



EMC TEST REPORT

EN55022: 2010
 EN55024: 2010
 EN61000-3-2:2006+A1:2009+A2:2009
 EN61000-3-3:2008

MEASUREMENT AND TEST REPORT

For

Ingtron Enterprise Co., Ltd.

No. 211-1, Qingfeng Road, Qingxi Town, Dongguan City, Guangdong, China

Model: IT-201, IT-2XX, IT-3XX (XX=0~9)

Feb. 28, 2013

This Report Concerns: <input checked="" type="checkbox"/> Original Report	Equipment Type: PC Case + DC Power Board
Test Engineer:	<i>Bill Jiang</i>
Report Number:	POCE13022716URE
Test Date:	Feb. 20, 2013 to Feb. 28, 2013
Reviewed By:	<i>Michael</i>
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Shenzhen POCE Technology Co., Ltd.

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1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	PC Case + DC Power Board
Model	:	IT-201
Supplementary Model	:	IT-2xx, IT-3xx (xx=0~9) Remark: supplementary models are only different in exterior with tested Model and with the same circuit construction. All the tests of this report are carried on Model IT-201.
Applicant Address	:	Ingtron Enterprise Co., Ltd. No. 211-1, Qingfeng Road, Qingxi Town, Dongguan City, Guangdong, China
Manufacturer Address	:	Ingtron Enterprise Co., Ltd. No. 211-1, Qingfeng Road, Qingxi Town, Dongguan City, Guangdong, China
Date of receiver	:	Feb. 20, 2013
Date of Test	:	Feb. 20, 2013 to Feb. 28, 2013

1.2. Test Standards

Test Standards	
EN55022:2010	Emission standard for residential, commercial and light-industrial environments
EN55024:2010	Immunity for residential, commercial and light-industrial environments
EN61000-3-2:2006+A1:2009+A2:2009	Electromagnetic compatibility(EMC)-Part 3-2:Limits-Limits for harmonic current emissions(equipment input current $\leq 16A$ per phase)
EN61000-3-3:2008	Electromagnetic compatibility(EMC)-Part 3-3:Limits-Limitation of voltage changes, Voltage fluctuations and flicker in public low-voltage supply systems. For equipment with Rated current $\leq 16A$ per phase and not subject to conditional connection

1.3. Test Summary

For the EUT described above.

Table 1: Tests Carried Out Under EN55022:2010

Standard	Test Items	Status
EN55022:2010	Disturbance Voltage at The Mains Terminals (150KHz To 30MHz)	√
	Radiated Disturbances (30MHz To 1000MHz)	√

√ Indicates that the test is applicable

× Indicates that the test is not applicable

Table 2: Tests Carried Out Under EN55024:2010

Standard	Test Items	Status
EN61000-4-2:2009	Electrostatic discharge Immunity	√
EN61000-4-3:2006 +A1:2008+2:2010	Radiated Susceptibility (80MHz to 1GHz)	√
EN61000-4-4:2004+A1:2010	Electrostatic Fast Transient/Burst Immunity	√
EN61000-4-5:2006	Surge Immunity	√
EN61000-4-6:2009	Conducted Susceptibility (150KHz to 80MHz)	√
EN61000-4-8:2010	Power Frequency Magnetic Field Immunity (50/60Hz)	√
EN61000-4-11:2004	Voltage Dips Short Interruptions Immunity Tests	√

√ Indicates that the test is applicable

× Indicates that the test is not applicable

Table 3: Tests Carried Out Under EN61000-3-2:2006+A1:2009+A2:2009& EN61000-3-3:2008

Standard	Test Items	Status
EN61000-3-2:2006+A1:2009+A2:2009	Harmonic Current	×
EN61000-3-3:2008	Voltage Fluctuations	√

√ Indicates that the test is applicable

× Indicates that the test is not applicable

1.4. Test Methodology

All measurements contained in this report were conducted with CISPR 16-1, radio disturbance and immunity measuring apparatus, and CISPR16-2, Method of measurement of disturbances and immunity.

All measurement required was performed at laboratory of Shenzhen POCE Technology Co., Ltd. , at Room 501-502, Bldg. 1, Xinghua Garden, Bao'an Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China

1.5. Test Facility

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

FCC – Registration No.: 222278

EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 222278.

TUV Accredited

EMC Laboratory has been Accredited by TUV Rheinland Shenzhen 2008.9, The Laboratory has been assessed according to the requirements ISO/IEC 17025.

The facility also complies with the radiated and AC line conducted test site criteria set forth in CISPR 16-1, CISPR16-2.

1.6. Measurement Uncertainty

Radiation Uncertainty : $U_r = \pm 3.84 \text{ dB}$

Conduction Uncertainty : $U_c = \pm 2.72 \text{ dB}$

2. MEASURING DEVICE AND TEST EQUIPMENT

2.1. For Power Line Conducted Emission

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCS30	828985/018	Apr. 20, 2012	1 Year
2.	L.I.S.N	Rohde & Schwarz	ESH2-Z5	834549/005	Apr. 20, 2012	1 Year
3.	50Ω Coaxial Switch	Anritsu	MP59B	M20531	N/A	N/A
4.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	Apr. 20, 2012	1 Year
5.	Voltage Probe	Rohde & Schwarz	TK9416	N/A	Apr. 20, 2012	1 Year

2.2. For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	ANRITSU	MS2661C	6200140915	Apr. 20, 2012	1 Year
2.	Test Receiver	Rohde & Schwarz	ESCS30	828985/018	Apr. 20, 2012	1 Year
3.	Bilog Antenna	Schwarzbeck	VULB9163	142	Apr. 20, 2012	1 Year
4.	50 Coaxial Switch	Anritsu Corp	MP59B	6100237248	Apr. 20, 2012	1 Year
5.	EMI Power Line Filter	DUOJI EME	FNF 201 B16	N/A	Apr. 20, 2012	1 Year
6.	EMI Power Line Filter	JIANLI	DL-40C	N/A	Apr. 20, 2012	1 Year
7.	Cable	Schwarzbeck	AK9513	ACRX1	Apr. 20, 2012	1 Year
8.	Cable	Rosenberger	N/A	FP2RX2	Apr. 20, 2012	1 Year
9.	Cable	Schwarzbeck	AK9513	CRPX1	Apr. 20, 2012	1 Year
10.	Cable	Schwarzbeck	AK9513	CRRX2	Apr. 20, 2012	1 Year
11.	Signal Generator	HP	8648A	3625U00573	Apr. 20, 2012	1 Year

2.3. For Harmonic Current / Flicker Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Power Frequency Test System	HAEFELY	PHF555	080419-03	Apr. 20, 2012	1 Year
2.	PC	N/A	P2L97	N/A	Apr. 20, 2012	N/A

2.4. For Electrostatic Discharge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	HAEFELY	PESD1600	H708159	Apr. 20, 2012	1 Year

2.5. For RF Strength Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal Generator	HP	8648A	3625U00573	Apr. 20, 2012	1 Year
2.	Amplifier	AR	500A100	17034	NCR	NCR
3.	Amplifier	AR	100W/1000M1	17028	NCR	NCR
4.	Isotropic Field Monitor	AR	FM2000	16829	NCR	NCR
5.	Isotropic Field Probe	AR	FP2000	16755	Apr. 20, 2012	1 Year
6.	Biconic Antenna	EMCO	3108	9507-2534	NCR	NCR
7.	Log-periodic Antenna	AR	AT1080	16812	NCR	NCR
8.	PC	N/A	486DX2	N/A	N/A	N/A

2.6. For Electrical Fast Transient /Burst Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Burst Tester	HAEFELY	PEFT4010	080981-16	Apr. 20, 2012	1 Year
2.	Coupling Clamp	HAEFELY	IP-4A	147147	Apr. 20, 2012	1 Year

2.7. For Surge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Surge Tester	HAEFELY	PSURGE4.1	080107-04	Apr. 20, 2012	1 Year

2.8. For Injected Current Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Simulator	EMTEST	CWS500C	0900-12	Apr. 20, 2012	1 Year
2.	CDN	EMTEST	CDN-M2	5100100100	Apr. 20, 2012	1 Year
3.	CDN	EMTEST	CDN-M3	0900-11	Apr. 20, 2012	1 Year
4.	Injection Clamp	EMTEST	F-2031-23 MM	368	Apr. 20, 2012	1 Year
5.	Attenuator	EMTEST	ATT6	0010222A	Apr. 20, 2012	1 Year

2.9. For Magnetic Field Immunity Test

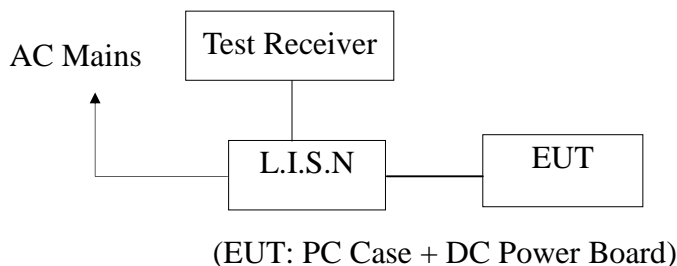
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Magnetic Field Tester	HAEFELY	MAG100	250040.1	Apr. 20, 2012	1 Year

2.10. For Voltage Dips and Interruptions Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Dips Tester	HAEFELY	Pline1610	083732-12	Apr. 20, 2012	1Year

3. POWER LINE CONDUCTED EMISSION MEASUREMENT

3.1. Block Diagram of Test Setup



3.2. Measuring Standard

EN55022:2010

Power Line Conducted Emission Limits (Class B)

Frequency (MHz)	Limit (dB μ V)	
	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.

3.3. EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet EN55022 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

EUT : PC Case + DC Power Board
Model Number : IT-201
Serial Number : N/A

3.4. Operating Condition of EUT

- 3.4.1. Setup the EUT as shown on Section 3.1.
- 3.4.2. Turn on the power of all equipments.
- 3.4.3. Let the EUT work in measuring mode (On) and measure it.

3.5. 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 a 50ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN55022 regulations during conducted emission measurement.

The bandwidth of the field strength meter (R&S Test Receiver ESCS30) is set at 9KHz in 150KHz~30MHz and 200Hz in 9KHz~150KHz.

The frequency range from 150kHz to 30MHz is investigated

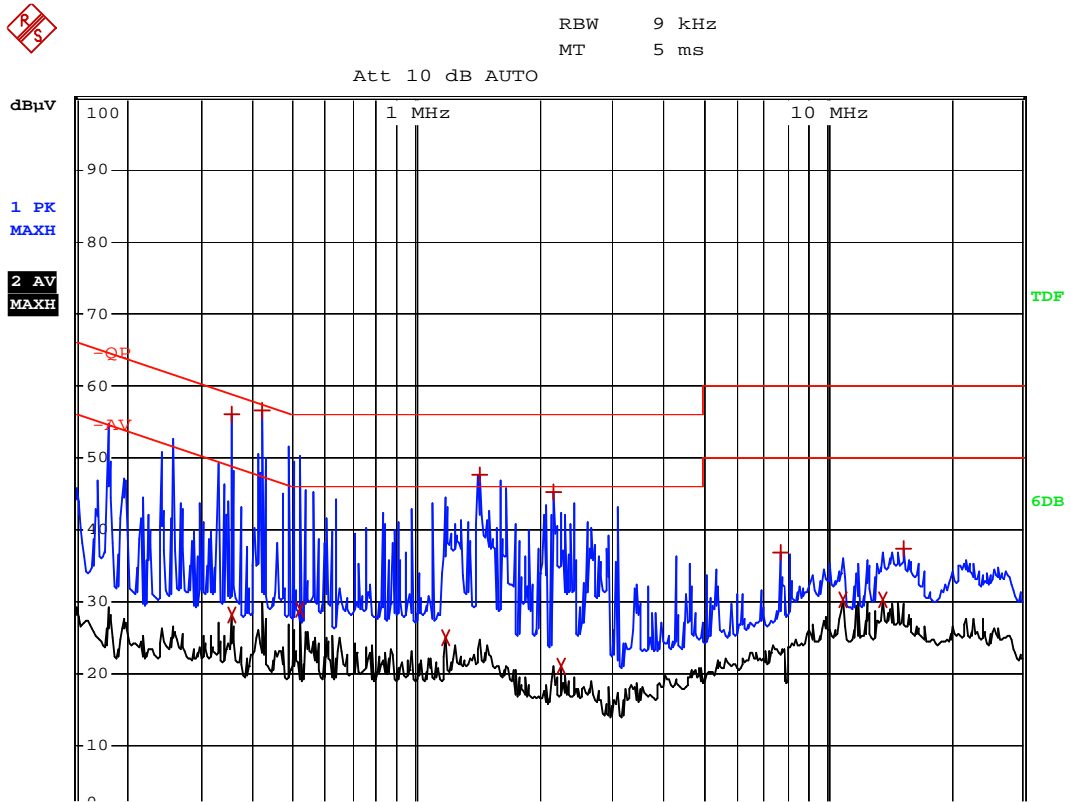
3.6 Measuring Results

PASS

Please reference to the following pages

Conducted Emission

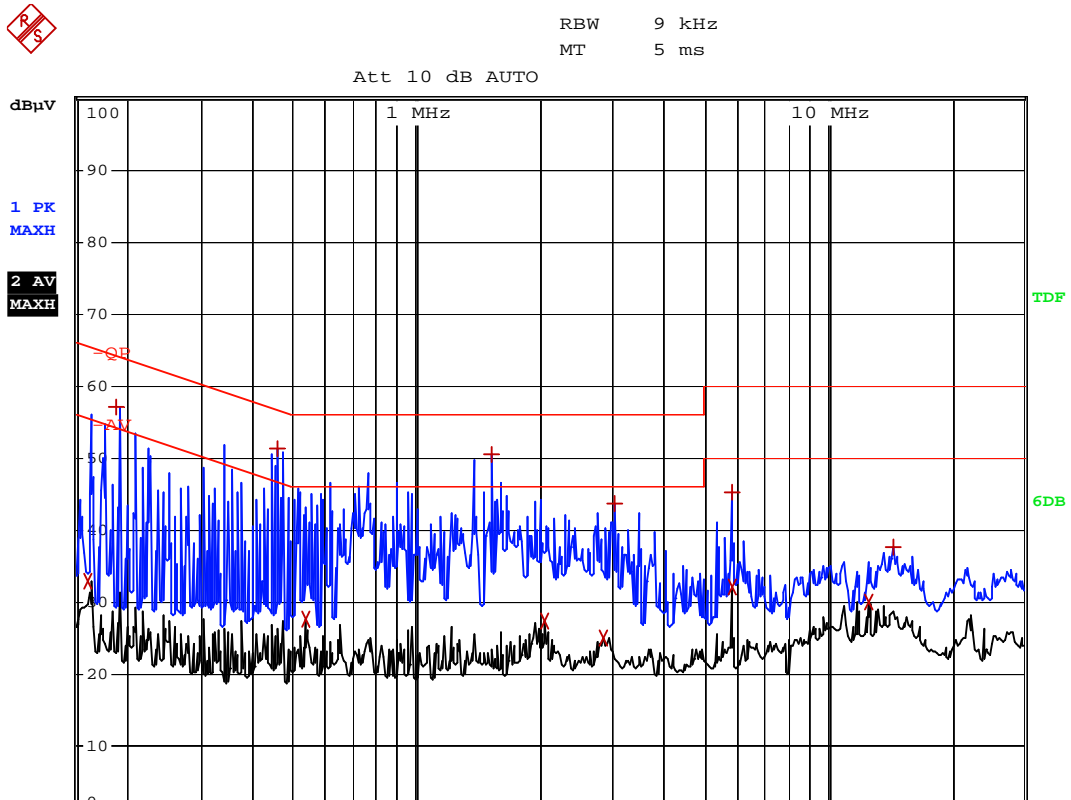
EUT : PC Case + DC Power Board Date : 2013-02-25
 Model : IT-201 Phase : L-line
 Model : Normal Working



EDIT PEAK LIST (Prescan Results)			
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
1 Max Peak	354 kHz	56.01	-2.85
2 Average	354 kHz	28.13	-20.73
1 Max Peak	418 kHz	56.50	-0.97
2 Average	518 kHz	29.06	-16.94
2 Average	1.182 MHz	25.17	-20.82
1 Max Peak	1.426 MHz	47.72	-8.27
1 Max Peak	2.158 MHz	45.32	-10.68
2 Average	2.246 MHz	21.17	-24.82
1 Max Peak	7.702 MHz	36.95	-23.04
2 Average	10.922 MHz	30.29	-19.70
2 Average	13.73 MHz	30.32	-19.67
1 Max Peak	15.458 MHz	37.50	-22.49

Conducted Emission

EUT : PC Case + DC Power Board Date : 2013-02-25
 Model : IT-201 Phase : N-line
 Model : Normal Working

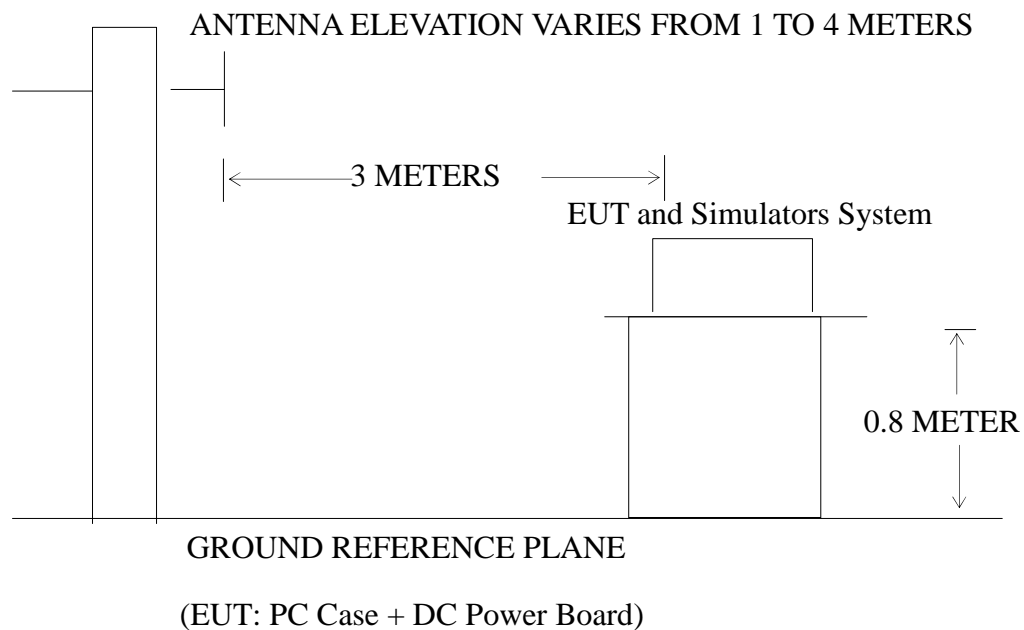


EDIT PEAK LIST (Prescan Results)			
TRACE	FREQUENCY	LEVEL dBµV	DELTA LIMIT dB
Trace1:	-QP		
Trace2:	-AV		
Trace3:	---		
2 Average	162 kHz	32.85	-22.50
1 Max Peak	190 kHz	57.01	-7.02
1 Max Peak	458 kHz	51.42	-5.30
2 Average	538 kHz	27.75	-18.24
1 Max Peak	1.518 MHz	50.50	-5.49
2 Average	2.042 MHz	27.41	-18.58
2 Average	2.854 MHz	24.99	-21.00
1 Max Peak	3.026 MHz	43.57	-12.42
1 Max Peak	5.842 MHz	45.36	-14.63
2 Average	5.842 MHz	32.13	-17.86
2 Average	12.542 MHz	29.93	-20.06
1 Max Peak	14.382 MHz	37.75	-22.25

4. RADIATED EMISSION MEASUREMENT

4.1. Block Diagram of Test

4.1.1. Block diagram of test setup (In chamber)



4.2. Measuring Standard

EN55022:2010

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 (dB μ V/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 (Normal) 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 (ESCS30) is set at 120kHz.

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

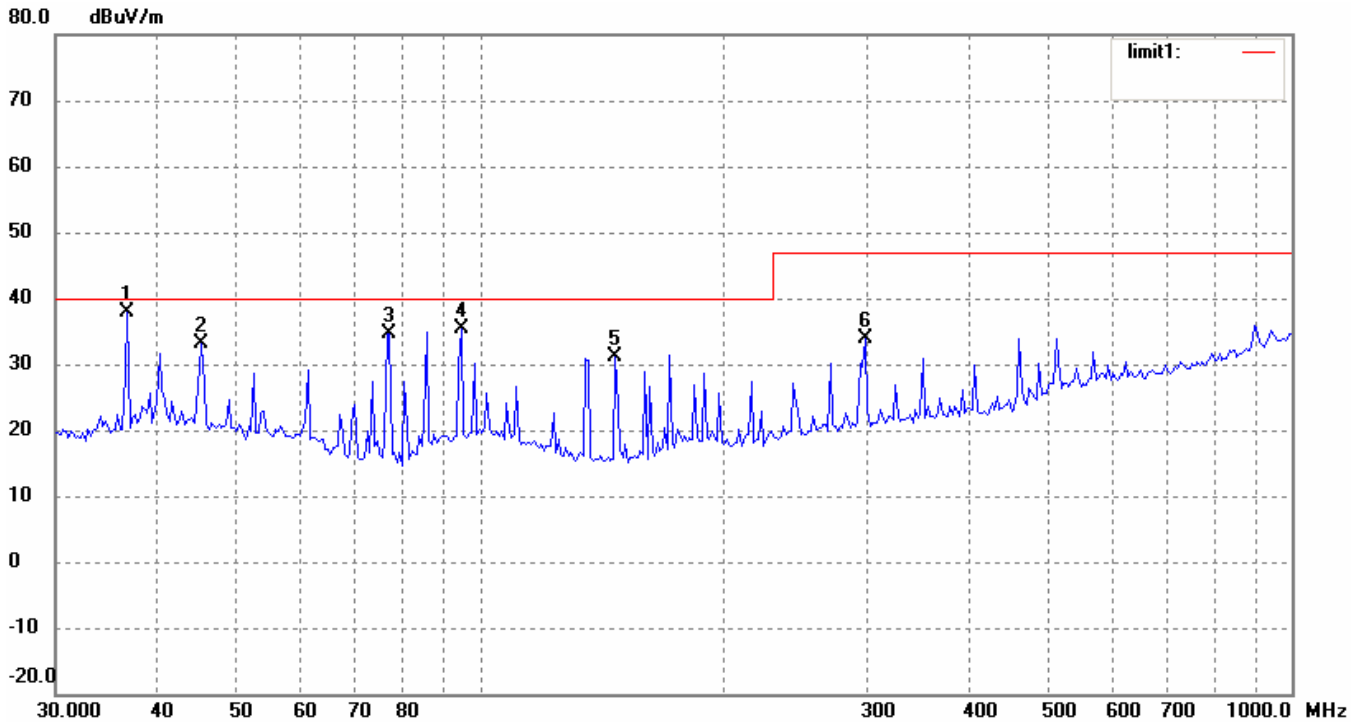
4.7.Measuring Results

PASS.

Please reference to the following pages

Radiated Emission Test Data

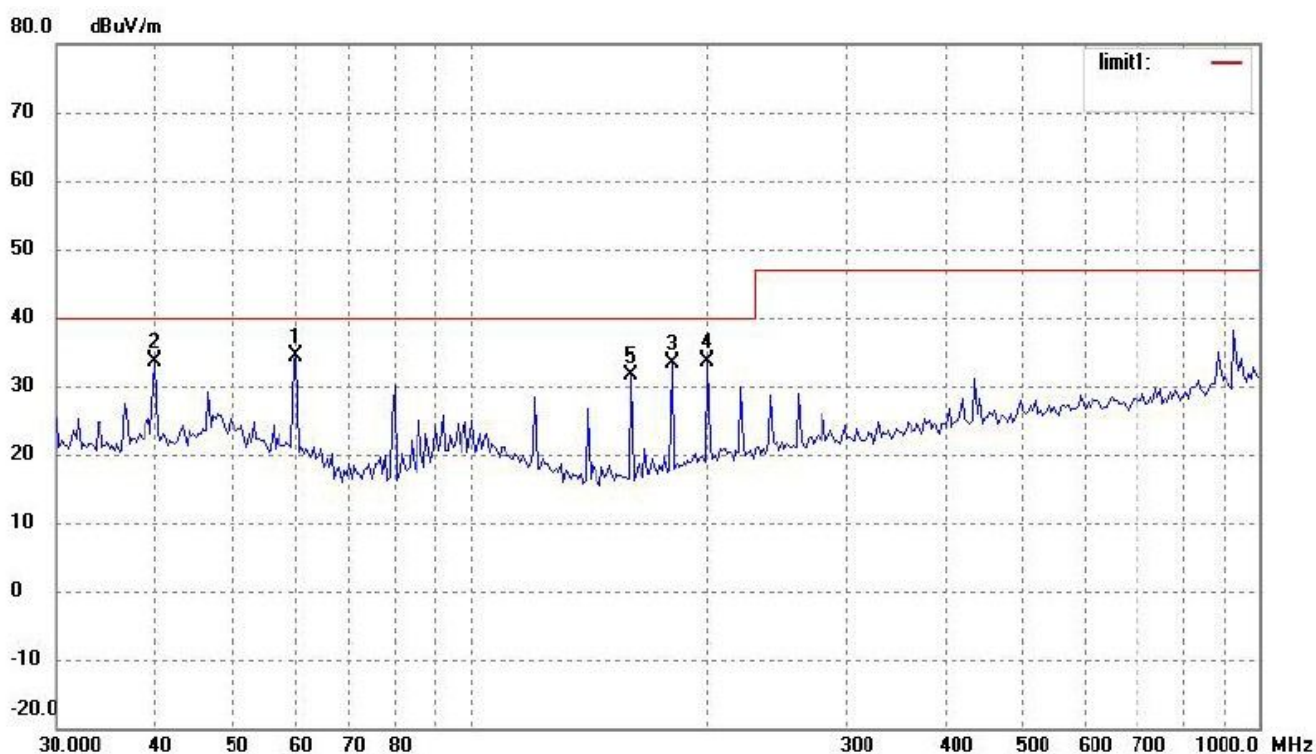
Standard:	EN55022 ClassB RE	Polarziation:	Horizontal
Test item:	Radiation Test	Date:	2013-02-25
EUT:	PC Case + DC Power Board	Test By:	Bill
Model:	IT-201	Distance:	3m
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	36.7811	30.76	7.08	37.84	40.00	-2.16	QP
2	45.4131	25.13	7.97	33.10	40.00	-6.90	QP
3	77.4680	31.90	2.77	34.67	40.00	-5.33	QP
4	94.9788	27.98	7.47	35.45	40.00	-4.55	QP
5	146.8392	27.77	3.28	31.05	40.00	-8.95	QP
6	298.5932	25.16	8.63	33.79	47.00	-13.21	QP

Radiated Emission Test Data

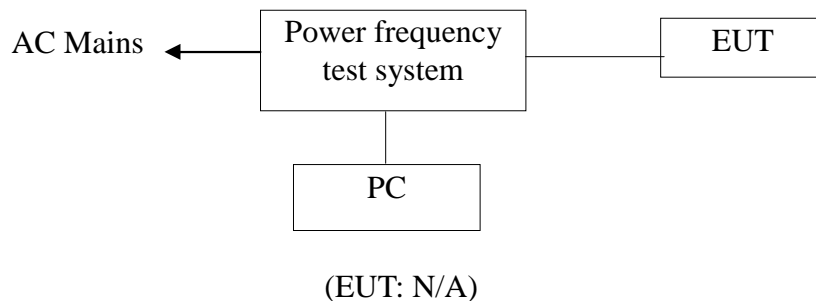
Standard:	EN55022 ClassB RE	Polarziation:	Vertical
Test item:	Radiation Test	Date:	2013-02-25
EUT:	PC Case + DC Power Board	Test By:	Bill
Model:	IT-201	Distance:	3m
Note:			



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	60.7525	27.27	7.13	34.40	40.00	-5.60	QP
2	39.0163	25.68	7.93	33.61	40.00	-6.39	QP
3	179.0201	28.49	4.78	33.27	40.00	-6.73	QP
4	200.0432	28.07	5.68	33.75	40.00	-6.25	QP
5	158.7216	27.81	3.73	31.54	40.00	-8.46	QP

5. HARMONIC CURRENT EMISSION MEASUREMENT

5.1 Block Diagram of Test Setup



5.2 Measuring Standard

EN 61000-3-2: 2006+A1:2009 +A2:2009

5.3 Operation Condition of EUT

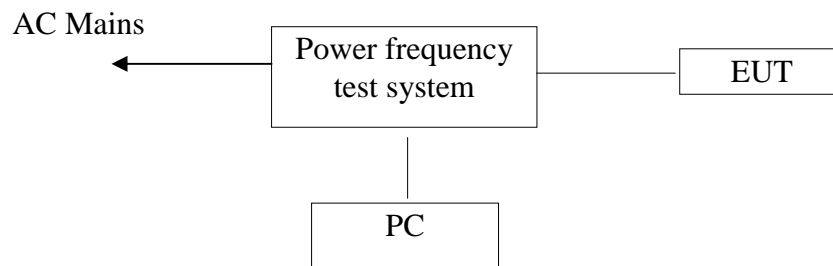
Same as Section 3.4, except the test setup replaced as Section 5.1.

5.4 Measuring Results

N/A(Below 75W)

6. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

6.1 Block Diagram of Test Setup



(EUT: PC Case + DC Power Board)

6.2 Measuring Standard

EN61000-3-3:2008

6.3 Operation Condition of EUT

6.3.1 Setup the EUT and simulators as shown in Section 6.1.

6.3.2 Turn on the power of all equipments.

6.3.3 Let the EUT work in test modes (Normal) and test it.

6.4 Measuring Results

PASS

Please reference to the following page

EN 61000-3-3 TEST REPORT 2013-02-25 11:23

Unit: PC Case + DC Power Board M/N: IT-201
 Test mode: Normal Working

Manuf: Ingtron Enterprise Co., Ltd.

Operator: Bill

=====

TEST SETUP

Test Freq.: 50.00 Hz.
 Waveform: SINE
 Test Time: 120.0 min. Tshort: 10.0 min.

Prog. Zo Enabled: YES Prog. Zo: 0.000

Voltage Change less than once per Hour: NO
 Impedance selected: IEC-725 STD. REF.

Synthetic R+L Enabled: NO
 Resistance: 0.380 Ohms Inductance: 460.000 uH

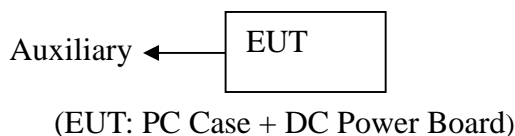
TEST DATA

Result:	EUT Data		Limit	Result	Test Enabled
PASS	Pst max	0.189	1.00	PASS	true
	Plt max	0.166	0.65	PASS	true
	dc %	0.00	3.00	PASS	true
	dmax %	1.32	4.00	PASS	true
	d(t) sec.	0.00	0.20	PASS	true
	Power Source Data				
	Source Pst max	0.231	0.400	PASS	true
	% THD	0.03	3.00	PASS	true

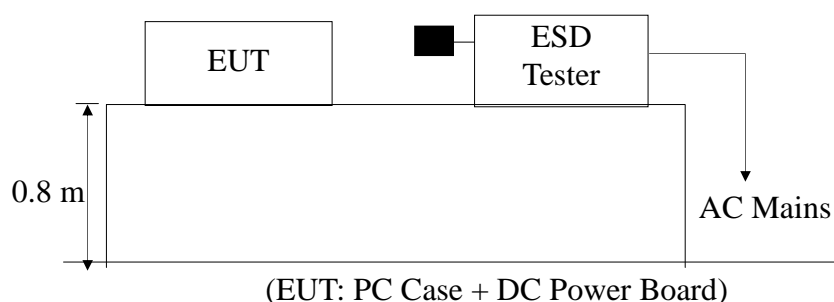
7. ELECTROSTATIC DISCHARGE IMMUNITY TEST

7.1 Block Diagram of Test Setup

7.1.1 Block Diagram of the EUT and the simulators



7.1.2 Block diagram of ESD test setup



7.2 Test Standard

EN 55024:2010 (EN61000-4-2: 2009)

Severity Level: 3 / Air Discharge: $\pm 8\text{KV}$ Level: 2 / Contact Discharge: $\pm 4\text{KV}$

7.3 Severity Levels and Performance Criterion

7.3.1 Severity level

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

7.3.2 Performance criterion: **B**

7.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

7.5 Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.4. Except the test set up replaced by Section 7.1.

7.6 Test Procedure

7.6.1 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.

7.6.2 Contact Discharge:

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

7.6.3 Indirect discharge for horizontal coupling plane

At least 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.

7.6.4 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.

7.7 Test Results

PASS

Please refer to the following page

Electrostatic Discharge Test Result

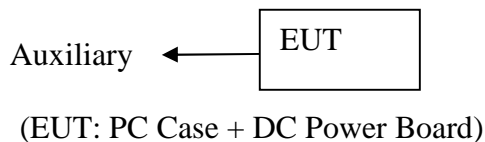
SHENZHEN POCE TECHNOLOGY CO.,LTD

Applicant	: Ingtron Enterprise Co., Ltd.	Test Date	: 2013-02-25	
EUT	: PC Case + DC Power Board	Temperature	: 22°C	
M/N	: IT-201	Humidity	: 50%	
Power Supply	: AC 230V	Test Mode	: Normal	
Air discharge	: ±2.0KV, ±4.0KV, ±8.0KV	Criterion	: B	
Contact discharge:	±2.0KV, ±4.0KV	Test Engineer	: Bill	
Location		Kind A-Air Discharge C-Contact Discharge		Result
Gap	10 points	A		PASS
Button	10 points	A		PASS
Port	10 points	A		PASS
Screw	10 points	C		PASS
Metal	10 points	C		PASS
HCP	4 points	C		PASS
VCP	4 points	C		PASS
Test Equipment: ESD Simulator (HAEFELY, PESD1600)				

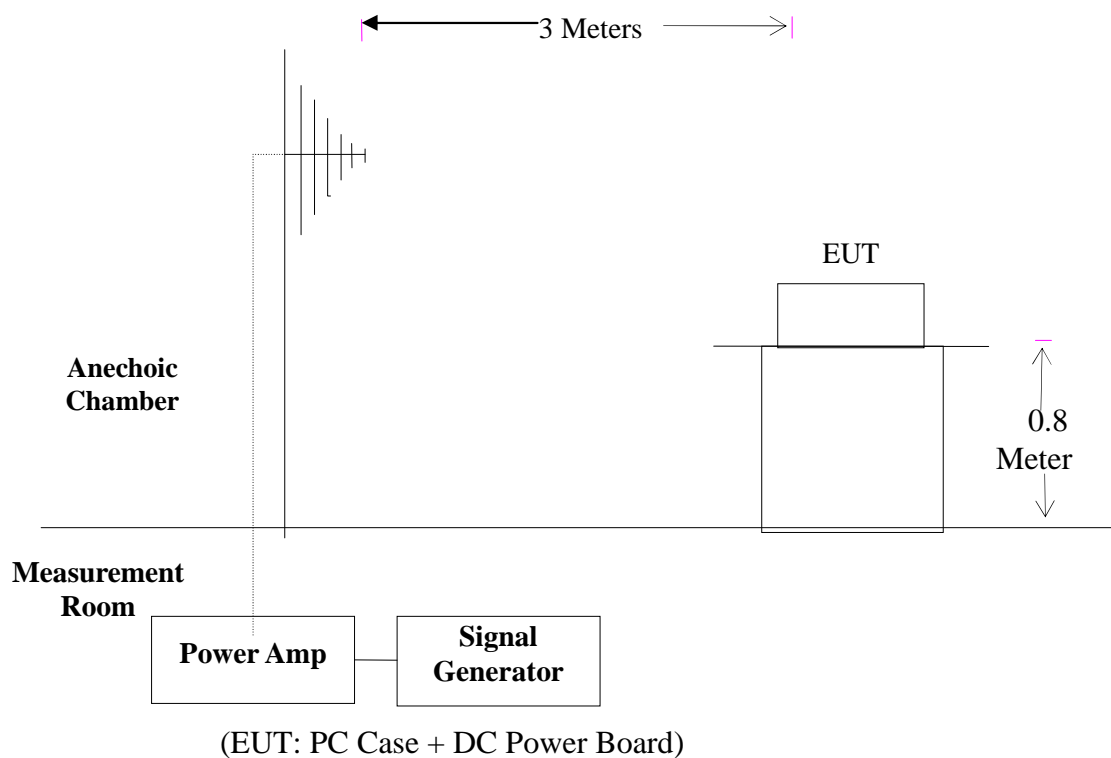
8. RF FIELD STRENGTH SUSCEPTIBILITY TEST

8.1 Block Diagram of Test

8.1.1 Block diagram of connection between the EUT and Load



8.1.2 Block diagram of RS test setup



8.2 Test Standard

EN 55024:2010(EN61000-4-3: 2006+A1:2008+A2:2010 (Severity Level: 2, 3V / m))

8.3 Severity Levels and Performance Criterion

8.3.1 Severity Levels

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

8.3.2 Performance Criterion : A

8.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3.3.

8.5 Operating Condition of EUT

Same as radiated emission measurement which is listed in Section 3.4, except the test setup replaced as Section 8.1.

8.6 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 its screen. 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.

8.7 Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

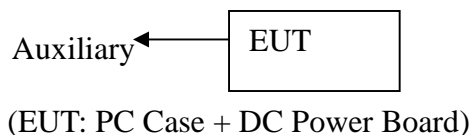
SHENZHEN POCE TECHNOLOGY CO., LTD.

Applicant	: Ingtron Enterprise Co., Ltd.	Test Date	: 2013-02-25	
EUT	: PC Case + DC Power Board	Temperature	: 22°C	
M/N	: IT-201	Humidity	: 50 %	
Field Strength	: 3 V/m	Criterion	: A	
Power Supply	: AC 230V	Test Mode	: Normal	
Test Engineer	: Bill	Frequency Range	: 80 MHz to 1000 MHz	
Modulation: <input type="checkbox"/> None		<input type="checkbox"/> Pulse <input checked="" type="checkbox"/> 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 : 2031 (MARCONI) 2. Power Amplifier : 500A100 & 100W/1000M1 (A&R) 3. Power Antenna : 3108 (EMCO) & AT1080 (A&R) 4. Field Monitor : FM2000 (A&R)				
Note:				

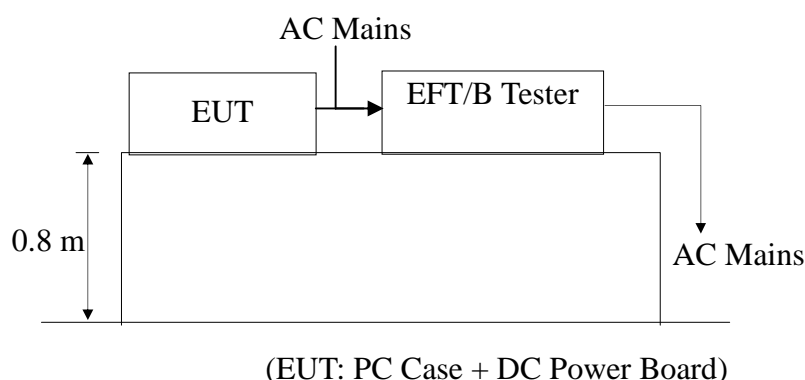
9. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

9.1 Block Diagram of Test Setup

9.1.1. Block Diagram of the EUT



9.1.2. EFT Test Setup



9.2 Test Standard

EN 55024:2010(EN61000-4-4:2004+A1:2010, Severity Level, Level 2: 1KV)

9.3 Severity Levels and Performance Criterion

9.3.1 Severity level

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

9.3.2 Performance criterion: **B**

9.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

9.5 Operating Condition of EUT

- 9.5.1 Setup the EUT as shown in Section 9.1.
- 9.5.2 Turn on the power of all equipments.
- 9.5.3 Let the EUT work in test mode (Normal) and measure it.

9.6 Test Procedure

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

9.6.1 For input and output AC power ports:

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

9.6.2 For signal lines and control lines ports:

No I/O ports. It's unnecessary to test.

9.6.3 For DC output line ports:

It's unnecessary to test.

9.7 Test Result

PASS

Please reference to the following page

Electrical Fast Transient/Burst Test Results

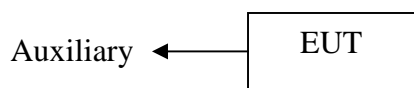
SHENZHEN POCE TECHNOLOGY CO., LTD

Standard	<input type="checkbox"/> IEC 61000-4-4 <input checked="" type="checkbox"/> EN 61000-4-4	Result : <input checked="" type="checkbox"/> PASS / <input type="checkbox"/> FAIL	
Applicant : <u>Ingtron Enterprise Co., Ltd.</u>			
EUT : <u>PC Case + DC Power Board</u>		M/N : <u>IT-201</u>	
Criterion : <u>B</u>			
Ambient Condition : <u>20 °C</u>		<u>50% RH</u>	
Operation Mode : Normal			
Line : <input checked="" type="checkbox"/> AC Mains		Line : <input type="checkbox"/> Signal line <input type="checkbox"/> DC line	
Coupling : <input checked="" type="checkbox"/> Direct		Coupling : <input type="checkbox"/> Capacitive	
Test Time : 120s			
Line	Test Voltage	Result(+)	Result(-)
L	1KV	PASS	PASS
N	1KV	PASS	PASS
PE	1KV	PASS	PASS
L、N	1KV	PASS	PASS
L、PE	1KV	PASS	PASS
N、PE	1KV	PASS	PASS
L、N、PE	1KV	PASS	PASS
Note:			
Test Equipment		Burst Tester Model : PEFT 4010	

10. SURGE IMMUNITY TEST

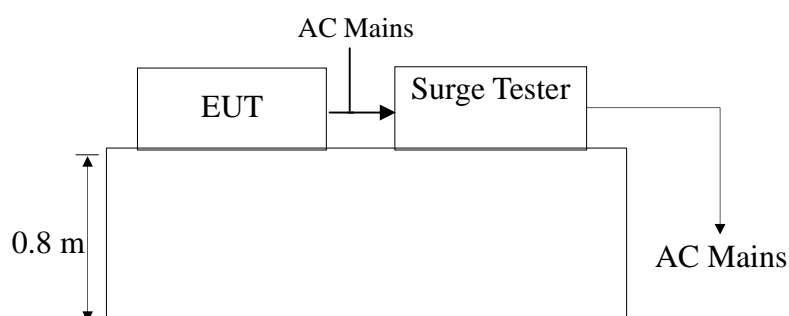
10.1 Block Diagram of Test Setup

10.1.1 Block Diagram of the EUT



(EUT: PC Case + DC Power Board)

10.1.2. Surge Test Setup



(EUT: PC Case + DC Power Board)

10.2 Test Standard

EN 55024:2010 (EN61000-4-5: 2006)

Severity Level: Line to Line: Level 2, 1.0KV

10.3 Severity Levels and Performance Criterion

10.3.1. Severity level

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

10.3.2 Performance criterion : **B**

10.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

10.5 Operating Condition of EUT

10.5.1 Setup the EUT as shown in Section 10.1.

10.5.2. Turn on the power of all equipments.

10.5.3. Let the EUT work in test mode (Normal) and measure it.

10.6 Test Procedure

- 1) Set up the EUT and test generator as shown on Section 10.1.2.
- 2) For line to line coupling mode, provide a 1.0 KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 4) Different phase angles are done individually.
- 5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

10.7 Test Result

PASS

Please reference to the following page

Surge Immunity Test Result

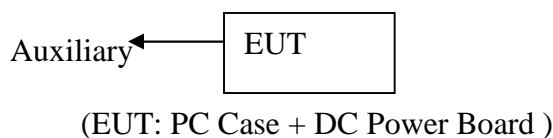
SHENZHEN POCE TECHNOLOGY CO., LTD.

Applicant : <u>Ingtron Enterprise Co., Ltd.</u>				Test Date : <u>2013-02-25</u>	
EUT : <u>PC Case + DC Power Board</u>				Temperature : <u>22°C</u>	
M/N : <u>IT-201</u>				Humidity : <u>50%</u>	
Test Engineer : <u>Bill</u>				Test Mode : <u>Normal</u>	
Power Supply : <u>AC 230V</u>				Criterion : <u>B</u>	
Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)	Result
L-N	+	0°	5	1.0	PASS
	+	90°	5	1.0	PASS
	+	180°	5	1.0	PASS
	+	270°	5	1.0	PASS
	-	0°	5	1.0	PASS
	-	90°	5	1.0	PASS
	-	180°	5	1.0	PASS
	-	270°	5	1.0	PASS
L-PE	+	0°	5	2.0	PASS
	+	90°	5	2.0	PASS
	+	180°	5	2.0	PASS
	+	270°	5	2.0	PASS
	-	0°	5	2.0	PASS
	-	90°	5	2.0	PASS
	-	180°	5	2.0	PASS
	-	270°	5	2.0	PASS
N-PE	+	0°	5	2.0	PASS
	+	90°	5	2.0	PASS
Remark:				Test Equipment : Surge Tester P Surge4.1	

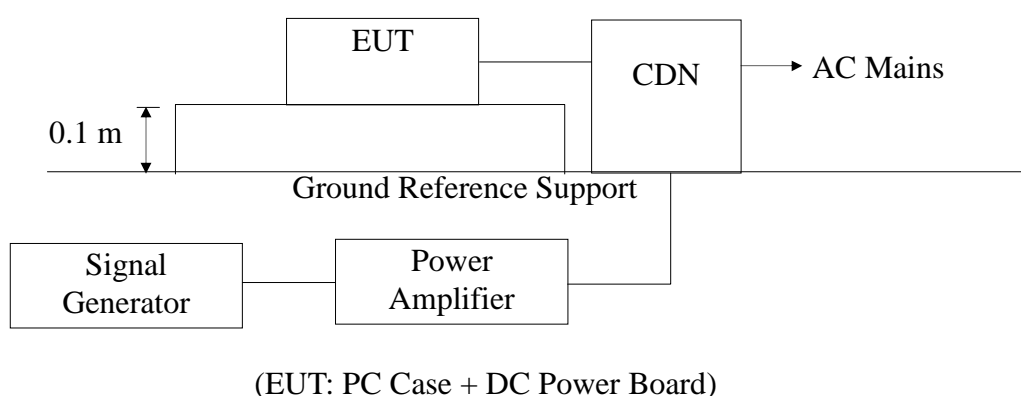
11. INJECTED CURRENTS SUSCEPTIBILITY TEST

11.1 Block Diagram of Test Setup

11.1.1 Block Diagram of the EUT



11.1.2 Block Diagram of Test Setup



11.2 Test Standard

EN 55024:2010 (EN61000-4-6: 2009, Severity Level: Level 2, 3V (rms), (0.15MHz ~ 80MHz)

11.3 Severity Levels and Performance Criterion

11.3.1 Severity level

Level	Field Strength V
1	1
2	3
3	10
X	Special

11.3.2 Performance criterion: A

11.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

11.5 Operating Condition of EUT

11.5.1 Setup the EUT as shown in Section 11.1.

11.5.2 Turn on the power of all equipments.

11.5.3 Let the EUT work in test mode (Normal) and measure it.

11.6 Test Procedure

- 1) Set up the EUT, CDN and test generators as shown on Section 11.1.2.
- 2) Let the EUT work in test mode and measure it.
- 3) The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 4) The disturbance signal described below is injected to EUT through CDN.
- 5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 6) The frequency range is swept from 150KHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
- 7) The rate of sweep shall not exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

11.7 Test Results

PASS

Please reference to the following page

Injected Currents Susceptibility Test Results

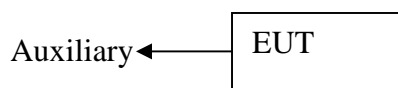
SHENZHEN POCE TECHNOLOGY CO., LTD.

Applicant : <u>Ingtron Enterprise Co., Ltd.</u>		Test Date: <u>2013-02-25</u>		
EUT : <u>PC Case + DC Power Board</u>		Temperature : <u>22°C</u>		
M/N : <u>IT-201</u>		Humidity : <u>58%</u>		
Test Engineer : <u>Bill</u>				
Test Mode : <u>Normal</u>				
Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Mains	3V	A	PASS
Test Mode : _____				
Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
Remark : 1. Modulation Signal:1KHz 80% AM Measurement Equipment : Simulator: CWS 500 (SWITZERLAND EMTEST) CDN : <input checked="" type="checkbox"/> CDN-M2 (SWITZERLAND EMTEST) <input checked="" type="checkbox"/> CDN-M3 (SWITZERLAND EMTEST)		Note:		

12. MAGNETIC FIELD SUSCEPTIBILITY TEST

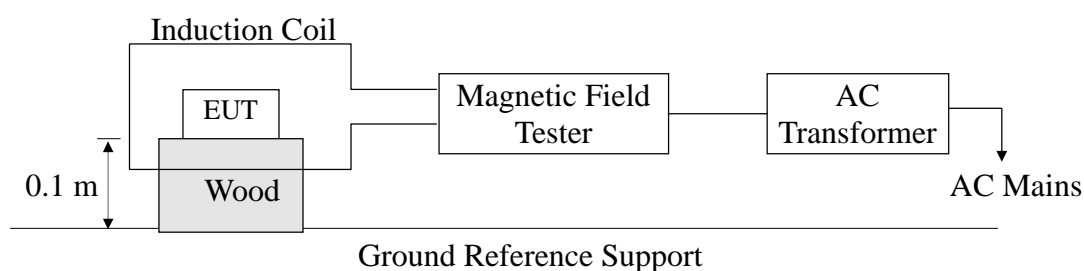
12.1 Block Diagram of Test

12.1.1 Block diagram of test setup



(EUT: PC Case + DC Power Board)

12.1.2 Magnetic field test setup



(EUT: PC Case + DC Power Board)

12.2 Test Standard

EN 55024:2010 (EN61000-4-8: 2010, Severity Level: Level 1, 1A / m)

12.3 Severity Levels and Performance Criterion

12.3.1 Severity Levels

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

12.3.2 Performance Criterion : A

12.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3.3.

12.5 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. Both horizontal and vertical 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.

12.6 Test Results

PASS

Please reference to the following page

Magnetic Field Immunity Test Result

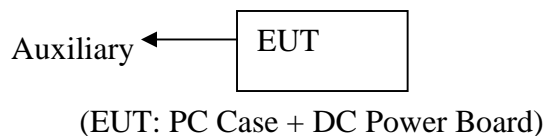
SHENZHEN POCE TECHNOLOGY CO., LTD.

Standard	<input type="checkbox"/> IEC 61000-4-8 <input checked="" type="checkbox"/> EN 61000-4-8		Result: <input checked="" type="checkbox"/> Pass / <input type="checkbox"/> Fail	
Applicant : <u>Ingtron Enterprise Co., Ltd.</u> EUT : <u>PC Case + DC Power Board</u> M/N: <u>IT-201</u> Date of Test : <u>2013-02-25</u> Test Engineer: <u>Bill</u> Ambient Condition : Temp : <u>22°C</u> Humid: <u>58%</u> Criterion: A				
Operation Mode : <u>Normal</u>				
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 :				
Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
Test Equipment	Magnetic Field Test: HEAFELY MAG 100.1			
Note:				

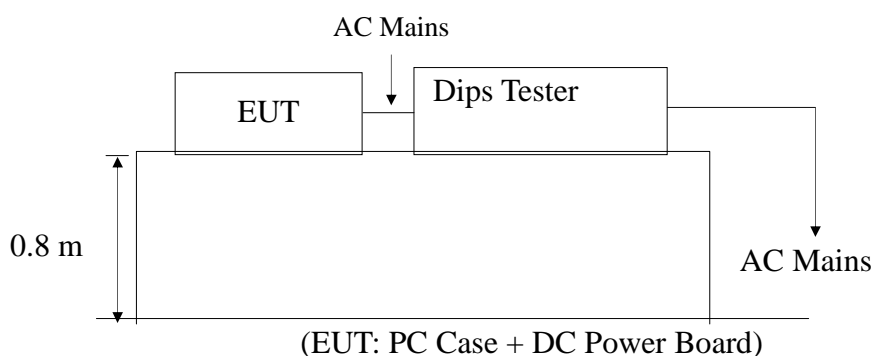
13. VOLTAGE DIPS AND INTERRUPTIONS TEST

13.1 Block Diagram of Test Setup

13.1.1 Block Diagram of the EUT



13.1.2 Dips Test Setup



13.2 Test Standard

EN 55024:2010 (EN61000-4-11: 2004)

13.3 Severity Levels and Performance Criterion

13.3.1 Severity level

Test Level %UT	Voltage dip and short interruptions %UT	Duration (in period)
0	100	0.5 1
40	60	5 10
70	30	25 50 *

13.3.2 Performance criterion: **B&C**

13.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

13.5 Operating Condition of EUT

13.5.1 Setup the EUT as shown in Section 13.1.

13.5.2 Turn on the power of all equipments.

13.5.3 Let the EUT work in test mode (Normal) and measure it.

13.6 Test Procedure

- 1) Set up the EUT and test generator as shown on Section 13.1.2.
- 2) The interruptions is introduced at selected phase angles with specified duration.
- 3) Record any degradation of performance.

13.7 Test Result

PASS

Please reference to the following page

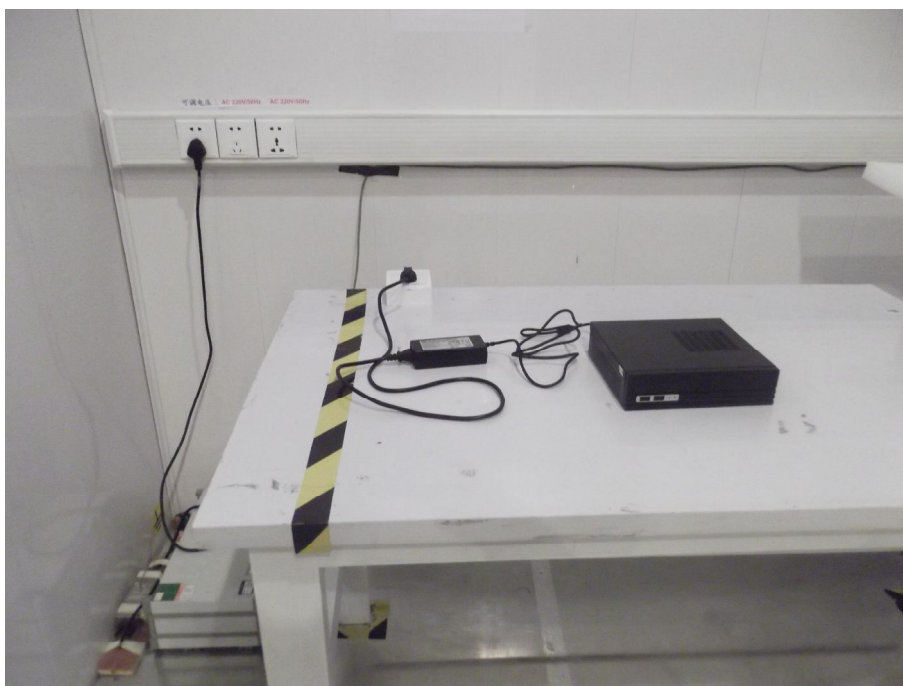
Voltage Dips And Interruptions Test Results

SHENZHEN POCE TECHNOLOGY CO., LTD.

Applicant : <u>Ingtron Enterprise Co., Ltd.</u>		Test Date : <u>2013-02-25</u>		
EUT : <u>PC Case + DC Power Board</u>		Temperature : <u>22°C</u>		
M/N : <u>IT-201</u>		Humidity : <u>50%</u>		
Test Engineer : <u>Bill</u>				
Test Mode: <u>Normal</u>				
Test Level % U _T	Voltage Dips & Short Interruptions % U _T	Duration (in periods)	Criterion <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	Result P=PASS F=Fail
0	100	0.5P	B	P
70	30	25P	C	P
0	100	250P	C	P
Test Mode :				
Test Level % U _T	Voltage Dips & Short Interruptions % U _T	Duration (in periods)	Criterion <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	Result P=PASS F=FAIL
Note:				

14. PHOTOGRAPH

14.1 Photo of Conducted Emission Measurement



14.2 Photo of Radiated Emission Measurement

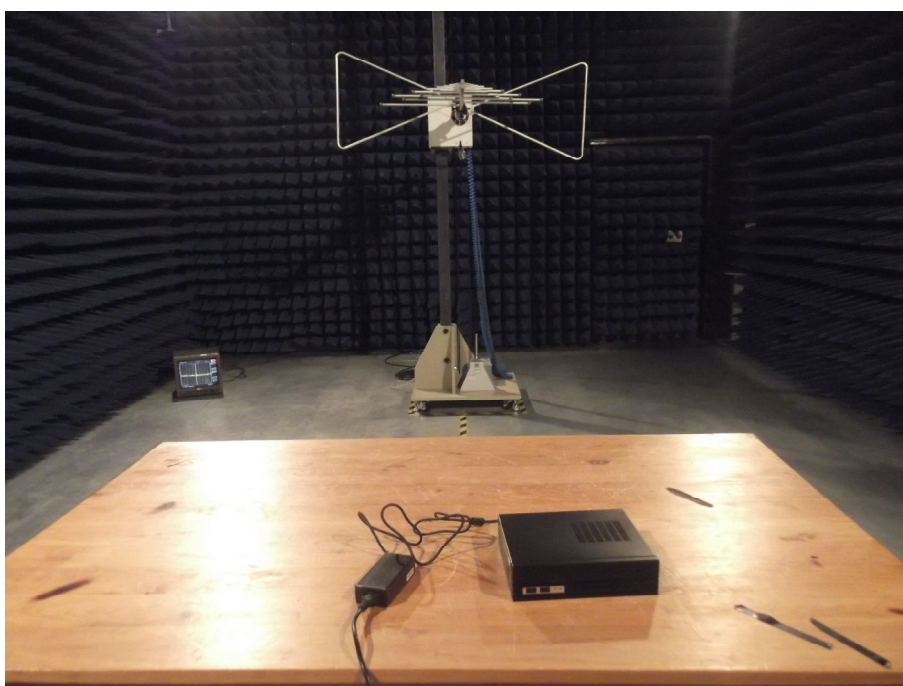


FIGURE
GENERAL APPEARANCE OF EUT



Figure-1

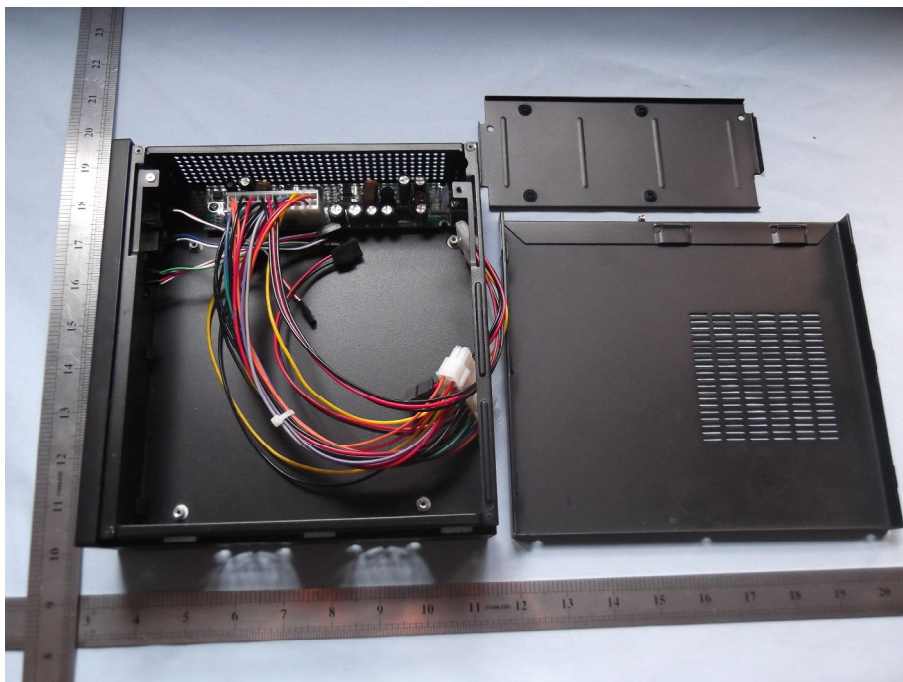


Figure-2

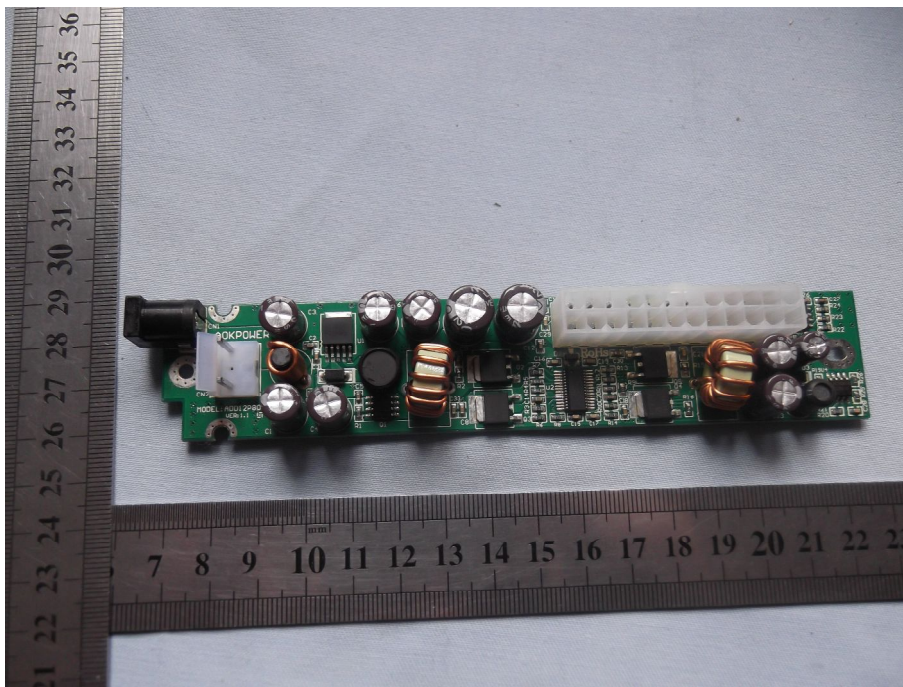


Figure-3

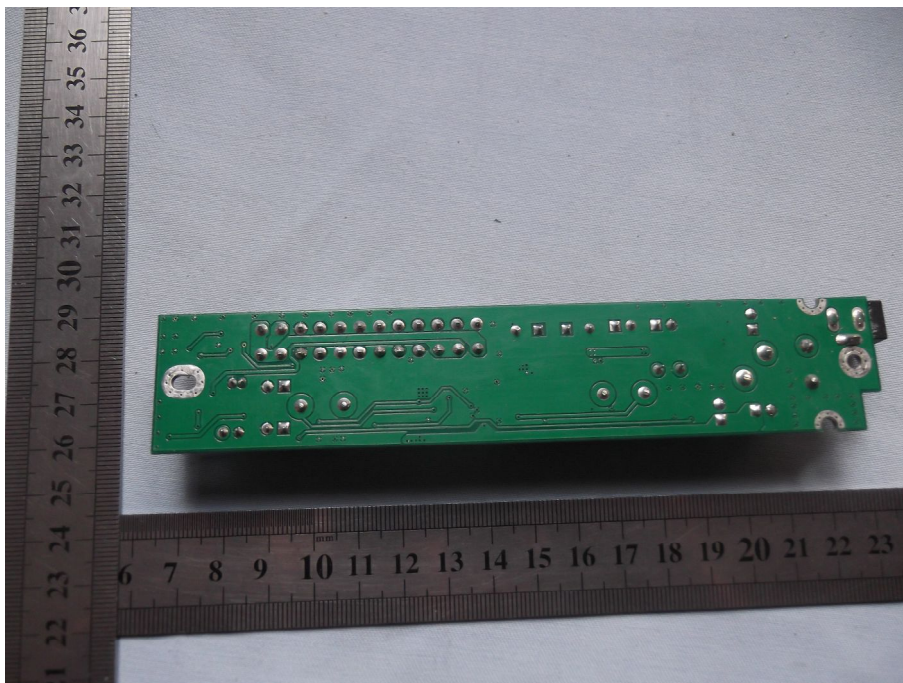


Figure-4

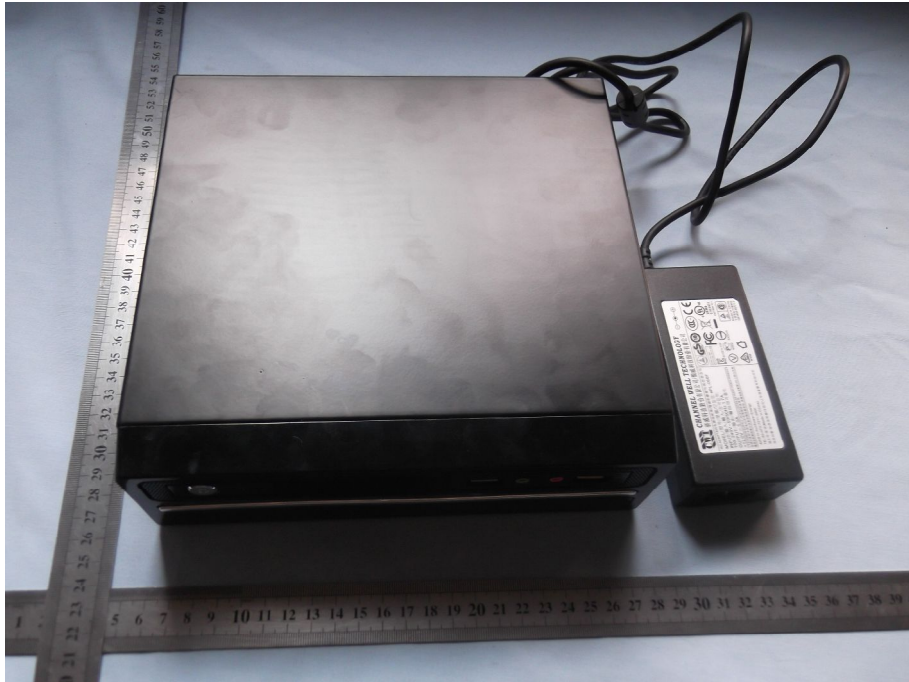


Figure-5

*****THE END*****