

Report No: EMC 0504084
File reference No: 2005-05-23

Applicant: Gembird Electronics Ltd.

Product: CPU and Audio Automatic Switch

Model No: CAS-241

Trademark: Gembird

Test Standards: EN 55022:1998 EN 61000-3-2:2000
+A1:2000+A2:2003
EN 55024:1998 EN 61000-3-3:1995
+A1:2001+A2:2003 +A1:2001

Test result: The EMC testing has been performed on the submitted samples and found in compliance with council EMC Directive 89/336/EEC.

Approved By

Jack Chung

EMC Manager

Dated: May 23,2005

**Results appearing herein relate only to the sample tested
The technical reports is issued errors and omissions exempt and is subject to
withdrawal at**

HONG KONG TIMEWAY TECHNOLOGY DEVELOPMENT LIMITED

Rm.1805, 18/F., Wu Sang house, Nathan Road, Mongkok, Kln. HONG KONG

Tel (852) 2781 7498

Fax (852) 2381 2492



Test Report Conclusion
Content

1.0	General Details	3
1.1	Test Lab Details.....	3
1.2	Applicant Details.....	3
1.3	Description of EUT	3
1.4	Test Uncertainty.....	3
1.5	Submitted Sample.....	3
1.6	Test Duration.....	3
2.0	List of Measurement Equipment	4
2.1	Conducted Emission Test.....	4
2.2	Radiated Disturbance Test.....	4
2.3	Harmonic Test & Flicker Test.....	4
2.4	ESD Test	4
2.5	Radiated electromagnetic disturbance test.....	4
2.6	Electrical Fast Transient/Burst (EFT/B) immunity test.....	5
2.7	Surge test.....	5
2.8	Conducted Immunity test	5
2.9	Power Frequency magnetic field.....	5
2.10	Voltage Dips/Interruptions immunity test.....	5
3.0	Technical Details	6
3.1	Investigations Requested.....	6
3.2	Test Standards.....	6
4.0	Power line Conducted Emission Test	7
5.0	Disturbance Power Test	10
6.0	Voltage Fluctuations & Flicker Test	13
7.0	Harmonic Current Emission Test	14
8.0	ESD Test	16
9.0	RF field strength susceptibility (80---1000MHZ)	18
10	Electrical Fast Transient/Burst (EFT/B) immunity test	20
11	Surge test	22
12	Conducted Immunity test	24
13	Power Frequency magnetic field	26
14	Voltage Dips/Interruptions immunity test	28
15	Product Labeling	30
	Appendix	31

The report refers only to the sample tested and does not apply to the bulk.
This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it or a certified copy thereof prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.
In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



1.0 General Details

1.1 Test Lab Details

Name : Hong Kong Timeway Technology Development Limited
Address: Rm.1805,18/F., Wu Sang House, Nathan Road, Mongkok, Kln. HONG KONG
Telephone: (852) 2781 7498
Fax: (852) 2381 2492

1.2 Applicant Details

Applicant: Gembird Electronics Ltd.
Address: Room 1709, New Building, #2 Shennan Zhong Lu, Shenzhen
Telephone: 86-755-82090225/82090379
Fax: 86-755-82090540

1.3 Description of EUT

Product: CPU and Audio Automatic Switch
Manufacturer: Gembird Electronics (Zhuhai) Co., Ltd.
Brand Name: Gembird
Model Number: CAS-241
Additional Model Number: -
Additional Trade Name: -
Rating: DC5V 350mA 1.5W
The Difference between models: -

1.4 Submitted Sample

1 Sample

1.5 Test Duration

2005-04-28 to 2005-05-23

1.6 Test Uncertainty

Conducted Emissions Uncertainty = ± 2.4 dB

Radiated Emissions Uncertainty = ± 4.2 dB

1.7 Test or witness Engineer

The sample tested by _____
Print Name: Ivy Zhu

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the Hong Kong Timeway Technology Development Limited to his customer, supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, the Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



2.0 List of Measurement Equipment

2.1 Conducted Emission Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EMI Test Receiver	ESCS30	830245/009	RS	2005.2.23	1 Year
Coaxial Switch	MP59B	M70585	ANRITSU	N/A	N/A
ISN	NTFM8132	8132137	SCHWARZBECK	2005.2.24	1 Year
ISN	NTFM8134	8134109	SCHWARZBECK	2005.2.24	1 Year
ISN	NTFM8136	8136102	SCHWARZBECK	2005.2.24	1 Year

2.2 Radiated Disturbance Test Equipment

Name	Model No	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EMI Test Receiver	ESCS30	830245/009	RS	2005.2.23	1 Year
Coaxial Switch	MP59B	M70585	ANRITSU	N/A	N/A
Spectrum Analyzer(with Tracking Generator)	MS2661C	MT72089	ANRITSU	2005.2.23	1 Year
Amplifier	MH648A	M20494	ANRITSU	2005.2.23	1 Year
Bilog Antenna	CBL6101C	2576	CHASE	2005.2.23	1 Year

2.3 Harmonic & Flicker Test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
Harmonics Flicker Test System	5001ix-CTS-400	X71730	CI	2005.2.24	1 Year

2.4 ESD Test Equipment

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
ESD Simulator	NSG435	2103	SCHNAFFNER	2005.2.23	1 Year

2.5 Radiated electromagnetic disturbance test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EMI Test Receiver	ESCS30	830245/009	RS	2005.2.23	1 Year
Coaxial Switch	MP59B	M70585	ANRITSU	N/A	N/A

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Spectrum Analyzer(with Tracking Generator)	MS2661C	MT72089	ANRITSU	2005.2.23	1Year
Amplifier	MH648A	M20494	ANRITSU	2005.2.24	1Year
Bilog Antenna	CBL6101C	2576	CHASE	2005.2.23	1Year

2.6 Electrical Fast Transient/Burst (EFT/B) immunity test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EFT Generator	NSG2025-1	2024	SCHNAFFNER	2005.2.23	1Year
Coupling Clamp	CDN126	418	SCHNAFFNER	N/A	N/A

2.7 Surge test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EMCPRO		9909302	KEYTEK	2005.2.23	1Year

2.8 Conducted Immunity test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
CW Generator	CW500	0399-10	EMTEST	2005.2.23	1Year
CDN	CDN-M2	9907105C	EMTEST	2005.2.23	1Year
CDN	CDN-M3	9905070C	EMTEST	2005.2.23	1Year
6dB Attenuator	ATT 6	9812105A	EMTEST	2005.2.23	1Year

2.9 Power Frequency magnetic field

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EMCPRO		9909302	KEYTEK	2005.2.23	1Year
Coil	F-1000-4-8/9/10-L-1M	9935	FCC	2005.2.23	1Year
Field Meter	ELF-66D	K71988-18	KEYTEK	2005.2.23	1Year

2.10 Voltage Dips/Interruptions immunity test

Name	Model No.	Serial No.	Manufacturer	Calibration Date	Calibration Cycle
EMCPRO		9909302	KEYTEK	2005.2.23	1Year

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



3.0 Technical Details

3.1 Investigations Requested

Perform Electromagnetic Interference [EMI] & Electromagnetic Susceptability[EMS] tests for CE Marking

3.2 Test Standards

Test Standards	
EN 55022:1998	Limits and methods of measurement of radio disturbance characteristics of information technology equipment Amendment A1:2000 to EN 55022:1998 Amendment A2:2003 to EN 55022:1998
EN 61000-3-2:2000	Electromagnetic compatibility(EMC)- Part 3-2:Limits-Limits for harmonic current emissions(equipment input current 16A per phase)
EN 61000-3-3:1995	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 t 16A per phase and not subject to conditional connection Amendment A1:2001 to EN 61000-3-3:1995
EN 55024:1998	Electromagnetic Compatibility Generic Immunity Standard, Part 1: Residential, Commercial and Light Industry. Amendment A1:2001 to EN 55024:1998 Amendment A2:2003 to EN 55024:1998
	EN 61000-4-2:1995 Electrostatic discharge
	EN 61000-4-3:1996 RF field strength susceptibility
	EN 61000-4-4:1995 Electrical Fast transients
	EN 61000-4-5:1995 Surge
	EN 61000-4-6:1996 Conducted susceptibility
	EN 61000-4-8:1994 Magnetic Field
	EN 61000-4-11:1994 Dips/Voltage Interruption Variation

The report refers only to the sample tested and does not apply to the bulk.

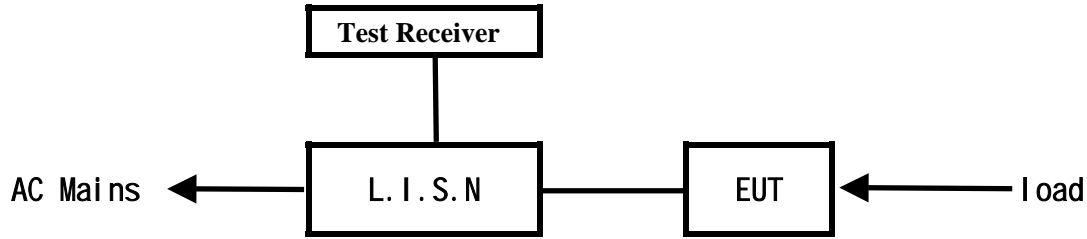
This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report.

In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



4. Power line Conducted Emission Test

4.1 Schematics of the test

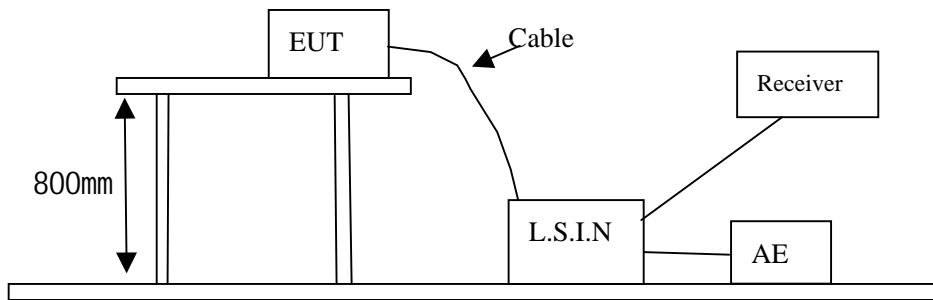


EUT: Equipment Under Test

4.2 Test Method:

The test was performed in accordance with EN 55022:1998

Block diagram of Test setup



4.3 Power line conducted Emission Limit

Frequency(MHz)	Limits 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

- Notes: 1. *decreasing linearly with logarithm of frequency.
 2. The lower limit shall apply at the transition frequencies

4.4 Test Results

Limits for Conducted Emission test, Please refer to limit line (Quasi-peak) in the following diagram labelled as (QP)

The report refers only to the sample tested and does not apply to the bulk.
 This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report.
 In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



A Conducted Emission on Live Terminal of the power line (150kHz to 30MHz)

EUT set Condition: -

Results: N/A

Please refer to following diagram for individual

Frequency (MHz)	Reading (dB μ V)				Limit	
	Live		Neutral		(dB μ V)	
	Quasi -peak	Average	Quasi -peak	Average	Quasi -peak	Average
			-	-		
			-	-		
			-	-		
			-	-		
			-	-		
			-	-		

The report refers only to the sample tested and does not apply to the bulk.
 This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report.
 In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



B Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)

EUT set Condition: -

Results: N/A

Please refer to following diagram for individual

Frequency (MHz)	Reading (dB μ V)				Limit	
	Live		Neutral		(dB μ V)	
	Quasi -peak	Average	Quasi -peak	Average	Quasi -peak	Average
	-	-				
	-	-				
	-	-				
	-	-				
	-	-				
	-	-				

The report refers only to the sample tested and does not apply to the bulk.
 This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it or a certified copy thereof prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.
 In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



5 Radiated Disturbance Test

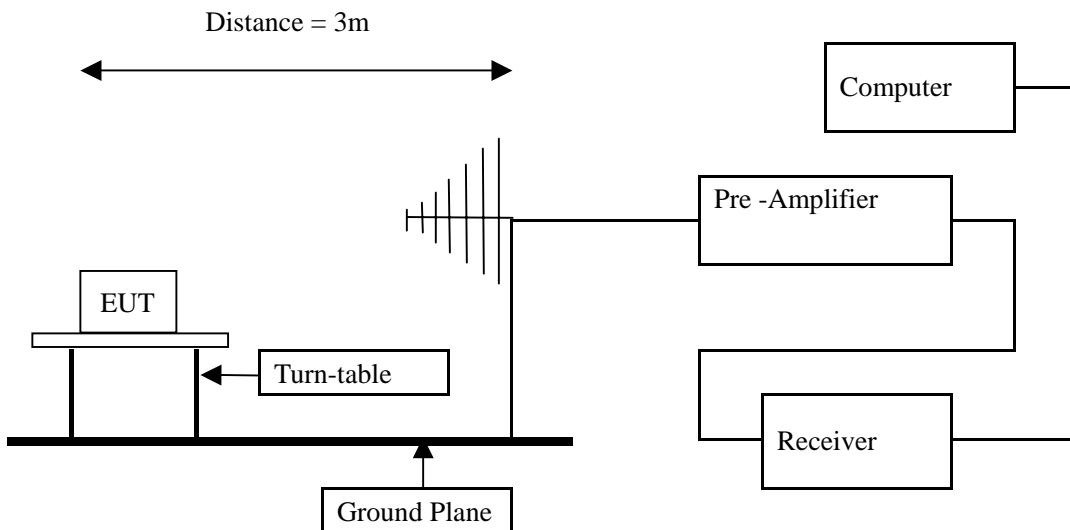
5.1 Schematics of the test



5.2 Test Method:

The test was performed in accordance with EN 55022:1998

Block diagram of Test setup



5.3 Power line conducted Emission Limit

Frequency Range(MHz)	Peak limits (dB μ V/m)
30-230	40.0
230-1000	47.0

Note: The lower limit shall apply at the transition frequencies

5.4 Test result

Please refer to following table

The report refers only to the sample tested and does not apply to the bulk. This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report. In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.

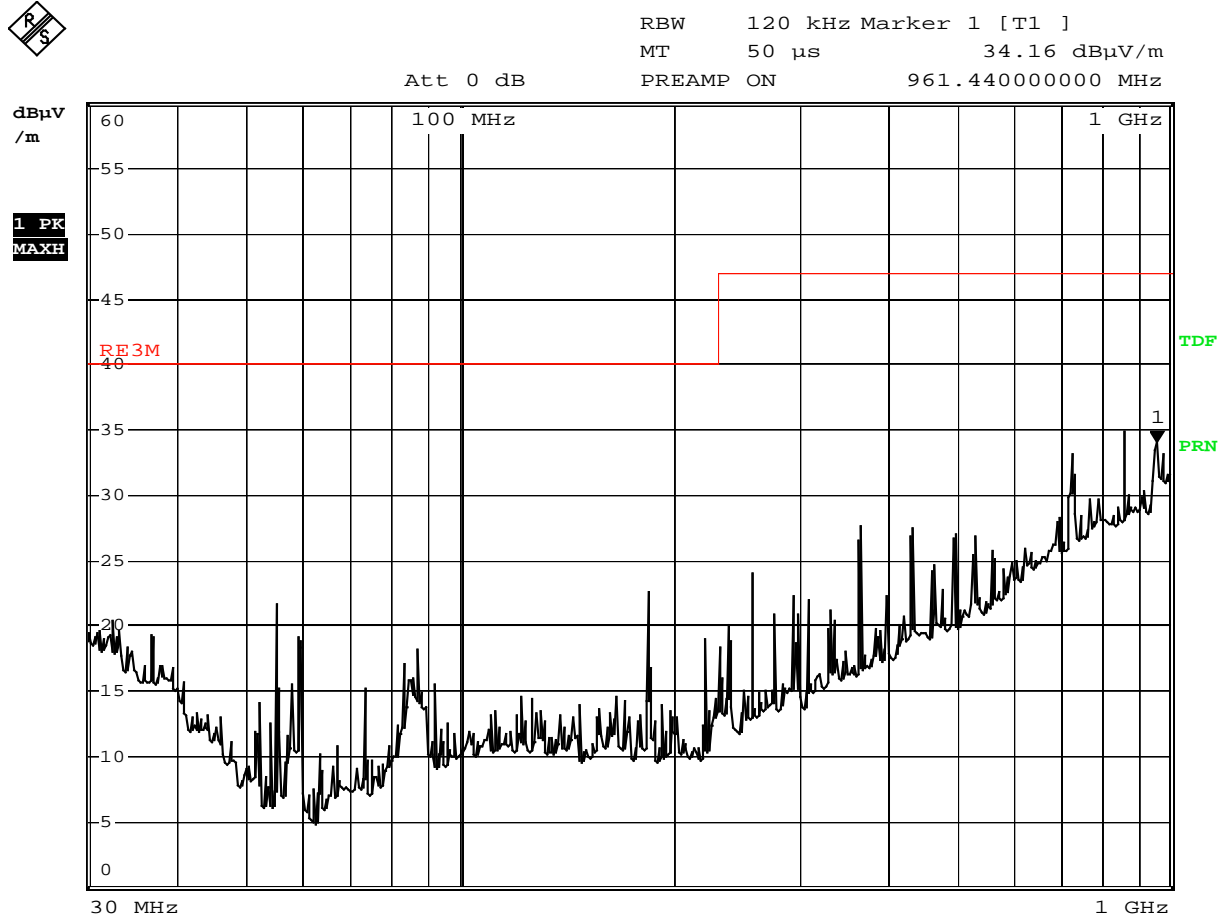


Radiated Disturbance In Horizontal (30MHz---1000MHz)

EUT set Condition: Normal Operation Mode

Results: Pass

Please refer to following diagram for individual



Date: 19.MAY.2005 16:18:51

Frequency (MHz)	Level@3m (dB µ V/m)	Antenna Polarity	Limit@3m (dB µ V/m)
55.294	22.93	H	40
184.324	25.38	H	40
258.026	20.88	H	47
366.834	22.98	H	47
864.474	33.71	H	47

The report refers only to the sample tested and does not apply to the bulk.
 This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report.
 In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Radiated Disturbance In Vertical (30MHz----1000MHz)

EUT set Condition: Normal Operation Mode

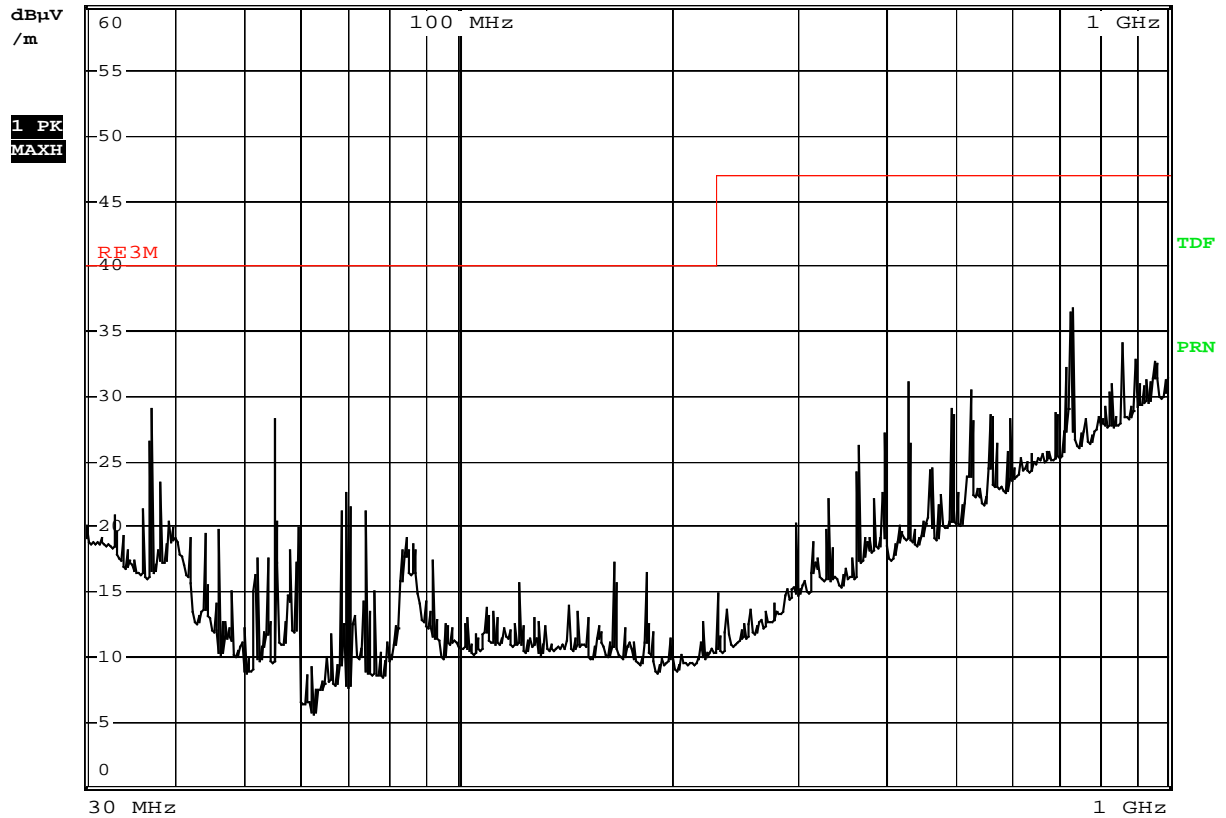
Results: Pass

Please refer to following diagram for individual



RBW 120 kHz
 MT 50 μs
 PREAMP ON

Att 0 dB



Date: 19.MAY.2005 16:29:59

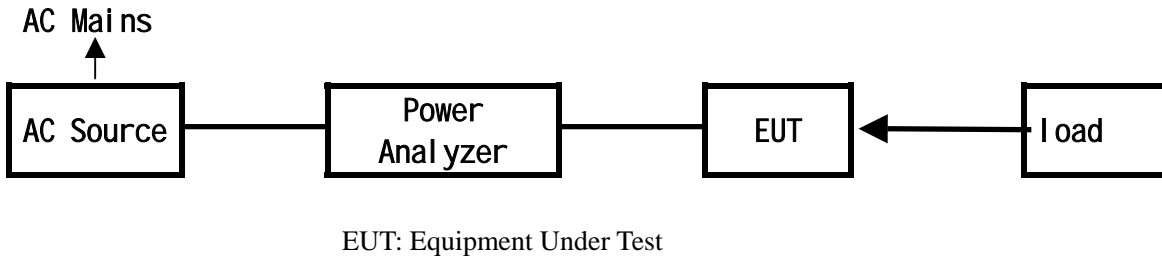
Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB μ V/m)
36.881	28.76	V	40
55.279	28.12	V	40
432.076	29.52	V	47
728.640	33.91	V	47
964.157	35.72	V	47

The report refers only to the sample tested and does not apply to the bulk. This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report. In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



6. Voltage Fluctuations & Flicker Test

6.1 Schematic of the test



6.2 Test Method:

The test was performed in accordance with EN 61000-3-3:1995

6.3 Test Results

Result: N/A

* N/A ---The test is not applicable for the product because the power less than 70W.

Please refer to the following pages

Maximum Occurring Levels:

Ut: 230.1 (EUT Test RMS Voltage)

Pst:	Limit=	1.0	(The Highest short Term Flicker Value)
Plt:	Limit=	0.65	(The Highest Long Term Flicker Value)
dt(%):	Limit=	4%	(The Highest instantaneous Voltage Change (10ms))
dc(%):	Limit=	3%	(The highest Relative steady state voltage change (1sec))
dmax:	Limit=	4%	(The highest Max Relative voltage change)
Tdt:	Limit=	200ms	(The Max Time(in milli-sec) that dt exceeds 3%)

The report refers only to the sample tested and does not apply to the bulk.

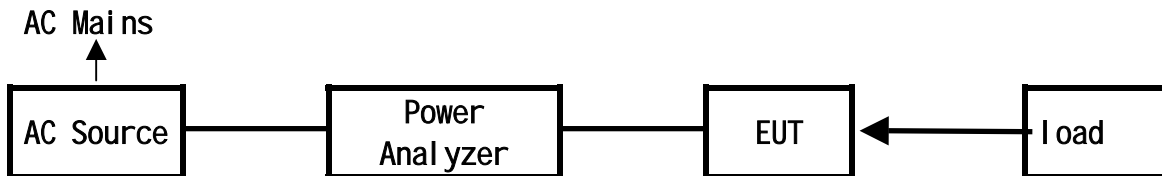
This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report.

In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



7.0 Harmonic Current Emission Test

7.1 Schematic of the test



EUT: Equipment Under Test

7.2 Test Method

The test was performed in accordance with EN 61000-3-2: 2000

*: The Level of the product is : CLASS A

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report.

In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



7.3 Test Results

Result:N/A

* N/A ---The test is not applicable for the product because the power less than 70W.

Please refer to the following pages

Rating:

Harmonic results as a% of the limits

No	(Test result/Limit)%	No	(Test result/Limit)%	No	(Test result/Limit)%	No	(Test result/Limit)%
1		10		21		31	
2		12		22		32	
3		13		23		33	
4		14		24		34	
5		15		25		35	
6		16		25		36	
7		17		27		37	
8		18		28		38	
9		19		29		39	
10		20		30		40	

The report refers only to the sample tested and does not apply to the bulk.

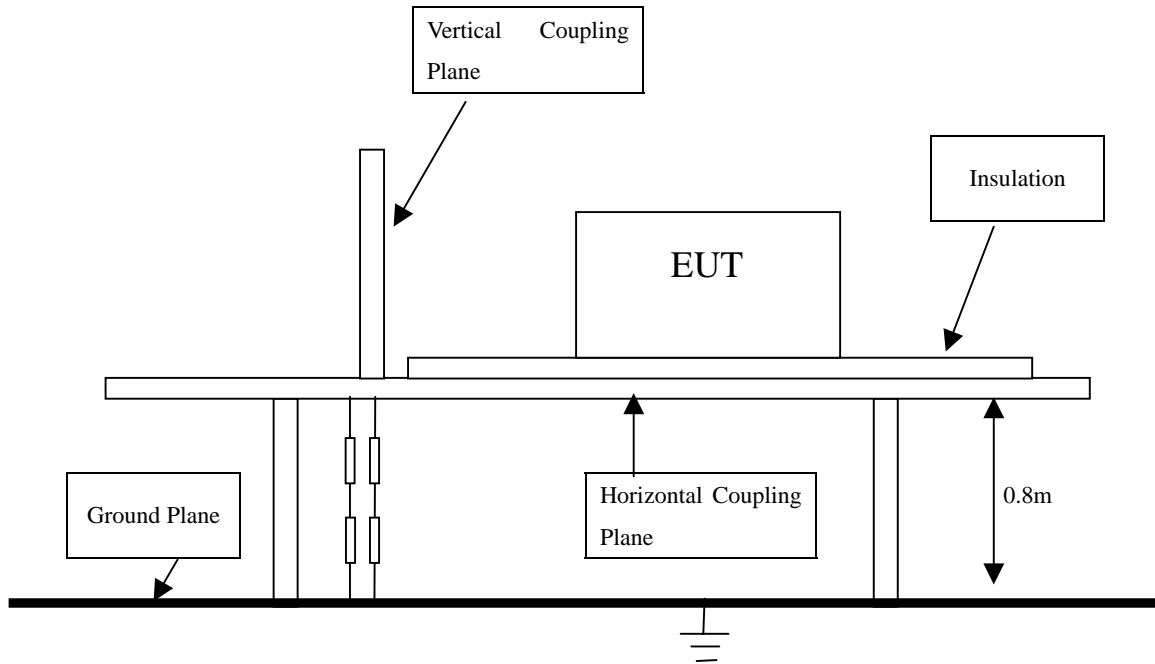
This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report.

In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



8.0 Electrostatic Discharge

8.1 Schematic of the test



8.2 Test method

The test was performed in accordance with EN 61000-4-2:1995

8.3 Test severity

- ± 4kV for direct & in-direct Contact Discharge
- ± 8kV for air Discharge

Performance Criterion Require: B (Please see following table)

8.4 Susceptibility performance Criteria and Severity level

A	Normal performance within the specification limits
B	Temporary degradation or loss of function or performance which is self recoverable
C	Temporary degradation or loss of function or performance which requires operator intervention or system reset
D	Degradation or loss of function which is not recoverable due to damage of equipment(components) or software, or loss of data

The report refers only to the sample tested and does not apply to the bulk. This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report. In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Severity Level

Level	Test Voltage Direct & in-direct contact Discharge (kV)	Test Voltage Air discharge(kV)
1	± 2kV	± 2kV
2	± 4kV	± 4kV
3	± 6kV	± 8kV
4	± 8kV	± 15kV

8.5 Test Result

Please refer to the following table for individual results.

Location	Discharge Method	Test Voltage	Results
HCP (Horizontal coupling plane)	Contact Discharge	± 4kV	PASS
VCP(Vertical Coupling plane)	Contact Discharge	± 4kV	PASS
Cover	Contact Discharge	± 4kV	PASS
PCI Signal Terminals	Contact Discharge	± 4kV	PASS
Mouse Terminals	Contact Discharge	± 4kV	PASS
Keyboard Terminals	Contact Discharge	± 4kV	PASS
USB	Contact Discharge	± 4kV	PASS
PC2 all the terminals	Contact Discharge	± 4kV	PASS
PC3 all the terminals	Contact Discharge	± 4kV	PASS
PC4 all the terminals	Contact Discharge	± 4kV	PASS
Console Mouse terminals	Contact Discharge	± 4kV	PASS
Keyboard terminals	Contact Discharge	± 4kV	PASS
Switch	Contact Discharge	± 4kV	PASS
Location	Discharge Method	Test Voltage	Results
HCP (Horizontal coupling plane)	Air Discharge	± 8kV	PASS
VCP(Vertical Coupling plane)	Air Discharge	± 8kV	PASS
Cover	Air Discharge	± 8kV	PASS
PCI Signal Terminals	Air Discharge	± 8kV	PASS
Mouse Terminals	Air Discharge	± 8kV	PASS
Keyboard Terminals	Air Discharge	± 8kV	PASS
USB	Air Discharge	± 8kV	PASS
PC2 all the terminals	Air Discharge	± 8kV	PASS
PC3 all the terminals	Air Discharge	± 8kV	PASS
PC4 all the terminals	Air Discharge	± 8kV	PASS
Console Mouse terminals	Air Discharge	± 8kV	PASS
Keyboard terminals	Air Discharge	± 8kV	PASS
Switch	Air Discharge	± 8kV	PASS

Remark: Calculated measurement uncertainty= ± 0.2kV

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



9.0 RF field strength susceptibility (80MHz----- 1000MHz)

9.1 Schematics of the test



9.2 Test Method:

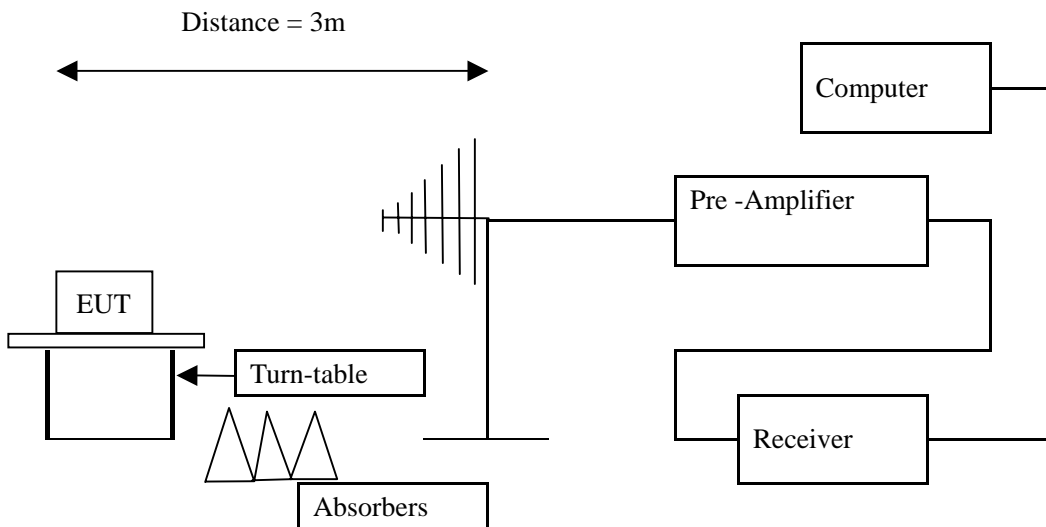
The test was performed in accordance with EN 61000-4-3:1996

Severity: Level 2 (3V/m)

Modulation: 80% AM

Performance Criterion Require: A (Please see following table)

Block diagram of Test setup



9.3 Susceptibility performance Criteria and severity Level

Susceptibility performance Criteria

A	Normal performance within the specification limits
B	Temporary degradation or loss of function or performance which is self recoverable
C	Temporary degradation or loss of function or performance which requires operator intervention or system reset
D	Degradation or loss of function which is not recoverable due to damage of equipment(components) or software, or loss of data

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report.

In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Severity Level

Level	Field Strength (V/m)
1	1
2	3
3	10

9.4 Test Result:

Please refer to the following table for individual results.

Frequency (MHz)	Face	Polarity	Level (V/m)	Dwell Time(s)	Sweep Rate (%)	Results
80-1000	0 °	Horizontal	3	1	1	PASS
80-1000	90 °	Horizontal	3	1	1	PASS
80-1000	180 °	Horizontal	3	1	1	PASS
80-1000	270 °	Horizontal	3	1	1	PASS
80-1000	0 °	Vertical	3	1	1	PASS
80-1000	90 °	Vertical	3	1	1	PASS
80-1000	180 °	Vertical	3	1	1	PASS
80-1000	270 °	Vertical	3	1	1	PASS

Remark: Calculated measurement uncertainty= 80MHz to 1000mHz (+3.7/ -1.3) V/m

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it or a certified copy thereof prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



10.0 Electrical Fast Transient/Burst (EFT/B) immunity test

10.1 Schematics of the test



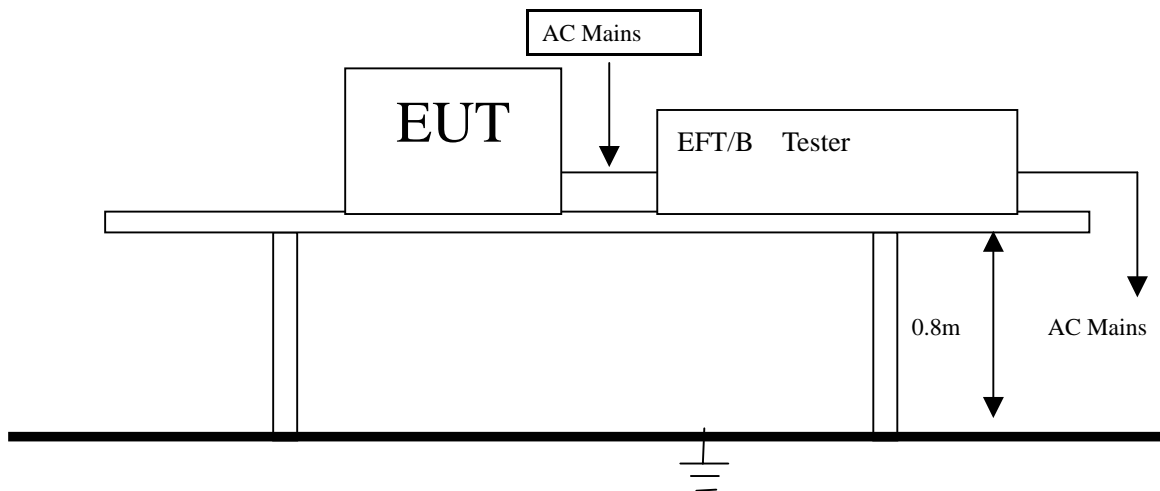
10.2 Test Method:

The test was performed in accordance with EN 61000-4-4:1995

Severity: Level 2 (1kV)

Performance Criterion Require: B (Please see following table)

Block diagram of Test setup



10.3 Susceptibility performance Criteria and Severity Level

Susceptibility performance Criteria

A	Normal performance within the specification limits
B	Temporary degradation or loss of function or performance which is self recoverable
C	Temporary degradation or loss of function or performance which requires operator intervention or system reset
D	Degradation or loss of function which is not recoverable due to damage of equipment(components) or software, or loss of data

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report.

In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Severity Level

Open Circuit output Test Voltage ± 10%		
Level	On power Supply Lines	On I/O (Input/output) Signal data and control lines
1	0.5kV	0.5kV
2	1kV	1kV
3	2kV	2kV
4	4kV	4kV
X	Special	Special

10.4 Test Results

Please refer to following page.

Inject location:

Inject Line	Voltage kV	Inject Times (s)	Method	Results
L	± 1	120S	Direct	PASS
N	± 1	120S	Direct	PASS
L-N	± 1	120S	Direct	PASS

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report.

In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



11.0 Surge test

11.1 Schematics of the test

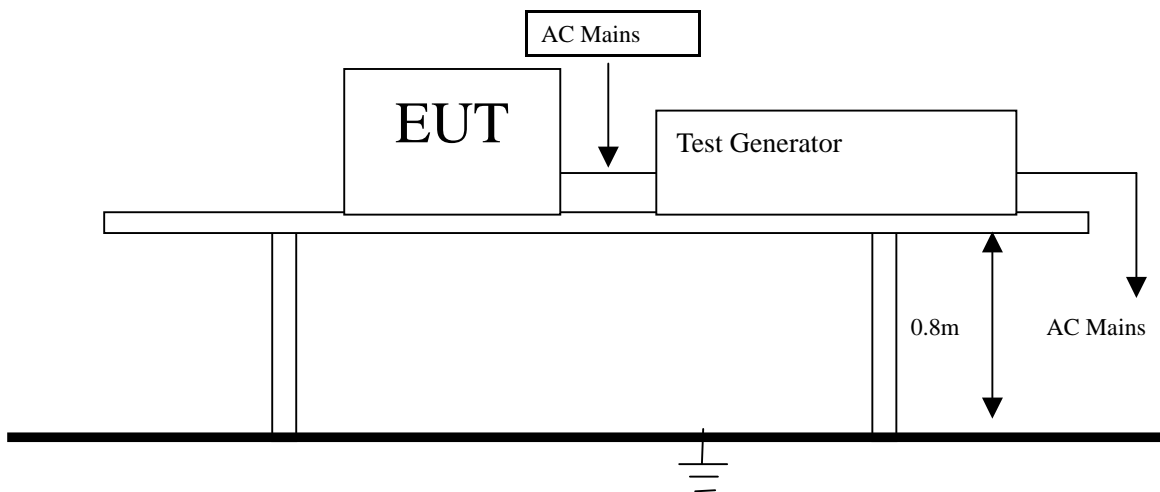


11.2 Test Method:

The test was performed in accordance with EN 61000-4-5:1995
 Severity: Level 2 (Line to Neutral at 1kV)

Performance Criterion Require: C (Please see following table)

Block diagram of Test setup



11.3 Susceptibility performance Criteria and Severity Level

Susceptibility performance Criteria

A	Normal performance within the specification limits
B	Temporary degradation or loss of function or performance which is self recoverable
C	Temporary degradation or loss of function or performance which requires operator intervention or system reset
D	Degradation or loss of function which is not recoverable due to damage of equipment(components) or software, or loss of data

The report refers only to the sample tested and does not apply to the bulk.
 This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it, or a certified copy thereof prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.
 In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Severity Level

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

11.4 Test Results

Please refer to following page.

Test location:

Location	Polarity	Phase Angle	No of Pulse	Pulse Voltage(kV)	Results
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

The report refers only to the sample tested and does not apply to the bulk.

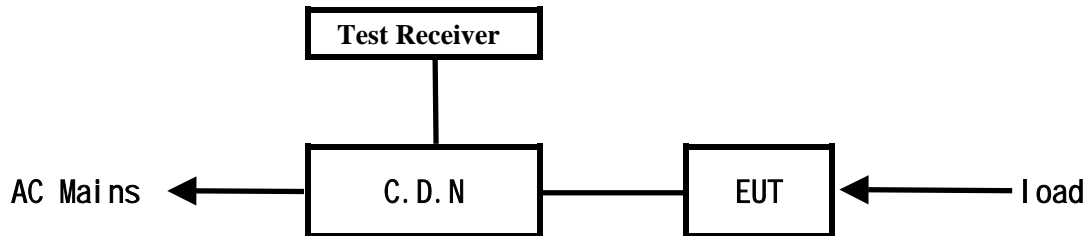
This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it or a certified copy thereof prepared by the Hong Kong Timeway Technology Development Limited to his customer, supplier or other persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, the Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



12.0 Conducted Immunity test

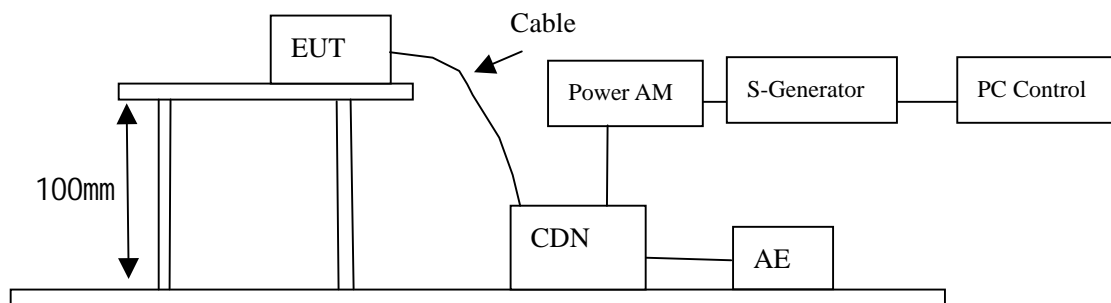
12.1 Schematics of the test



12.2 Test Method

The test was performed in accordance with EN 61000-4-6:1996
 Severity: Level 2 (3 V rms),0.15MHz—80MHz
 Performance Criterion Require: A (Please see following table)

Block diagram of Test setup



12.3 Susceptibility performance Criteria and Severity Level

Susceptibility performance Criteria

A	Normal performance within the specification limits
B	Temporary degradation or loss of function or performance which is self recoverable
C	Temporary degradation or loss of function or performance which requires operator intervention or system reset
D	Degradation or loss of function which is not recoverable due to damage of equipment(components) or software, or loss of data

The report refers only to the sample tested and does not apply to the bulk.
 This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report.
 In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Severity Level

Severity Level	Field Strength V/m
1	1
2	3
3	10
*	Special

12.4 Test Results:

Please refer to the following page

Frequency Range (MHz)	Injected Position	Strength	Criterion	Result
0.15 - 20	AC Line	3V (rms) Unmodulated	A	PASS
20 - 80	AC Line	3V (rms) Unmodulated	A	PASS

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report. In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



13.0 Power Frequency magnetic field test

13.1 Schematics of the test



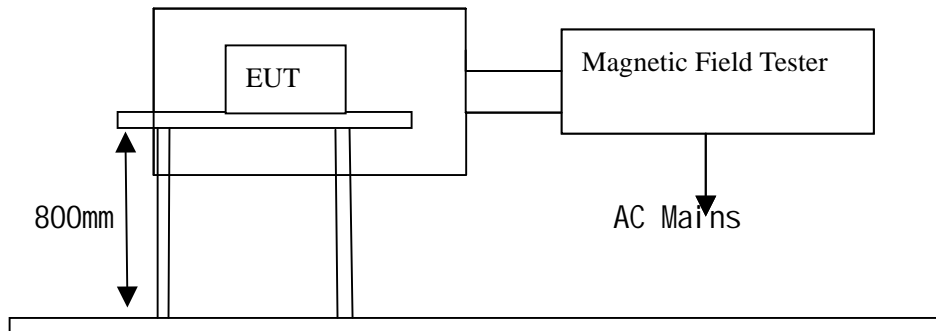
13.2 Test Method

The test was performed in accordance with EN 61000-4-8:1993

Severity: Level 2 (3A/m),

Performance Criterion Require: A (Please see following table)

Block diagram of Test setup



13.3 Susceptibility performance Criteria and Severity Level

Susceptibility performance Criteria

A	Normal performance within the specification limits
B	Temporary degradation or loss of function or performance which is self recoverable
C	Temporary degradation or loss of function or performance which requires operator intervention or system reset
D	Degradation or loss of function which is not recoverable due to damage of equipment(components) or software, or loss of data

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report.

In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Severity Level

Severity Level	Magnetic Field Strength A/m
1	1
2	3
3	10
4	30
5	100
*	Special

13.4 Test Results:

Please refer to the following page

Test Level	Testing Duration	Coil Orientation	Criterion	Result
3A/m	5 Mins	Horizontal	A	PASS
3A/m	5 Mins	Vertical	A	PASS

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report.

In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



14.0 Voltage Dips/Interruptions immunity test

14.1 Schematics of the test

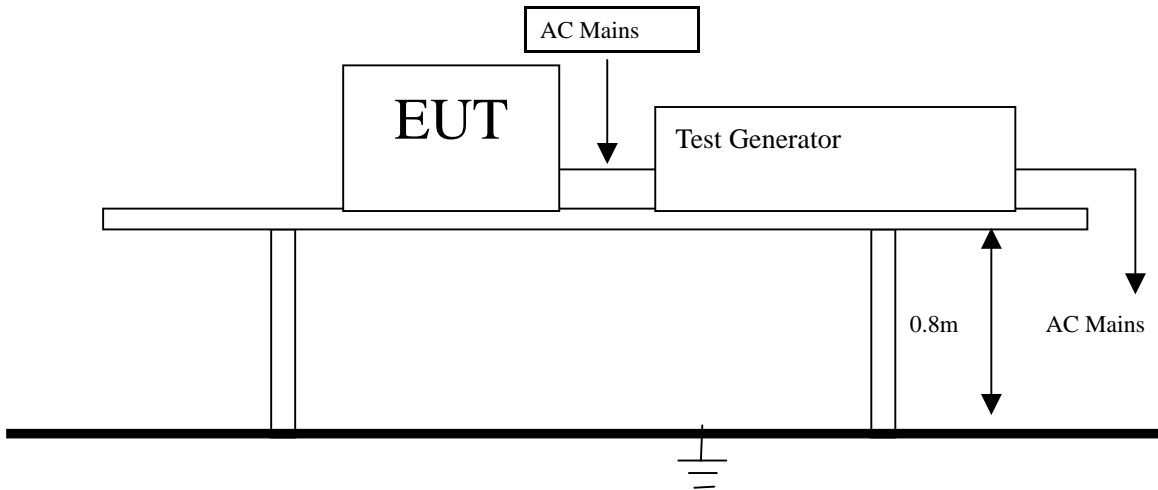


14.2 Test Method:

The test was performed in accordance with EN 61000-4-11:1994

Performance Criterion Require: C&B (Please see following table)

Block diagram of Test setup



14.3 Susceptibility performance Criteria and Severity Level

Susceptibility performance Criteria

A	Normal performance within the specification limits
B	Temporary degradation or loss of function or performance which is self recoverable
C	Temporary degradation or loss of function or performance which requires operator intervention or system reset
D	Degradation or loss of function which is not recoverable due to damage of equipment(components) or software, or loss of data

The report refers only to the sample tested and does not apply to the bulk. This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report. In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



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 *

14.4 Test Result:

Please refer to the following page

Test Level % Ut	Voltage dips & short interruptions % Ut	Duration(in period)	Phase Angle	Criterion	Result
0	100	250P	0 ° - 360 °	C	PASS
40	60	5P	0 ° - 360 °	C	PASS
70	30	0.5P	0 ° - 360 °	B	PASS

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it or a certified copy thereof prepared by the Hong Kong Timeway Technology Development Limited to his customer, supplier or other persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contents of the report.

In the event of the improper use of the report, the Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



15.0 Product Labeling

15.1 CE Mark label specification

Text of the mark is black or white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing and shall be affixed at a conspicuous location on the EUT or silk-screened onto the EUT.



15.2 Mark Location: Rear enclosure

*

The report refers only to the sample tested and does not apply to the bulk.

This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report. In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Appendix:

Photos of the Product



The report refers only to the sample tested and does not apply to the bulk. This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report. In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Appendix:

Photos of the Product



The report refers only to the sample tested and does not apply to the bulk.
This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report.
In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.



Appendix:

Photos of the Product



End of the report

The report refers only to the sample tested and does not apply to the bulk.
This report is issued in confidence to the client and it will be strictly treated as such by the Hong Kong Timeway Technology Development Limited. It may not be reproduced rather in its entirety or in part and it may not be used for advertising. The client to whom the report is issued may, however, show or send it . or a certified copy there of prepared by the Hong Kong Timeway Technology Development Limited to his customer. Supplier or others persons directly concerned. Hong Kong Timeway Technology Development Limited will not, without the consent of the client enter into any discussion of correspondence with any third party concerning the contentsw of the report.
In the event of the improper use of the report. The Hong Kong Timeway Technology Development Limited reserves the rights to withdraw it and to adopt any other remedies which may be appropriate.