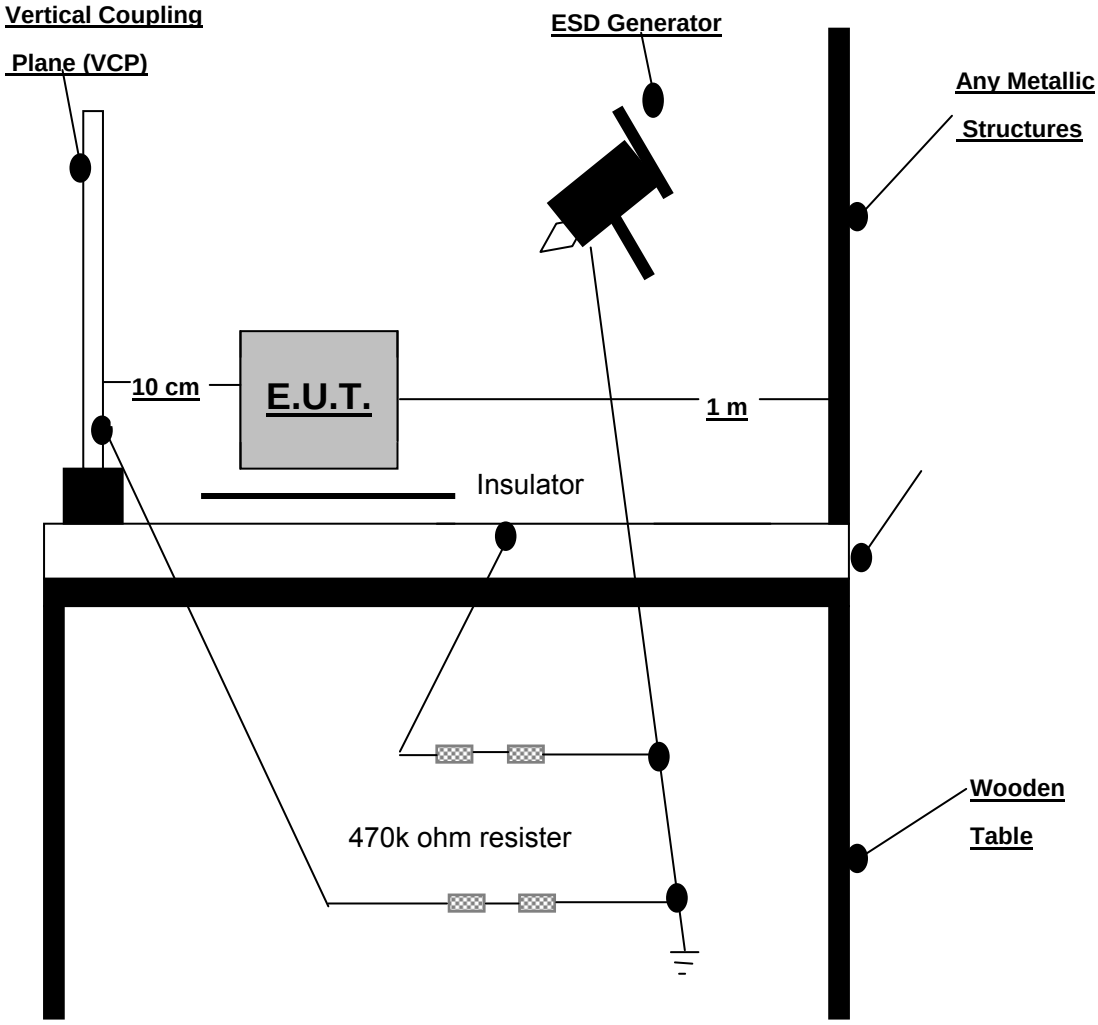
4.2.3 Indirect Application Test Results

Observations : Test points : 1. All sides.

Indirect Application			Test Results	
Discharge Level (kV)	**Polarity (+/-)**	**Test Point**	**Horizontal Coupling**	**Vertical Coupling**
4	+/-	1	A	A

Results
A: No degradation in the performance of the E.U.T. was observed.

4.2.4 ESD Test Setup Drawing



Test Setup: Electrostatic Discharge (ESD)

4.3 Radiated Immunity

Test Requirement: EN 55014-2
Test Method: EN 61000-4-3
Test Date: Oct 10, 2016
Frequency Range: 80MHz–1GHz
Face Under Test: Three Mutually Orthogonal Faces
Severity: 3V/m, 1kHz, 80% Amp. Mod. from 80MHz to 1GHz

4.3.1 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C
Humidity: 52 % RH
Barometric Pressure: 1012 mbar

EUT Operation:

Compliance test was performed test in on mode connected with the full load.

4.3.2 Test Results

Frequency	Level	Modulation	EUT Face	Result / Observations
80MHz-1GHz	3V/m	1kHz, 80%, Amp. Mod.	X Y Z	During test, After test EUT to normal (A).

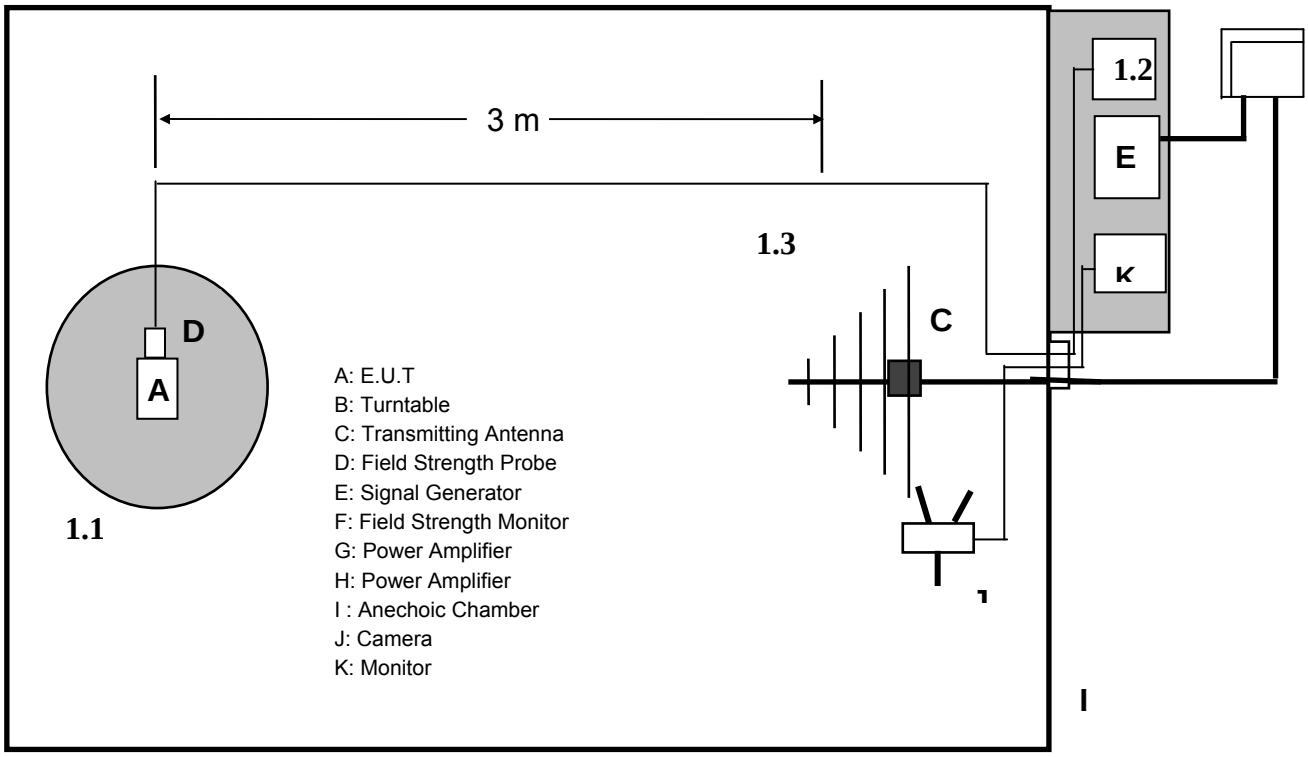
Remarks:

AM : Amplitude Modulation.
PM : Pulse Modulation.
X : EUT as per photograph in section 6.3.5 of this report.
Y : As X, but rotate EUT by 90° clockwise.
Z : As Y, but rotate EUT by 90° vertically.

Results

A: No degradation in the performance of the E.U.T. was observed.

4.3.3 Radiated Immunity Test Setup Drawing



4.4 Electrical Fast Transients (EFT)

Test Requirement: EN 55014-2
Test Method: EN 61000-4-4
Test Date: Oct 10, 2016
Test Level: 1.0kV on AC
Polarity: Positive & Negative
Repetition Frequency: 5kHz
Burst Duration: 300ms
Test Duration: 2 minutes per level & polarity & Earthing

E.U.T. Operation

Operating Environment:
Temperature: 24.0 °C
Humidity: 40 % RH
Barometric Pressure: 1012 mbar

EUT Operation:
Compliance test was performed test in on mode connected with the full load.

4.4.1 Test Results On AC Cable

Lead under Test	Level (±kV)	Coupling Direct/Clamp	EUT operating mode	Observations (Performance Criterion)
L	±1.0	Direct	ON	No loss of function
N	±1.0	Direct	ditto	ditto
L-N	±1.0	Direct	ditto	ditto
PE	±1.0	Direct	ditto	ditto

4.4.2 Fast Transients (Burst) Test Setup Drawing

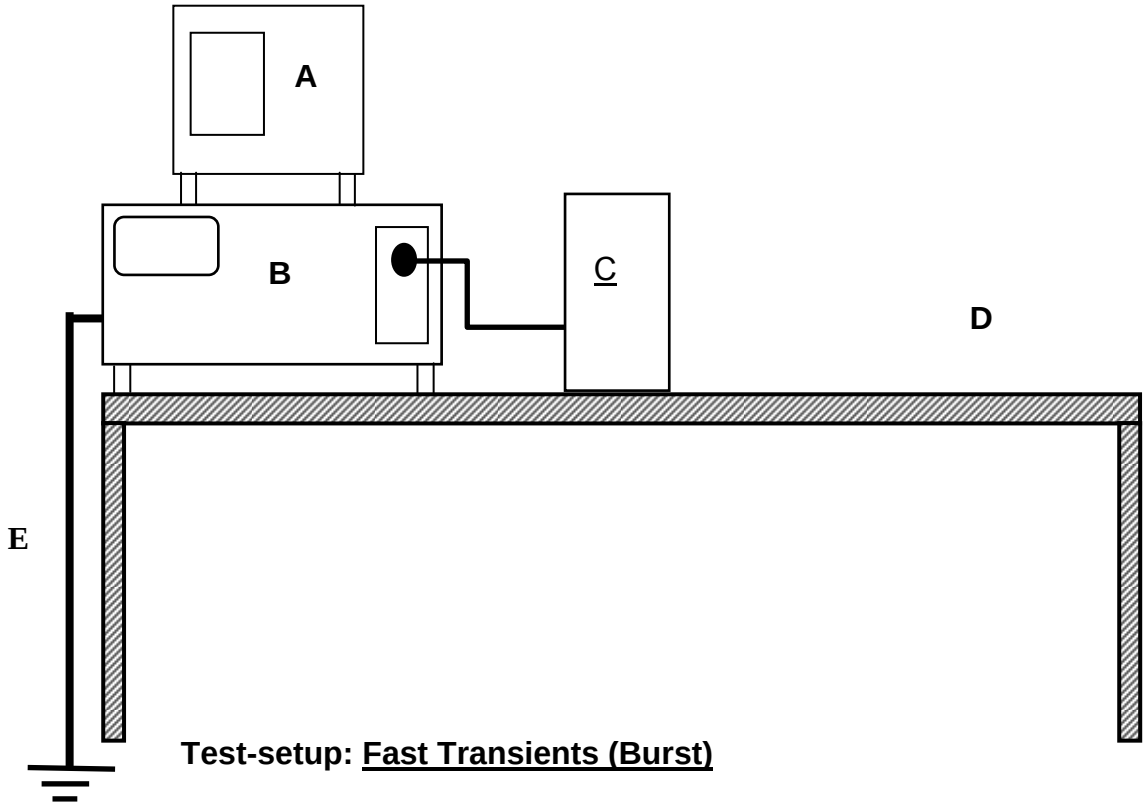
A: Digital Oscilloscope

B: Burst Generator

C: EUT

D: Wooden Table

E: Ground Wire



Test-setup: Fast Transients (Burst)

For reference only

Project number not require

4.5 Surge

Test Specification	:	EN 55014-2
Basic Standard	:	EN 61000-4-5
Date of testing	:	Oct 10, 2016
Pulsform	:	T_r/T_h=1.2/50μs
Test voltages	:	±0.5kV
Coupling	:	Coupling Network for AC Mains
Coupling phases	:	0, π/2, π, 3π/2
Number of surges	:	5 (for each combination of parameters)
Repetition rate	:	max. 1/min
Performance criterion	:	B

4.5.1 E.U.T. Operation

Operating Environment:

Temperature	:	24°C
Humidity	:	40%
Barometric Pressure	:	1012 mbar

EUT Operation:

Compliance test was performed test in on mode connected with the full load.

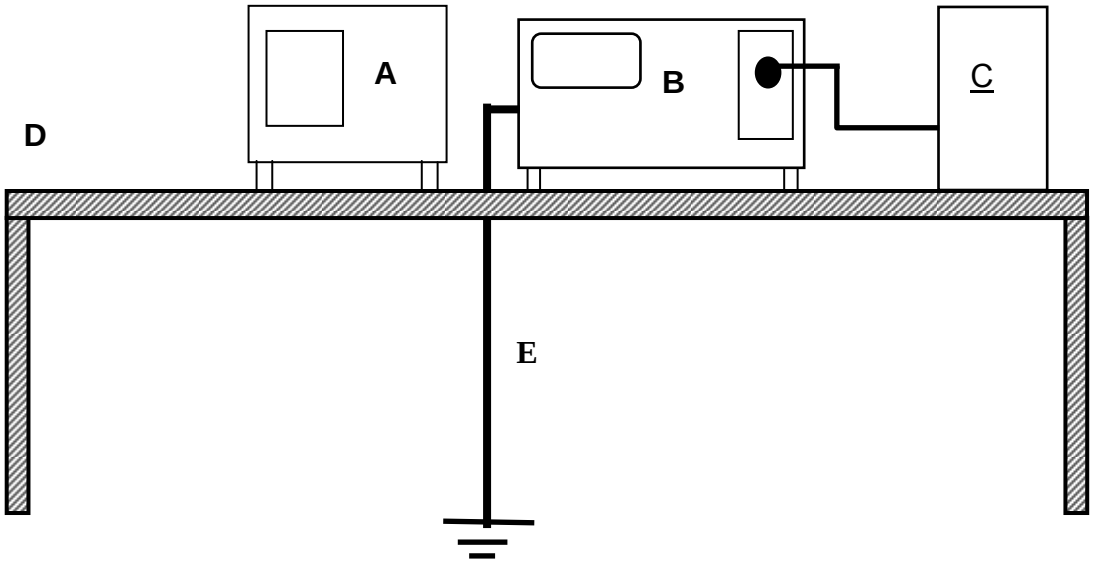
4.5.2 Test Results

Surge Immunity Tests, AC Power Supply

coupling port	test voltage	coupling phase / result		remarks
AC mains: L - N	±1000V	0 π/2 π 3π/2	Pass Pass Pass Pass	equipment operated as intended, no degradation of function
AC mains: L - PE	±2000V	0 π/2 π 3π/2	Pass Pass Pass Pass	equipment operated as intended, no degradation of function
AC mains: N - PE	±2000V	0 π/2 π 3π/2	Pass Pass Pass Pass	equipment operated as intended, no degradation of function

4.5.3 Surge Test Setup (Drawings)

A: Digital Oscilloscope
B: Surge Generator
C: EUT
D: Wooden Table
E: Ground Wire



Test-setup: Surges tests

For reference only
Project number not require

4.6 Conducted Immunity 0.15MHz to 80MHz

Test Requirement: EN 55014-2
Test Method: EN 61000-4-6
Test Date: Oct 10, 2016
Frequency Range: 0.15MHz to 80MHz
Test level: 3V rms (unmodulated emf into 150 Ω)
Modulation: 80%, 1kHz Amplitude Modulation.

4.6.1 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C
Humidity: 40 % RH
Barometric Pressure: 1012 mbar

EUT Operation:

Compliance test was performed test in on mode connected with the full load.

4.6.2 Test Results

AC mains of AC Cable

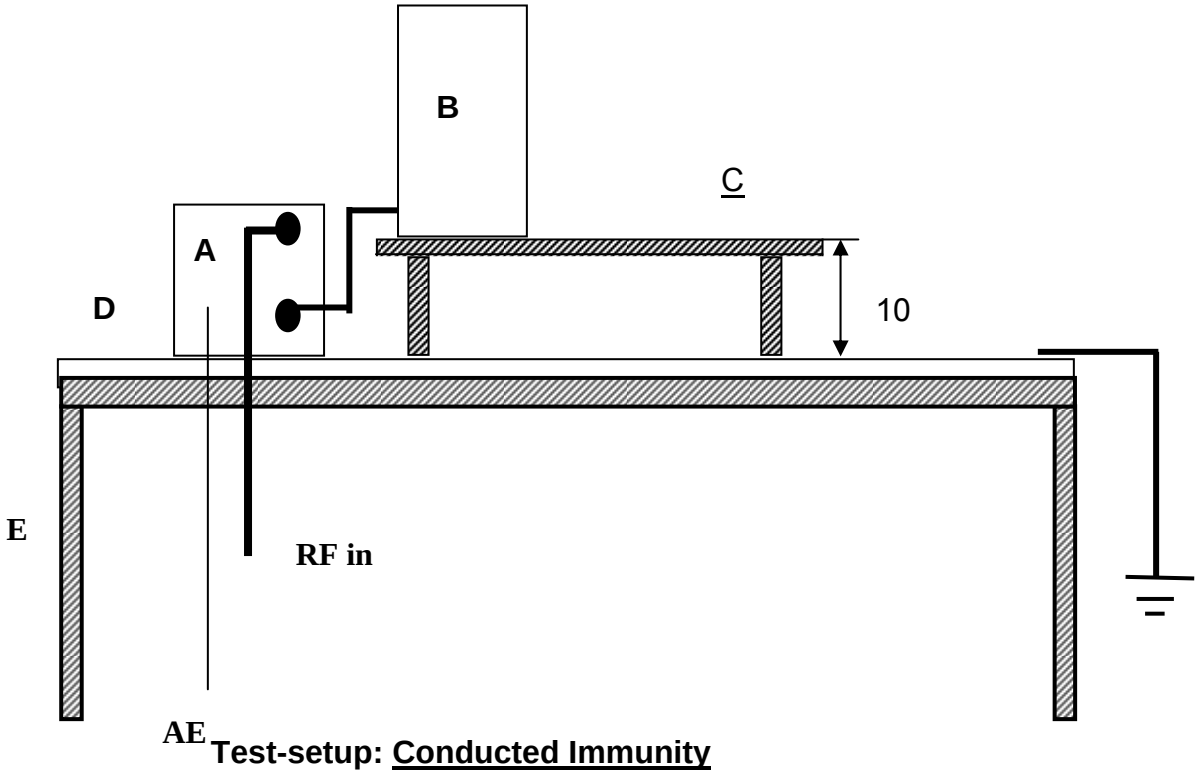
Frequency	Line	Test Level	Modulation	Step Size	Dwell Time	Observation (Performance Criterion)
150kHz to 80MHz	2 Wire AC Supply Cable	3Vrms	80%, 1kHz Amp. Mod.	1%	1s	During test, After test EUT to normal (A).

Results

A: No degradation in the performance of the E.U.T. was observed.

4.6.3 Conducted Immunity Test Setup Drawing

A: CDN
B: EUT
C: Wooden table
D: Reference Ground Plane
E: Wooden table
F: Ground Wire



Test-setup: Conducted Immunity

For reference only
Project number not require

4.7 Voltage Dips and Interruptions

Test Requirement: EN 55014-2
Test Method: EN 61000-4-11
Test Date: Oct 10, 2016
Test Level: 0% & 40% & 70 % of U_T (Supply Voltage)
No. of Dips / Interruptions: 3 per Level at 10s intervals

4.7.1 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C
Humidity: 52 % RH
Barometric Pressure: 1012 mbar

EUT Operation:

Compliance test was performed test in on mode connected with the full load.

4.7.2 Measurement Data

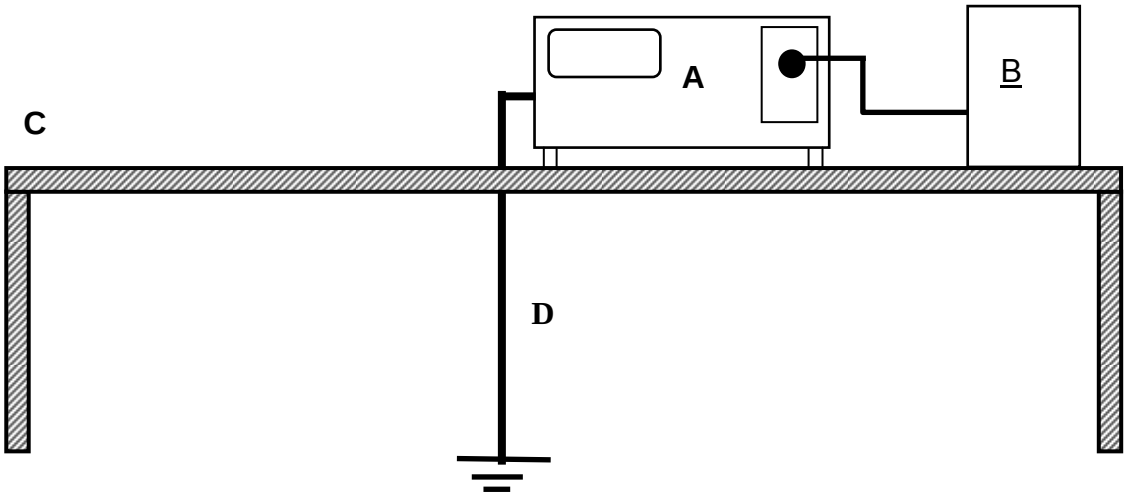
EUT operating mode	Dropout % U_T	Phase	Duration of dropout in Periods	No of dropout	Time between dropout	Observations (Performance Criterion)
On mode	0	0°	250	3	10s	EUT turned off during the test. After the test, the EUT recovers
ditto	40	0°	5	3	10s	No Loss of Function (A)
ditto	70	0°	0.5	3	10s	No Loss of Function (A)
ditto	70	180°	0.5	3	10s	No Loss of Function (A)

Results

A: No degradation in the performance of the E.U.T. was observed.

4.7.3 Voltage Dips and Interruptions Test Setup

A: Mains Drop out Simulator
B: EUT
C: Wooden Table
D: Ground Wire



Test-setup: Voltage Dips, Interruptions & Variations

For reference only
Project number not require

5 Photographs - Constructional Details

5.1 EUT – General View EGO-PZ001

5.2 EUT – General View

5.3 EUT – General View

5.4 EUT – General View

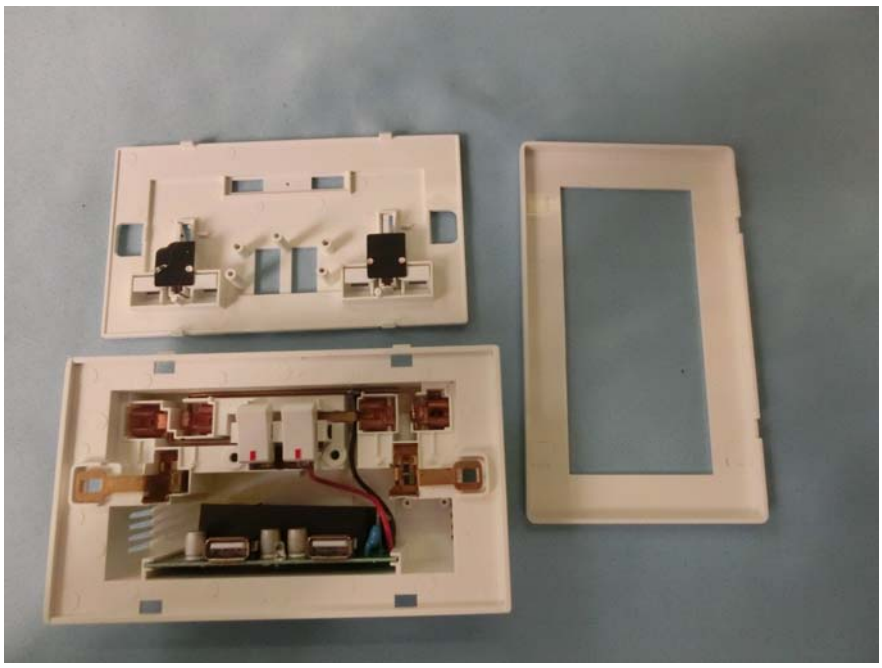
5.5 EUT – General View

5.6 EUT – General View

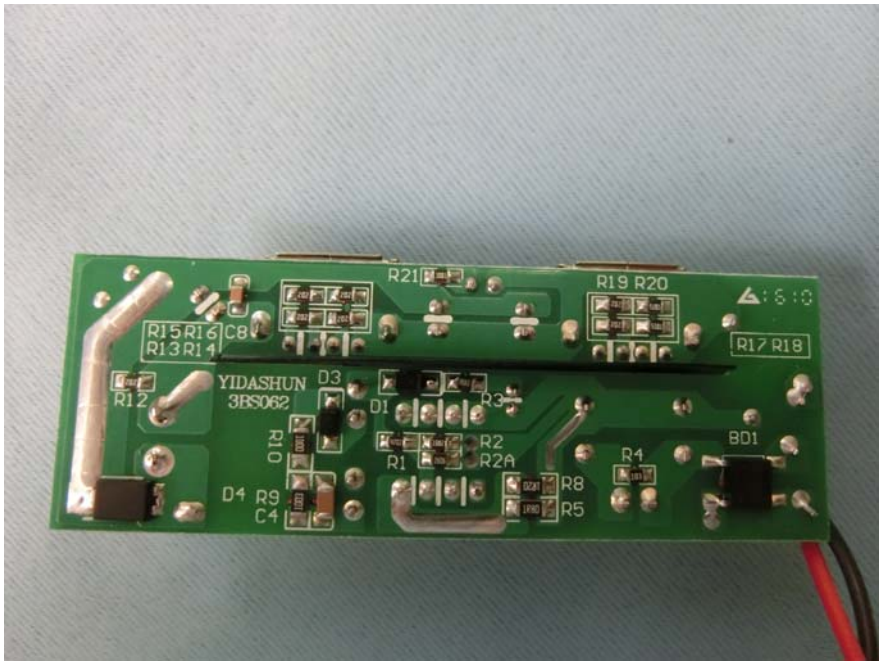
5.7 EUT – General View

5.8 EUT – General View

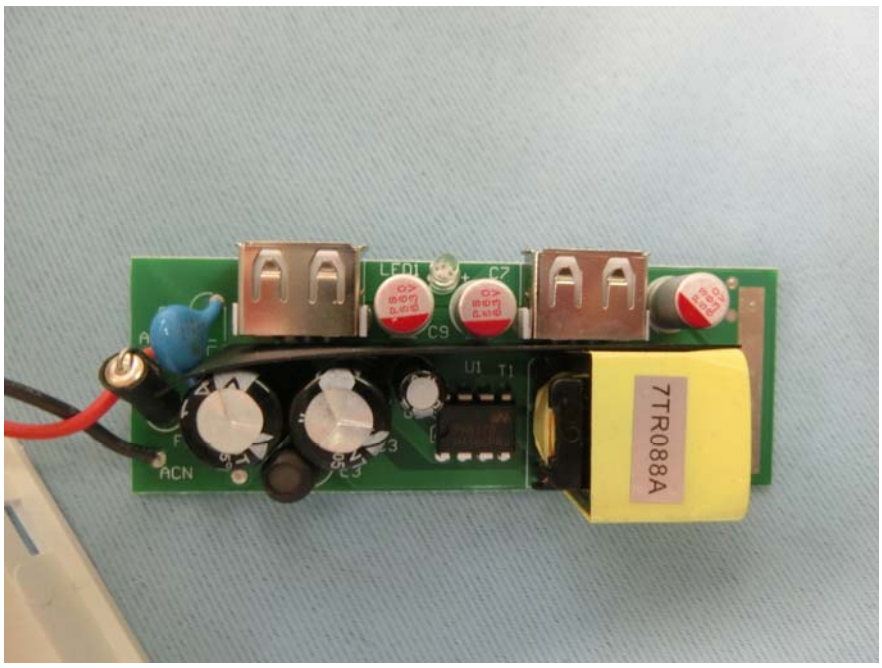
5.9 EUT – General View



5.10 EUT – General View



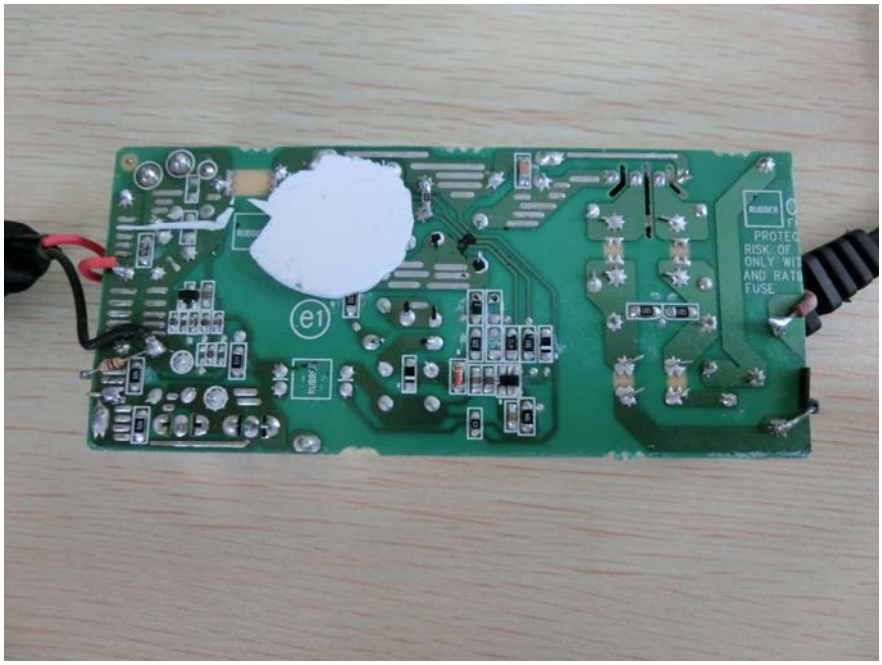
5.11 EUT – General View



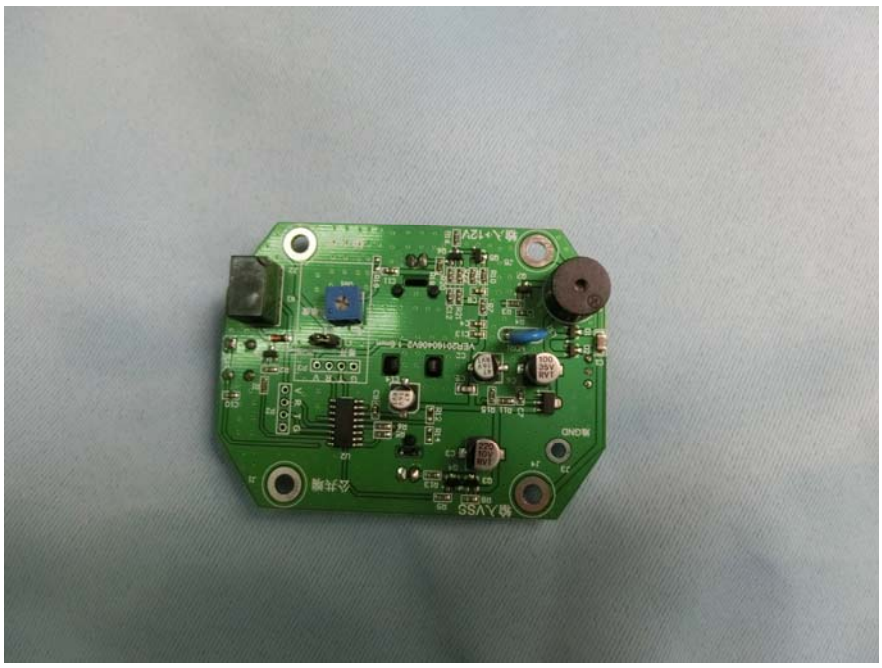
5.12 EUT – General View

5.13 EUT – General View

5.14 EUT – General View



5.15 EUT – General View



5.16 EUT – General View EGO-PZ002

5.17 EUT – General View EGO-PZ003

5.18 EUT – General View EGO-PZ004

End of the report