EMC TEST REPORT
for
SHENZHEN JOYE TECHNOLOGY CO., LTD

EGO
Model No.: JEG001

Prepared for	:	SHENZHEN JOYE TECHNOLOGY CO., LTD
Address	:	4/F, 9th Blvd. Changxing High New Tech. Industrial Zone, Shajing, Baoan, Shenzhen, China
Prepared by	:	SHENZHEN EMTEK Co., Ltd
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Report Number	:	E0912064E
Date of Test	:	December 11, 2009 to December 14, 2009
Date of Report	:	December 14, 2009

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TEST REPORT DESCRIPTION

Applicant	:	SHENZHEN JOYE TECHNOLOGY CO., LTD
Manufacturer	:	SHENZHEN JOYE TECHNOLOGY CO., LTD
Trade Mark	:	JOYE
EUT	:	EGO
Model No.	:	JEG001
Input Voltage	:	Input: DC 5V, 500mA(Connect to PC) Output: DC 4.2V, 400mA

Measurement Procedure Used:

EN55022: 2006+A1: 2007,
EN55024: 1998+A1: 2001+A2: 2003,
(EN61000-4-2: 2001, EN61000-4-3: 2006, EN61000-4-8: 2001)

The device described above is tested by SHENZHEN EMTEK CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and SHENZHEN EMTEK CO., LTD. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the EN55022 and EN55024 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of SHENZHEN EMTEK CO., LTD.

Date of Test : December 11, 2009 to December 14, 2009

Prepared by : _____
(Engineer)

Reviewer : _____
(Quality Manager)

Approved & Authorized Signer : _____
(Manager)

1. SUMMARY OF TEST RESULT

EMISSION			
Description of test item	Standard	Limits	Results
Conducted disturbance at mains terminals	EN55022: 2006+A1: 2007	Class B	N/A
Radiated Disturbance	EN55022: 2006+A1: 2007	Class B	Pass
Harmonic current emissions	EN61000-3-2: 2006	Class A	N/A
Voltage fluctuation and flicker	EN61000-3-3: 1995+A1: 2001+A2: 2005	Section 7	N/A
Immunity			
Description of test item	Basic Standard	Performance Criteria	Results
Electrostatic Discharge (ESD)	EN61000-4-2: 2001	B	Pass
Radio-frequency, Continuous radiated disturbance	EN61000-4-3: 2006	A	Pass
EFT/B Immunity	EN61000-4-4: 2004	B	N/A
Surge Immunity	EN61000-4-5: 2006	B	N/A
Conducted RF Immunity	EN61000-4-6: 2007	A	N/A
Power frequency magnetic field	EN61000-4-8: 2001	A	Pass
Voltage dips, >95% reduction	EN61000-4-11: 2004	B	N/A
Voltage dips, 30% reduction		C	N/A
Voltage interruptions		C	N/A
Note: N/A is an abbreviation for Not Applicable.			

2. GENERAL INFORMATION

2.1.Description of Device (EUT)

EUT	:	EGO
Model Number	:	JEG001
Power Supply	:	DC 5V
Applicant	:	SHENZHEN JOYE TECHNOLOGY CO., LTD
Address	:	4/F, 9th Blvd. Changxing High New Tech. Industrial Zone, Shajing, Baoan, Shenzhen, China
Manufacturer	:	SHENZHEN JOYE TECHNOLOGY CO., LTD
Address	:	4/F, 9th Blvd. Changxing High New Tech. Industrial Zone, Shajing, Baoan, Shenzhen, China
Date of Sample	:	December 11, 2009
Date of Test	:	December 11, 2009 to December 14, 2009

2.2.Description of Support Device

PC (For EMI test)	:	Manufacturer: Lenovo M/N: ThinkCentre 8701 S/N: 8701A53L3BC108 CE, FCC: DOC
PC	:	Manufacturer: HP M/N: Vectra VL420 MT S/N: CN15100363 CE, FCC: DOC
Monitor	:	Manufacturer: HP M/N: D8897 S/N: CN15034038 CE, FCC ID: ARSCM350S
Mouse	:	Manufacturer: HP M/N: M-S48a S/N: LZE14823966AW CE, FCC: DOC
Keyboard	:	Manufacturer: HP M/N: SK-2502C S/N: C0111141546 CE, FCC: DOC
Printer	:	Manufacturer: HP M/N: C89520 S/N: CN25S182N6 CE, FCC: DOC

2.3.Description of Test Facility

Site Description		
EMC Lab.	:	Accredited by CNAS, 2005.11.02 The certificate is valid until 2010.11 The Laboratory has been assessed and proved to be in compliance with CNAS-CL01:2006(identical to ISO/IEC17025:2005) The Certificate Registration Number is L2291. Accredited by TUV Rheinland Shenzhen, 2008.3 The Laboratory has been assessed according to the requirements ISO/IEC 17025 Accredited by FCC, March 18, 2008 The Certificate Registration Number is 709623. Accredited by Industry May 24, 2008 The Certificate Registration Number is 46405-4480.
Name of Firm	:	SHENZHEN EMTEK CO., LTD
Site Location	:	Bldg 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

2.4.Measurement Uncertainty

Conducted Emission Uncertainty	:	2.8dB
Radiated Emission Uncertainty	:	3.3dB

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1.For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	May 29, 2009	1 Year
2.	Pre-Amplifier	HP	8447D	2944A07999	May 29, 2009	1 Year
3.	Bilog Antenna	Schwarzbeck	VULB9163	142	May 29, 2009	1 Year
4.	Loop Antenna	ARA	PLA-1030/ B	1029	May 29, 2009	1 Year
5.	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	May 29, 2009	1 Year
6.	Horn Antenna	Schwarzbeck	BBHA 9120	D143	May 29, 2009	1 Year

3.2.For Electrostatic Discharge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	EMTEST	ESD30C	V0526100500	May 29, 2009	1 Year

3.3.For RF Strength Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	RF Power Meter. Dual Channel	BOONTON	4232A	10539	May 29, 2009	1 Year
2.	50ohm Diode Power Sensor	BOONTON	51011EMC	34236/ 34238	May 29, 2009	1 Year
3.	Broad-Band Horn Antenna	SCHWARZBECK	BBHA 9120 L3F	332	May 29, 2009	1 Year
4.	Power Amplifier	PRANA	AP32MT215	N/A	May 29, 2009	1 Year
5.	Power Amplifier	MILMEGA	AS0102-55	N/A	May 29, 2009	1 Year
6.	Signal Generator	AEROFLEX	2023B	N/A	May 29, 2009	1 Year
7.	Field Strength Meter	HOLADAY	HI-6005	N/A	May 29, 2009	1Year
8.	RS232 Fiber Optic Modem	HOLADAY	HI-4413P	N/A	May 29, 2009	1 Year
9.	Log.-Per. Antenna	SCHWARZBECK	VULP 9118E	N/A	May 29, 2009	1 Year

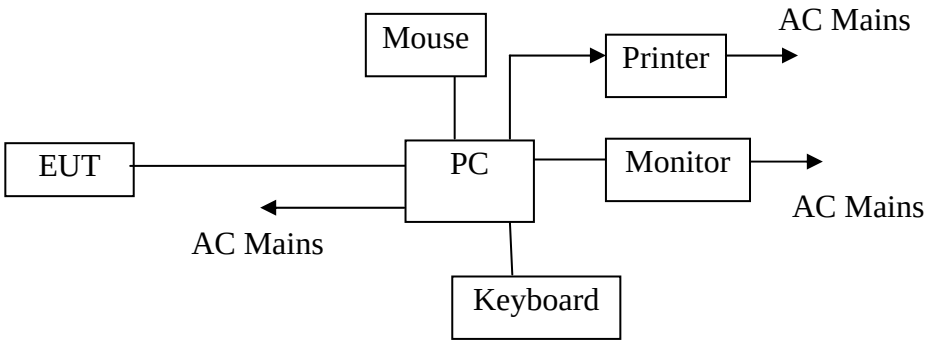
3.4.For Magnetic Field Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Magnetic Field Tester	HAEFELY	MAG100	250040.1	May 29, 2009	1Year

4. RADIATED EMISSION MEASUREMENT

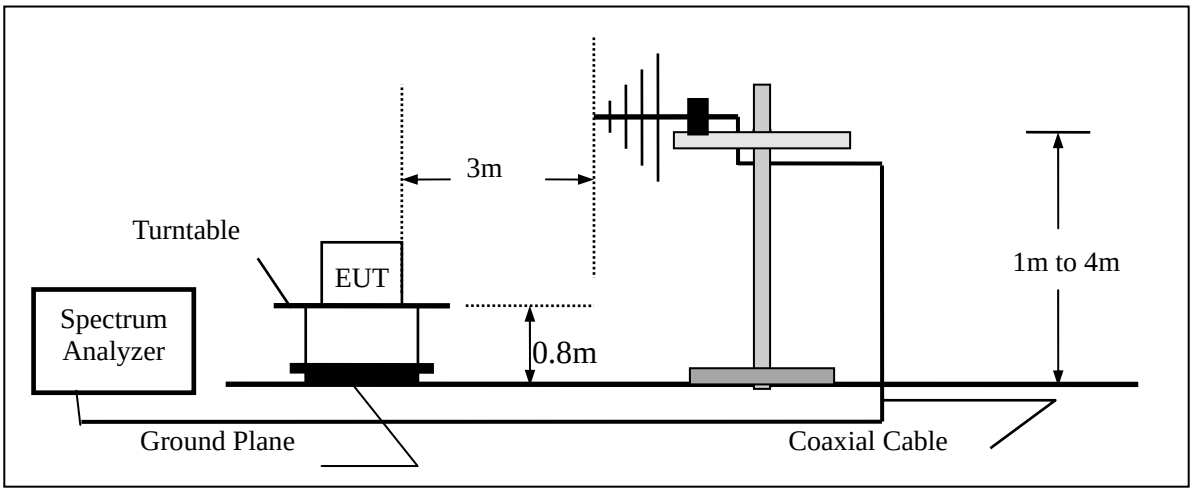
4.1.Block Diagram of Test

4.1.1.Block diagram of connection between the EUT and simulators.



(EUT: EGO)

4.1.2.Block diagram of test setup (In chamber)



(EUT: EGO)

4.2.Measuring Standard

EN55022: 2006+A1:2007

4.3.Radiated Emission 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:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dBμV/m)
30 ~ 230	3	40
230 ~ 1000	3	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.

4.4.EUT Configuration on Test

The EN55022 regulations test method must be used to find the maximum emission during radiated emission measurement.

4.5.Operating Condition of EUT

4.5.1.Turn on the power.

4.5.2.After that, let the EUT work in test mode (Connect to PC) and measure it.

4.6.Test Procedure

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

The bandwidth of the Receiver (ESU26) is set at 120kHz.
All the scanning curves are attached in Appendix I.

4.7.Measuring Results

PASS.

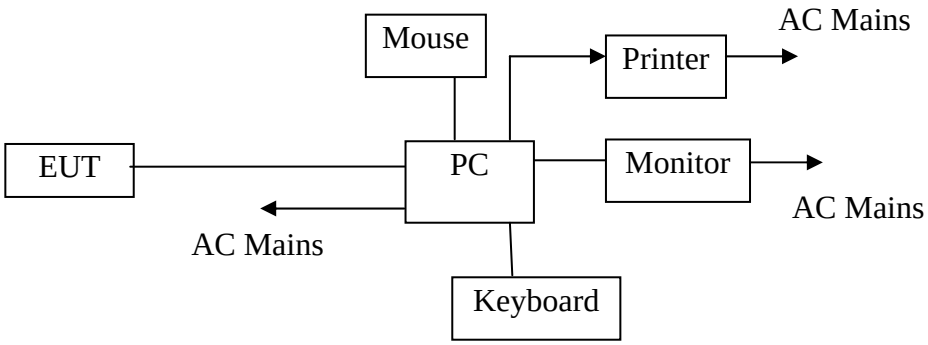
The frequency range from 30MHz to 1000MHz is investigated.

Please reference to the following page.

5. ELECTROSTATIC DISCHARGE IMMUNITY TEST

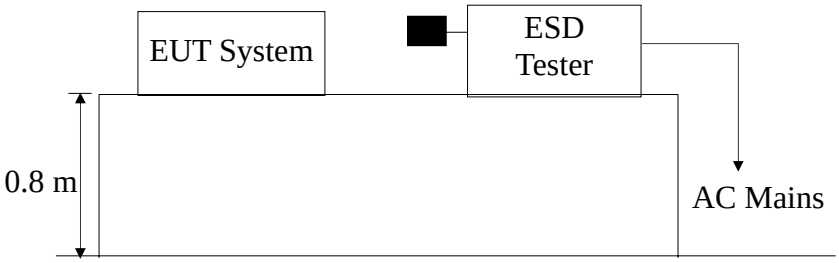
5.1.Block Diagram of Test Setup

5.1.1.Block diagram of connection between the EUT and simulators.



(EUT: EGO)

5.1.2.Block diagram of ESD test setup



(EUT: EGO)

5.2.Test Standard

EN55024: 1998+A1: 2001+A2: 2003,
(EN61000-4-2: 2001 Severity Level: 3 / Air Discharge: ±8KV
Level: 2 / Contact Discharge: ±4KV)

5.3.Severity Levels and Performance Criterion

5.3.1.Severity level

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

5.3.2.Performance criterion: B

5.4.EUT Configuration

The configuration of EUT is listed in Section 4.4.

5.5.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.5. Except the test set up replaced by Section 5.1.

5.6.Test Procedure

5.6.1.Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

5.6.2.Contact Discharge:

All the procedure shall be same as Section 5.6.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

5.6.3.Indirect discharge for horizontal coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

5.6.4.Indirect discharge for vertical coupling plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

5.7.Test Results

PASS

Please refer to the following pages

Electrostatic Discharge Test Result

SHENZHEN EMTEK CO., LTD

Applicant	:	SHENZHEN JOYE TECHNOLOGY CO., LTD			
EUT	:	EGO	Temperature	:	22℃
M/N	:	JEG001	Humidity	:	50％
Air discharge	:	± 8.0KV	Criterion	:	A
Contact discharge:		± 4.0KV			
Test Mode	:	Connect to PC			

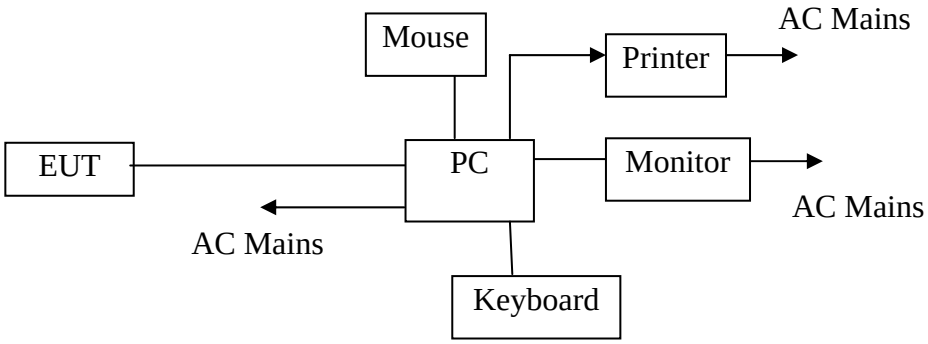
Location		**Kind** A-Air Discharge C-Contact Discharge	**Result**
All slots of EUT	12 points	A	PASS
LED	1 point	A	PASS
Button	1 point	A	PASS
Screw	2 points	C	PASS
HCP		C	PASS
VCP of front		C	PASS
VCP of rear		C	PASS
VCP of left		C	PASS
VCP of right		C	PASS

Test Equipment: ESD Simulator (EMTEST, ESD30C)

6. RF FIELD STRENGTH SUSCEPTIBILITY TEST

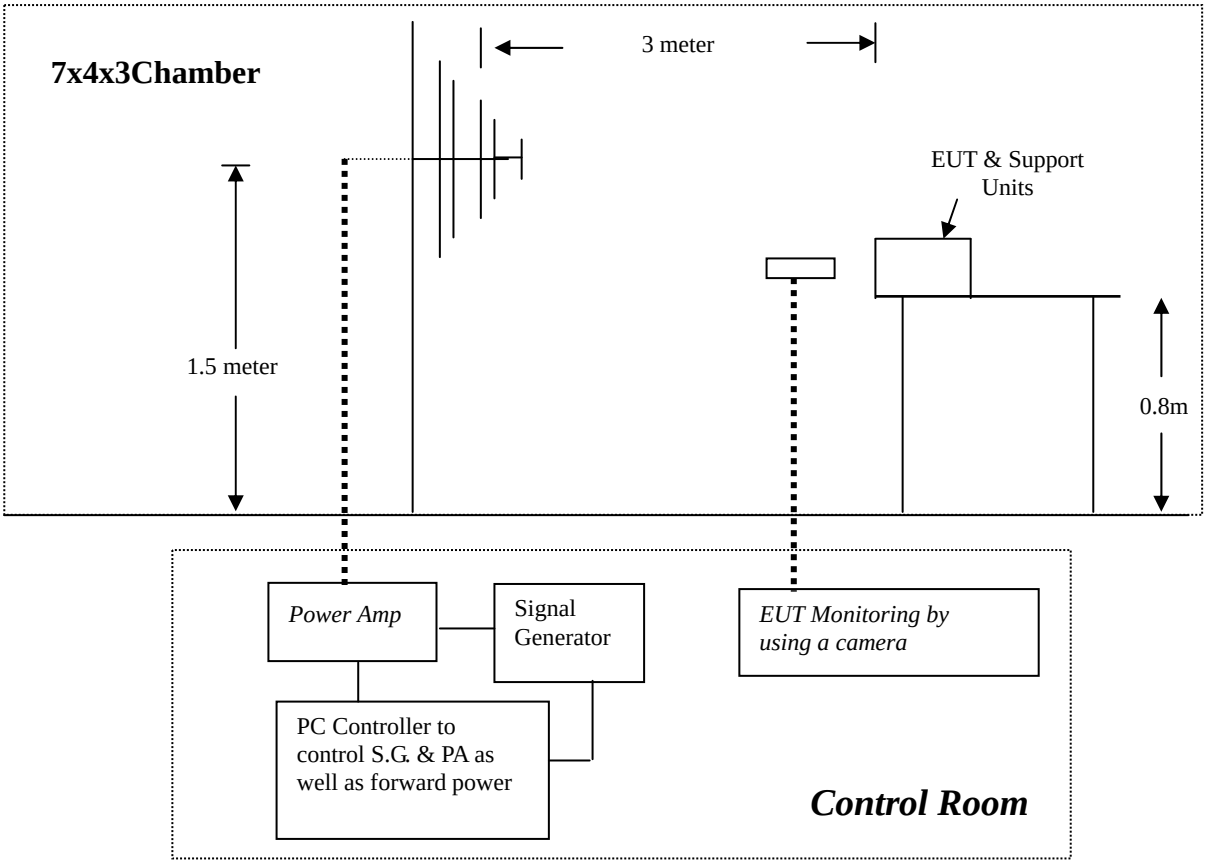
6.1. Block Diagram of Test

6.1.1.Block diagram of connection between the EUT and simulators.



(EUT: EGO)

6.1.2.Block diagram of RS test setup



(EUT: EGO)

6.2. Test Standard

EN55024: 1998+A1: 2001+A2: 2003,
(EN61000-4-3: 2006 (Severity Level: 2, 3V / m))

6.3.Severity Levels and Performance Criterion

6.3.1.Severity Levels

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

6.3.2.Performance Criterion: **A**

6.4. EUT Configuration on Test

The configuration of the EUT is same as Section 4.4.

6.5.Operating Condition of EUT

Same as radiated emission measurement which is listed in Section 4.5, except the test setup replaced as Section 6.1.

6.6.Test Procedure

The EUT are placed on a table which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.
In order to judge the EUT performance, a CCD camera is used to monitor it.

All the scanning conditions are as following:

Condition of Test	Remark
1. Fielded Strength	3V/m (Severity Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80-1000MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	1 Sec.

6.7.Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

SHENZHEN EMTEK CO., LTD.

Applicant :	SHENZHEN JOYE TECHNOLOGY CO., LTD		
EUT :	EGO	Temperature :	22℃
M/N :	JEG001	Humidity :	50 ％
Field Strength :	3 V/m	Criterion :	A
Test Mode :	Connect to PC	Frequency Range:	80 MHz to1000 MHz

Modulation: □ None Pulse ☒AM 1KHz 80%

	Frequency Rang 1: 80~ 1000MHz		Frequency Rang 2:	
Steps	1%			
	Horizontal	Vertical	Horizontal	Vertical
Front	PASS	PASS		
Right	PASS	PASS		
Rear	PASS	PASS		
Left	PASS	PASS		

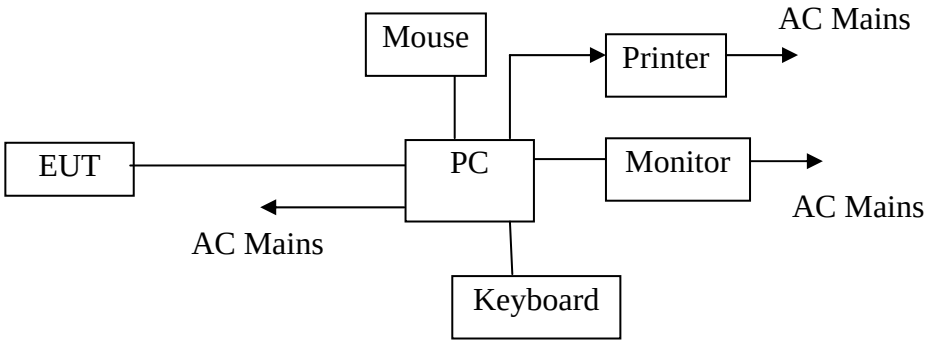
Test Equipment **:**
1. Signal Generator : 2023B (AEROFLEX)
2. Power Amplifier : AS0102-55(MILMEGA)&AP32MT215(PRANA)
3. Log.-Per.Antenna: VULP9118E(SCHWARZBECK)
4. Broad-Band Horn Antenna: BBHA 9120L3F(SCHWARZBECK)
5. RF Power Meter. Dual Channel: 4232A(BOONTON)
6. Field Strength Meter: HI-6005(HOLADAY)

Note:

7. MAGNETIC FIELD SUSCEPTIBILITY TEST

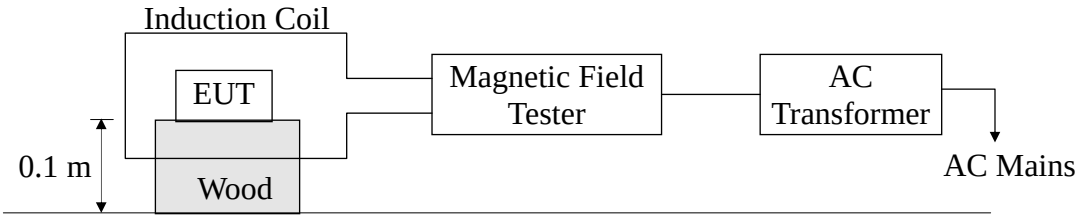
7.1.Block Diagram of Test

7.1.1.Block diagram of test setup.



(EUT: EGO)

7.1.2.Magnetic field test setup



(EUT: EGO)

7.2.Test Standard

EN55024: 1998+A1: 2001+A2: 2003
(EN61000-4-8: 2001, Severity Level: Level 1, 1A / m)

7.3.Severity Levels and Performance Criterion

7.3.1.Severity Levels

Level	Field Strength A/m
1	1
2	3
3	10
4	30
5	100
X	Special

7.3.2.Performance Criterion: A

7.4.EUT Configuration on Test

The configuration of the EUT is same as Section 4.4.

7.5.Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. X, Y and Z polarization of the induction coil are set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

7.6.Test Results

PASS.

Please refer to the following page.

Magnetic Field Immunity Test Result

SHENZHEN EMTEK CO., LTD.

Standard	☐ IEC 61000-4-8 ☒ EN 61000-4-8	Result: ☒Pass / ☐Fail

Applicant : SHENZHEN JOYE TECHNOLOGY CO., LTD

EUT : EGO M/N: JEG001

Input Voltage : DC 5V

Date of Test : December 11, 2009 Test Engineer: ANDY

Ambient Condition : Temp : 22℃ Humid: 58%

Criterion: A

Operation Mode : Connect to PC

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
1	5 mins	X	A	PASS
1	5 mins	Y	A	PASS
1	5 mins	Z	A	PASS

Operation Mode : Connect to PC

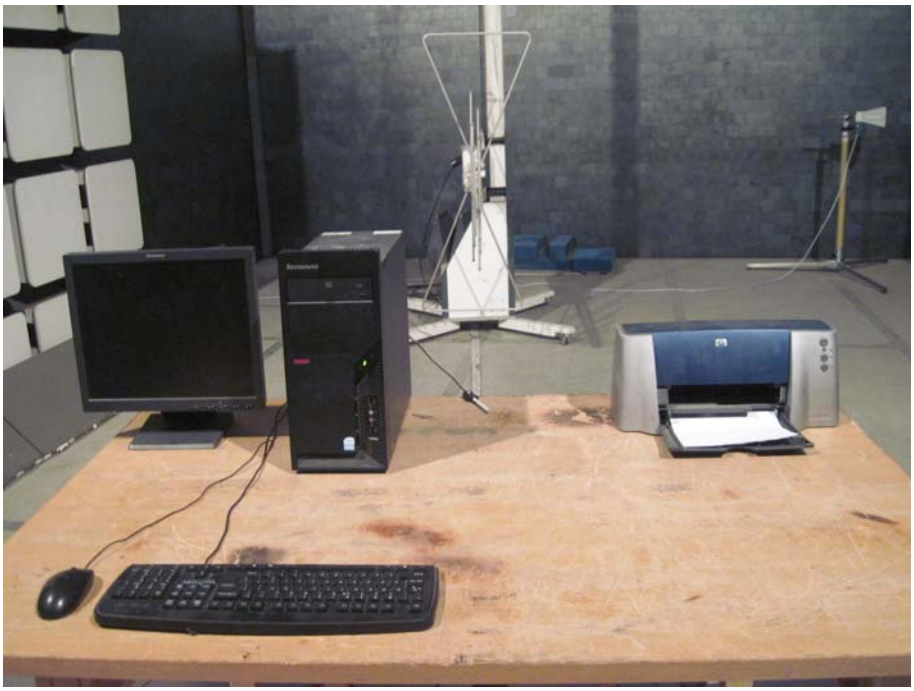
Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result

Test Equipment	Magnetic Field Test: HEAFELY MAG 100.1

Note:

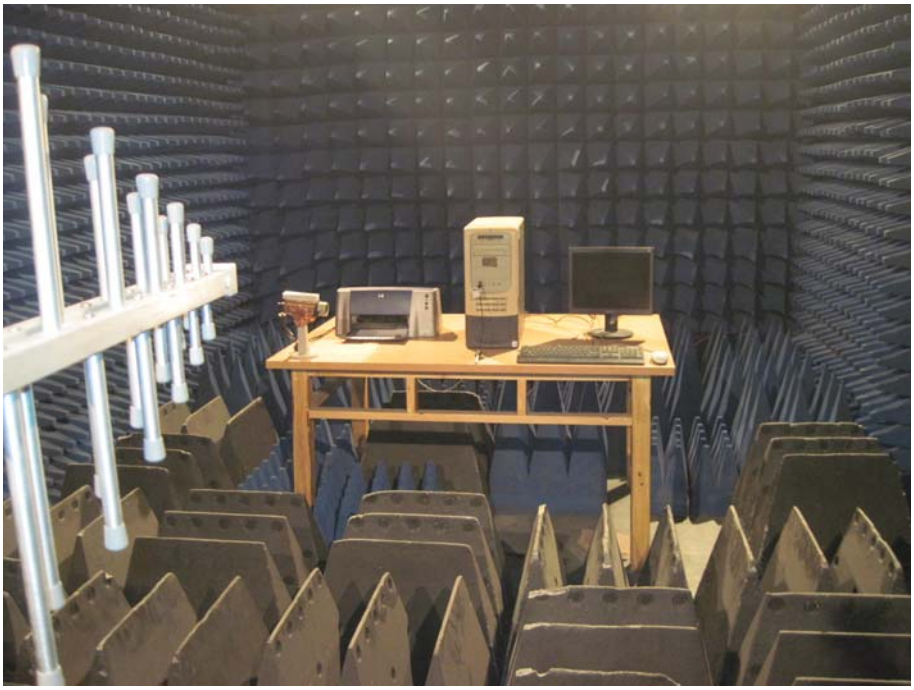
8. PHOTOGRAPH

8.1.Photo of Radiation Emission Measurement



8.2.Photo of Electrostatic Discharge Test

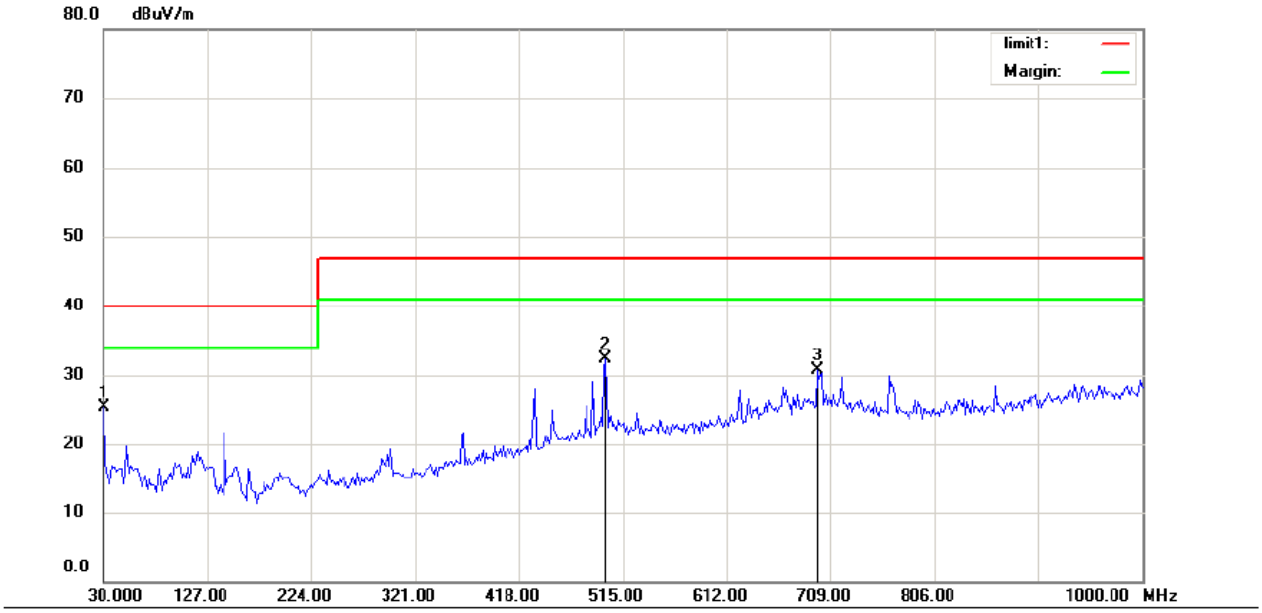
8.3.Photo of RF Field Strength Susceptibility Test



8.4.Photo of Magnetic Field Immunity Test

APPENDIX I

Test mode: Connect to PC



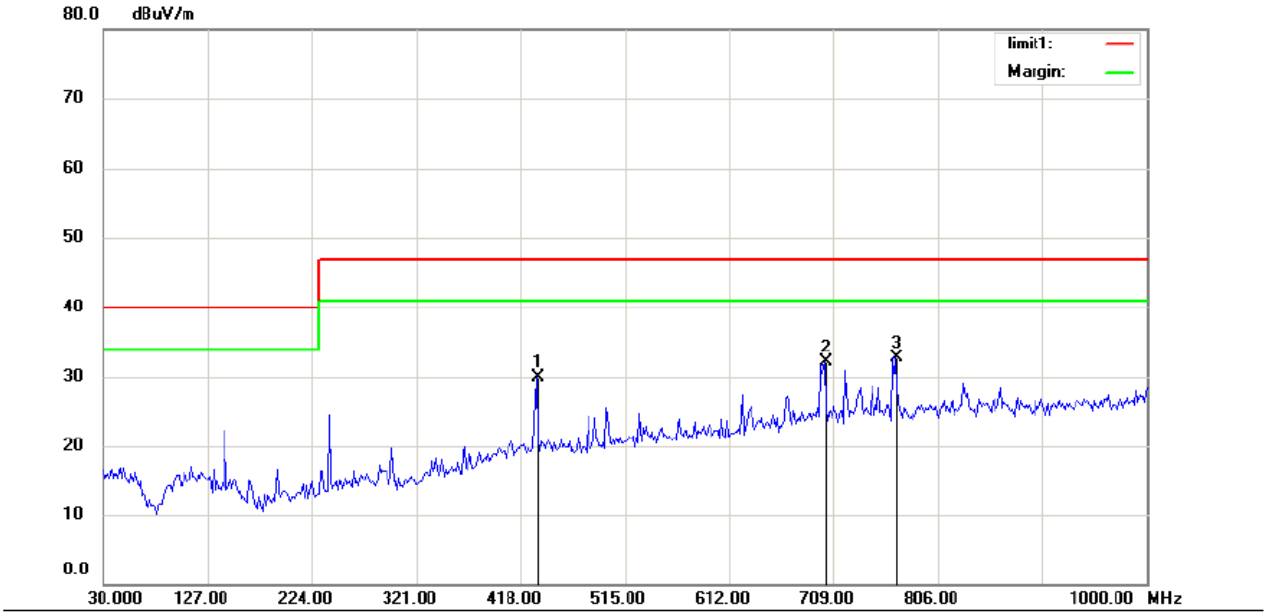
Site site #1 Polarization: *Vertical* Temperature: 26

Limit: (RE)EN55022 class B Power: Humidity: 60 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		30.0000	11.40	13.93	25.33	40.00	-14.67	QP			
2	*	499.4551	13.60	18.77	32.37	47.00	-14.63	QP			
3		696.8750	6.80	23.90	30.70	47.00	-16.30	QP			

*:Maximum data x:Over limit !:over margin Operator:KL

Test mode: Connect to PC



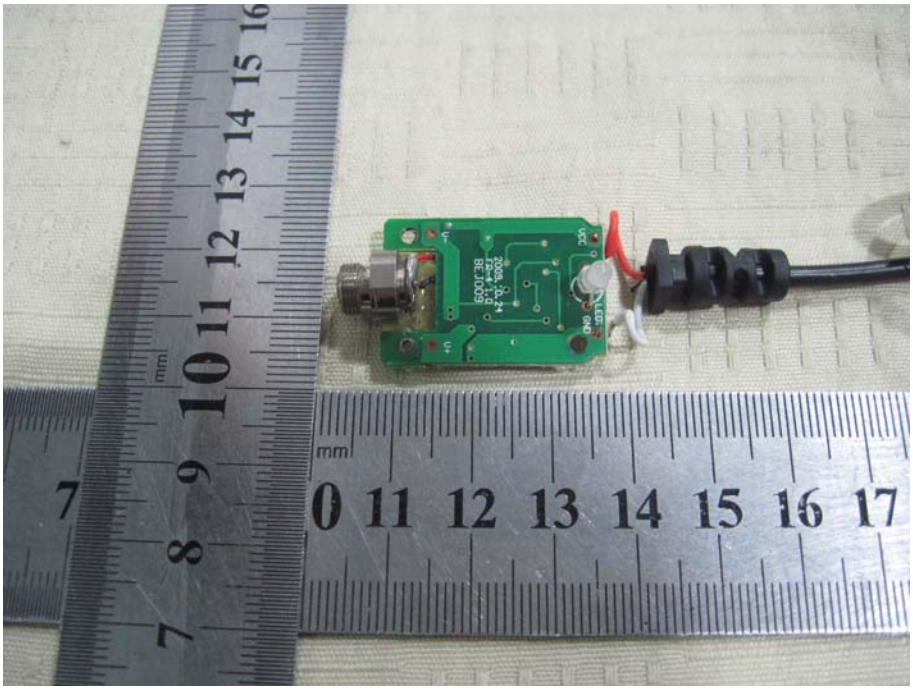
Site site #1 Polarization: *Horizontal* Temperature: 26

Limit: (RE)EN55022 class B Power: Humidity: 60 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		432.6122	11.25	18.57	29.82	47.00	-17.18	QP			
2		699.9840	9.22	22.80	32.02	47.00	-14.98	QP			
3	*	766.8270	9.70	23.04	32.74	47.00	-14.26	QP			

*:Maximum data x:Over limit !:over margin Operator: KL

APPENDIX II
(Photos of EUT)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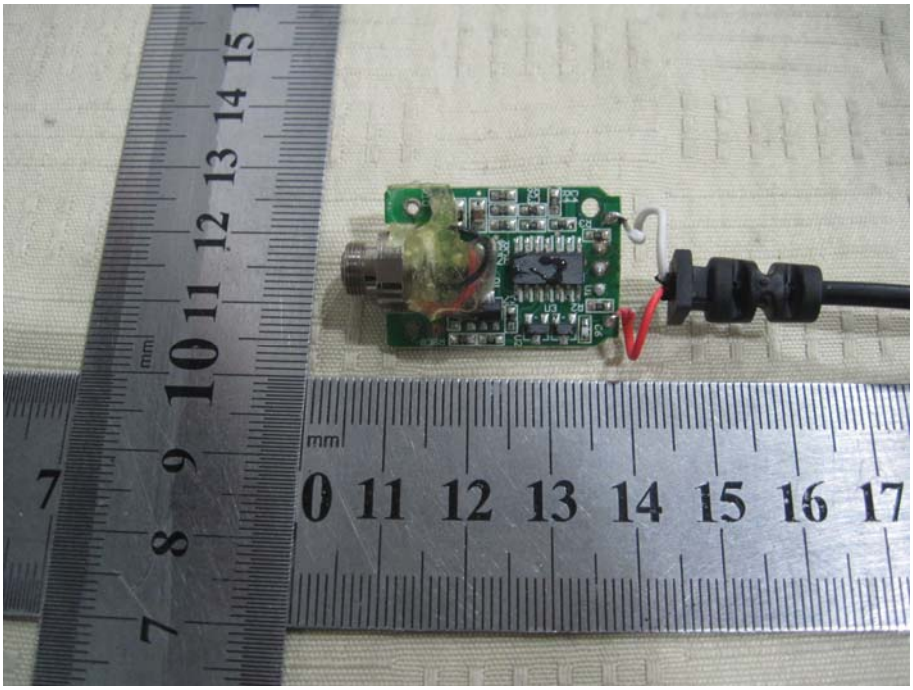
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