



SPORTON LAB.

Certificate No: **EC491503**

CERTIFICATE

● **EQUIPMENT : 4 Channels PC/104-Plus Video Capture Module**
MODEL NO. : DVP-1020

APPLICANT : Advantech Co., Ltd.

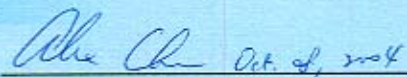
No. 1, Alley 20, Lane 26, Rueiguang Road,
Neihu District, Taipei, Taiwan 114, R.O.C.



I HEREBY

CERTIFY THAT:

THE MEASUREMENTS SHOWN IN THIS TEST REPORT WERE MADE IN ACCORDANCE WITH THE PROCEDURES GIVEN IN **EUROPEAN COUNCIL DIRECTIVE 89/336/EEC**. THE EQUIPMENT WAS **PASSED** THE TEST PERFORMED ACCORDING TO **European Standard EN 55022:1998, EN 55011:1998 Group I Class A, EN 61000-3-2:2000, EN 61000-3-3:1995/A1:2001 and EN 55024:1998/A1:2001** (IEC 61000-4-2:1995, IEC 61000-4-3:1995, IEC 61000-4-4:1995, IEC 61000-4-5:1995, IEC 61000-4-6:1996, IEC 61000-4-8:1993, IEC 61000-4-11:1994). THE TEST WAS CARRIED OUT ON **Oct. 05, 2004** AT **SPORTON INTERNATIONAL INC. LAB.**



Alex Chen
Manager



CE EMC TEST REPORT

According to

**European Standard EN 55022:1998,
EN 55011:1998 Group I Class A,
EN 61000-3-2: 2000, EN 61000-3-3:1995/A1:2001 and
EN 55024:1998/A1:2001 (IEC 61000-4-2:1995,
IEC 61000-4-3:1995, IEC 61000-4-4:1995, IEC 61000-4-5:1995,
IEC 61000-4-6:1996, IEC 61000-4-8:1993, IEC 61000-4-11:1994)**

Equipment : 4 Channels PC/104-Plus Video Capture Module

Model No. : DVP-1020

Applicant : **Advantech Co., Ltd.**
No. 1, Alley 20, Lane 26, Rueiguang Road,
Neihu District, Taipei, Taiwan 114, R.O.C.

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.
- This test report is only applicable to European Community.

SPORTON International Inc.

6F, No. 106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

Table of Contents

History of this test report	iii
CERTIFICATE OF COMPLIANCE.....	1
1. General Description of Equipment under Test.....	2
1.1 Applicant.....	2
1.2 Manufacturer	2
1.3 Basic Description of Equipment under Test	2
1.4 Feature of Equipment under Test	2
2. Test Configuration of Equipment under Test	3
2.1 Test Manner	3
2.2 Description of Test System	3
3. Test Software	7
4. General Information of Test.....	8
4.1 Test Facility	8
4.2 Test Voltage	8
4.3 Standard for Methods of Measurement.....	8
4.4 Test in Compliance with	8
4.5 Frequency Range Investigated	8
4.6 Test Distance	8
5. Test of Conducted Powerline	9
5.1 Description of Major Test Instruments	9
5.2 Test Procedures.....	10
5.3 Typical Test Setup Layout of Conducted Powerline	11
5.4 Test Result of AC Powerline Conducted Emission	12
5.5 Photographs of Conducted Powerline Test Configuration	14
6. Test of Radiated Emission.....	15
6.1 Description of Major Test Instruments	15
6.2 Test Procedures.....	16
6.3 Typical Test Setup Layout of Radiated Emission.....	17
6.4 Test Result of Radiated Emission	18
6.5 Photographs of Radiated Emission Test Configuration	22
7. Harmonics Test.....	23
8. Voltage Fluctuations Test.....	24
8.1 Standard.....	24
8.2 Test Procedure.....	24
8.3 Test Equipment Settings	24
8.4 Test Setup	24
8.5 Test Result Of Voltage Fluctuation And Flicker Test	25
8.6 Photographs Of Harmonics Test, Voltage Fluctuation And Flicker Test	26
9. Electrostatic Discharge Immunity Test (ESD)	27
9.1 Test setup.....	27
9.2 Test Setup for Tests Performed in Laboratory	28
9.3 ESD Test Procedure	29
9.4 Test Severity Levels	30
9.5 Test Points	31
9.6 Photographs of Electrostatic Discharge Immunity Test	32

10. Radio Frequency Electromagnetic Field Immunity Test (RS).....	33
10.1 Test setup.....	33
10.2 Test Procedure.....	34
10.3 Test Severity Levels.....	34
10.4 Photographs of Radio Frequency Electromagnetic Field Immunity Test.....	35
11. Electrical Fast Transient/Burst Immunity Test (EFT/BURST)	36
11.1 Test setup.....	36
11.2 Test on Power Line	37
11.3 Test on Communication Lines.....	37
11.4 Test Procedure.....	37
11.5 Test Severity Levels.....	38
11.6 Photographs of Electrical Fast Transient/Burst Immunity Test	39
12. Surge Immunity Test.....	41
12.1 Test Record.....	41
12.2 Test Level.....	42
12.3 Test Procedure.....	42
12.4 Photographs of Surge Immunity Test.....	44
13. Conducted Disturbances Induced by Radio-Frequency Field Immunity Test (CS).....	45
13.1 Test Level.....	45
13.2 Test Procedure.....	46
13.3 Photographs of CS Immunity Test	47
14. Power Frequency Magnetic Field Immunity Tests.....	48
14.1 Test Record.....	48
14.2 Test Setup	48
14.3 Photographs of Power Frequency Magnetic Field Immunity Tests.....	49
15. Voltage Dips and Voltage Interruption Immunity Tests	50
15.1 Test Record of Voltage Interruption	50
15.2 Test Record of Voltage Dips	50
15.3 Testing Requirement and Procedure	51
15.4 Test Conditions	51
15.5 Photographs of Voltage Dips and Voltage Interruption Immunity Tests.....	52
16. List of Measuring Equipment Used	53
17. Notice for Class A Product.....	56
18. Declaration of Conformity and the CE Mark.....	57
Appendix A. Photographs of EUT.....	A1 ~ A2



History of this test report

Original Report Issue Date: Oct. 07, 2004

No additional attachment.

Additional attachment were issued as following record:

Attachment No.	Issue Date	Description



CERTIFICATE OF COMPLIANCE

According to

**European Standard EN 55022:1998,
EN 55011:1998 Group I Class A,
EN 61000-3-2: 2000, EN 61000-3-3:1995/A1:2001 and
EN 55024:1998/A1:2001 (IEC 61000-4-2:1995,
IEC 61000-4-3:1995, IEC 61000-4-4:1995, IEC 61000-4-5:1995,
IEC 61000-4-6:1996, IEC 61000-4-8:1993, IEC 61000-4-11:1994)**

Equipment : 4 Channels PC/104-Plus Video Capture Module

Model No. : DVP-1020

Applicant : **Advantech Co., Ltd.**
No. 1, Alley 20, Lane 26, Rueiguang Road,
Neihu District, Taipei, Taiwan 114, R.O.C.

I **HEREBY** CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **EUROPEAN COUNCIL DIRECTIVE 89/336/EEC**. The equipment was **passed** the test performed according to **European Standard EN 55022:1998, EN 55011:1998 Group I Class A, EN 61000-3-2:2000, EN 61000-3-3:1995/A1:2001 and EN 55024:1998/A1:2001 (IEC 61000-4-2:1995, IEC 61000-4-3:1995, IEC 61000-4-4:1995, IEC 61000-4-5:1995, IEC 61000-4-6:1996, IEC 61000-4-8:1993, IEC 61000-4-11:1994)**. The test was carried out on **Oct. 05, 2004** at **SPORTON International Inc. LAB**.

Alex Chen
Manager

SPORTON International Inc.

6F, No. 106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.

1. General Description of Equipment under Test

1.1 Applicant

Advantech Co., Ltd.
No. 1, Alley 20, Lane 26, Rueiguang Road,
Neihu District, Taipei, Taiwan 114, R.O.C.

1.2 Manufacturer

Same as 1.1.

1.3 Basic Description of Equipment under Test

Equipment : 4 Channels PC/104-Plus Video Capture Module
Model No. : DVP-1020
Trade Name : ADVANTECH
Power Supply Type : From System
AC Power Cable : N/A

1.4 Feature of Equipment under Test

- Please refer to user manual.

2. Test Configuration of Equipment under Test

2.1 Test Manner

- a. During testing, the interface cables and equipment positions were varied according to European Standard EN 55022 and EN 55011.
- b. The complete test system included COMPAQ Monitor, LOGITECH PS/2 Mouse, GENUINE PS/2 Keyboard, ADVANTECH Video Distributor, ADVANTECH IPC, ADVANTECH CCD and EUT for EMI test.
- c. The complete test system included VIEWSONIC Monitor, DELL PS/2 Keyboard, DELL PS/2 Mouse, , ADVANTECH CCD, ADVANTECH Video Distributor, ADVANTECH IPC and EUT for EMS test.
- d. Frequency range investigated: Conduction 150 KHz to 30 MHz, Radiation 30 MHz to 1000MHz.

2.2 Description of Test System

< EMI >

Support Unit 1. -- Monitor (COMPAQ)

FCC ID	: N/A
Model No.	: S510
Power Cord	: Shielded
Serial No.	: SP0009
Data Cable	: Shielded, 360 degree via metal backshells, 1.7m
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 2. -- PS/2 Mouse (LOGITECH)

FCC ID	: DZL211029
Model No.	: M-S34
Serial No.	: SP0015
Data Cable	: Shielded, 1.7m

Support Unit 3. -- PS/2 Keyboard (GENUINE)

FCC ID	: N/A
Model No.	: K288
Serial No.	: SP0011
Data Cable	: Shielded, 1.3m
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 4. -- Video Distributor (ADVANTECH)

FCC ID : N/A
Model No. : VD-106
Serial No. : SP0100
Data Cable : Shielded, 1.5m

Support Unit 5. -- IPC (ADVANTECH)

FCC ID : N/A
Model No. : IPC610
Power Supply Type : Switching
Power Cord : Non-Shielded
Serial No. : SP0102
Remark : This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 6. -- CCD (ADVANTECH)

FCC ID : N/A
Model No. : CCD-2351
Serial No. : SP0134
Data Cable : Shielded, 1.5m

< EMS >

Support Unit 1. -- Monitor (VIEWSONIC)

FCC ID	: N/A
Model No.	: VCDTS21553-3J
Power Supply Type	: Switching
Power Cord	: Non-Shielded
Serial No.	: SP0034
Data Cable	: Shielded, 1.7m
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 2. -- PS/2 Keyboard (DELL)

FCC ID	: N/A
Model No.	: SK-8110
Serial No.	: SP0007
Data Cable	: Shielded, 1.8m
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 3. -- PS/2 Mouse (DELL)

FCC ID	: N/A
Model No.	: M-SAW34
Serial No.	: SP0036
Data Cable	: Shielded, 1.8m
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

Support Unit 4. -- CCD (ADVANTECH)

FCC ID	: N/A
Model No.	: CCD-2351
Serial No.	: SP0134
Data Cable	: Shielded, 1.5m

Support Unit 5. -- Video Distributor (ADVANTECH)

FCC ID	: N/A
Model No.	: VD-106
Serial No.	: SP0100
Data Cable	: Shielded, 1.5m



Support Unit 6. -- IPC (ADVANTECH)

FCC ID	: N/A
Model No.	: IPC610
Power Supply Type	: Switching
Power Cord	: Non-Shielded
Serial No.	: SP0102
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

3. Test Software

< EMI >

During testing, executed "DVP1020.EXE" under WIN XP to display image captured from CCD.

< EMS >

During testing, executed "DVP.EXE" under WIN XP to display image captured from CCD.

4. General Information of Test

4.1 Test Facility

< EMI >

This test was carried out by SPORTON International Inc.

Test Site Location : No. 30-2, Lin 6, Diing-Fwu Tsuen, Lin-Kou-Hsiang,
Taipei Hsien, Taiwan, R.O.C.
TEL : 886-2-2601-1640
FAX : 886-2-2601-1695

Test Site No. : CO01-LK, OS01-LK

< EMS >

This test was carried out by SPORTON International Inc.

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,
Kwei-Shan Hsiag, Tao Yuan Hsien, Taiwan, R.O.C.
TEL : 886-3-327-3456
FAX : 886-3-318-0055

4.2 Test Voltage

230V / 50Hz

4.3 Standard for Methods of Measurement

EMI Test (Conduction and Radiation) : European Standard EN 55022 Class A
EMI Test (Conduction and Radiation) : European Standard EN 55011 Group I Class A
Harmonics Test : European Standard EN 61000-3-2.
Voltage Fluctuations Test : European Standard EN 61000-3-3.
EMS Test : European Standard EN 55024
(ESD: IEC 61000-4-2, RS: IEC 61000-4-3, EFT: IEC 61000-4-4, Surge: IEC 61000-4-5,
CS: IEC 61000-4-6, Power Frequency Magnetic Field: IEC 61000-4-8, Dips: IEC 61000-4-11)

4.4 Test in Compliance with

EMI Test (Conduction and Radiation) : European Standard EN 55022 Class A
EMI Test (Conduction and Radiation) : European Standard EN 55011 Group I Class A
Harmonics Test : European Standard EN 61000-3-2.
Voltage Fluctuations Test : European Standard EN 61000-3-3.
EMS Test : European Standard EN 55024
(ESD: IEC 61000-4-2, RS: IEC 61000-4-3, EFT: IEC 61000-4-4, Surge: IEC 61000-4-5,
CS: IEC 61000-4-6, Power Frequency Magnetic Field: IEC 61000-4-8, Dips: IEC 61000-4-11)

4.5 Frequency Range Investigated

- Conducted emission test: from 150 kHz to 30 MHz
- Radiated emission test: from 30 MHz to 1,000 MHz
- Radio frequency electromagnetic field immunity test : 80-1000 MHz.

4.6 Test Distance

The test distance of radiated emission test from antenna to EUT is 10 M.

The test distance of radio frequency electromagnetic field immunity test from antenna to EUT is 3 M.

5. Test of Conducted Powerline

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 kHz and return leads of the EUT according to the methods defined in European Standard EN 55011 & EN 55022. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 5.3. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position producing maximum conducted emissions.

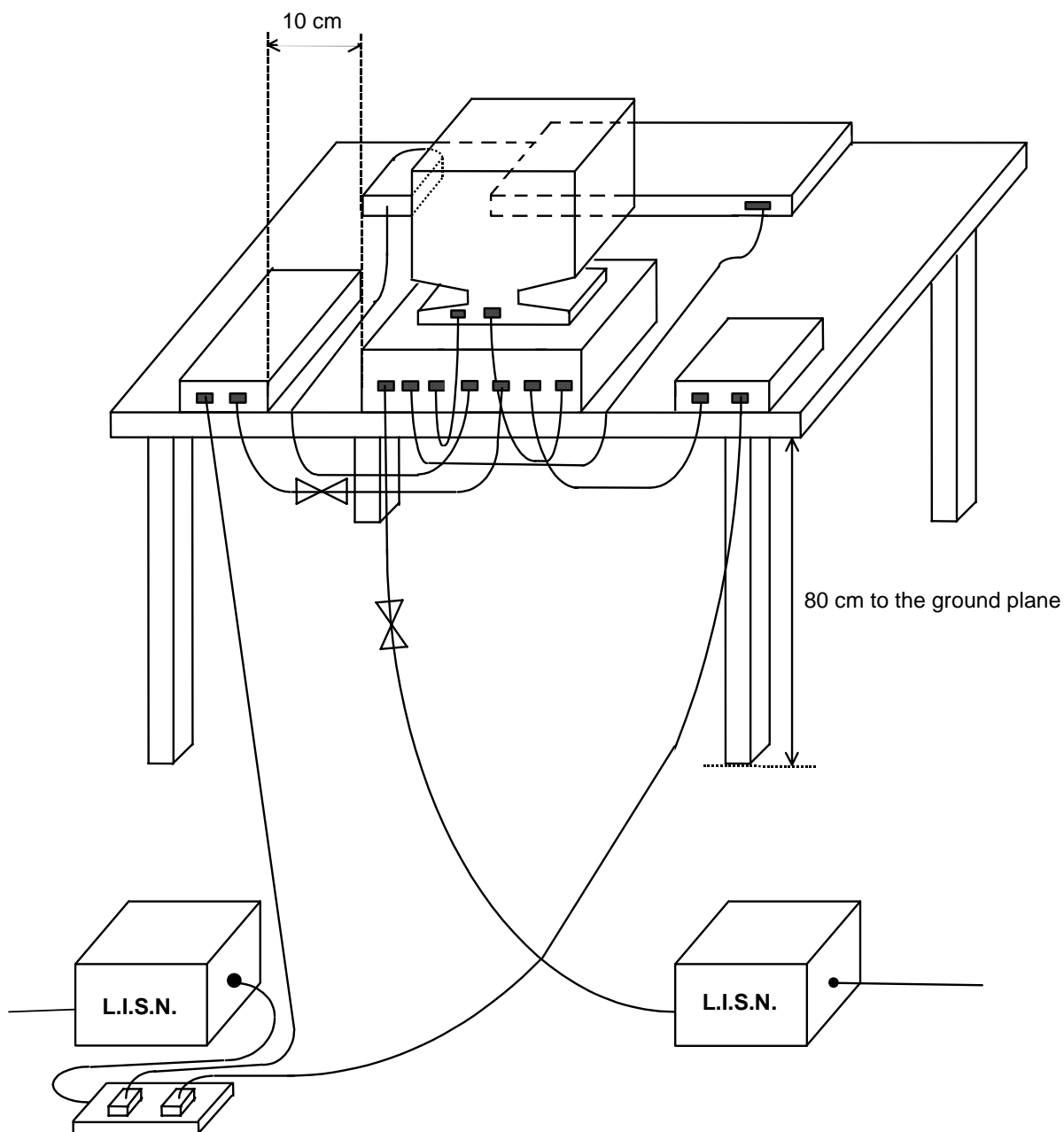
5.1 Description of Major Test Instruments

- Test Receiver (R&S ESCS 30)
 - Attenuation 10 dB
 - Start Frequency 0.15 MHz
 - Stop Frequency 30 MHz
 - IF Bandwidth 9 KHz

5.2 Test Procedures

- a. The EUT was placed on a desk 0.8 meters height from the metal ground plane and 0.4 meter from the conducting wall of the shielding room and it was kept at least 0.8 meters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. All the support units are connect to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The CISPR states that a 50 ohm , 50 microhenry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

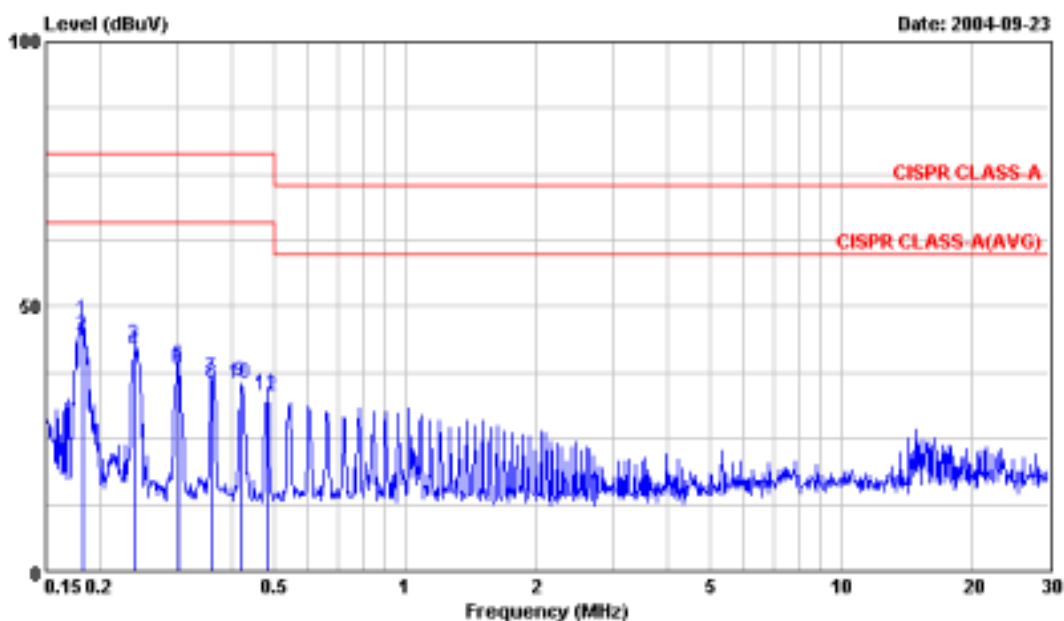
5.3 Typical Test Setup Layout of Conducted Powerline



5.4 Test Result of AC Powerline Conducted Emission

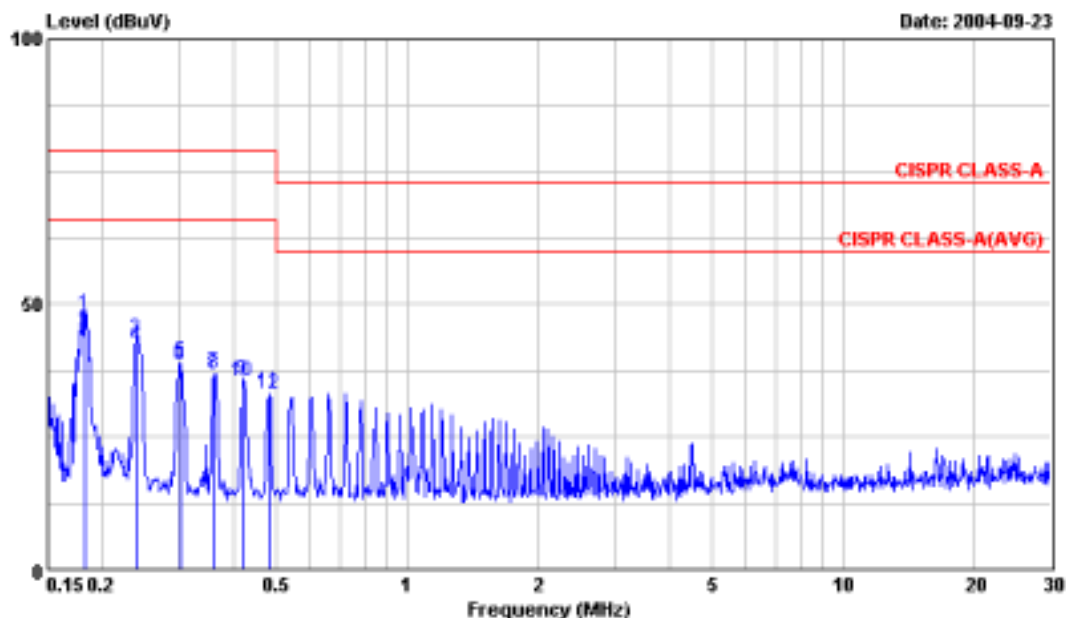
- Frequency Range of Test: from 0.15 MHz to 30 MHz
- Temperature : 24 °C
- Relative Humidity : 57 %
- Corrected Reading (dBuV) = LISN Factor + Cable Loss + Read Level = Level
- All emissions not reported here are more than 10 dB below the prescribed limit.

■ The test was passed at the minimum margin that marked by a frame in the following data



Site : LK_C001
 Condition : CISPR CLASS-A C001 LISN-92-08-25 LINE
 EUT : Video Encoder Module
 MODEL : DVP-1020
 POWER : 230V/50HZ
 MEMO :

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.182	47.58	-31.42	79.00	47.48	0.10	0.00	QP
2	0.182	44.42	-21.58	66.00	44.32	0.10	0.00	Average
3	0.240	42.90	-36.10	79.00	42.77	0.10	0.03	QP
4	0.240	41.51	-24.49	66.00	41.38	0.10	0.03	Average
5	0.301	38.70	-40.30	79.00	38.54	0.10	0.06	QP
6	0.301	37.98	-28.02	66.00	37.82	0.10	0.06	Average
7	0.360	36.37	-42.63	79.00	36.18	0.10	0.09	QP
8	0.360	35.52	-30.48	66.00	35.33	0.10	0.09	Average
9	0.421	35.66	-43.34	79.00	35.46	0.10	0.10	QP
10	0.421	35.33	-30.67	66.00	35.13	0.10	0.10	Average
11	0.483	33.34	-45.66	79.00	33.14	0.10	0.10	QP
12	0.483	32.97	-33.03	66.00	32.77	0.10	0.10	Average



Site : LK_C001
 Condition : CISPR CLASS-A C001 LISN-92-08-25 NEUTRAL
 EUT : Video Encoder Module
 MODEL : DVP-1020
 POWER : 230V/50HZ
 MEMO :

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.182	48.09	-30.91	79.00	47.99	0.10	0.00	QP
2 @	0.182	44.73	-21.27	66.00	44.63	0.10	0.00	Average
3	0.240	43.62	-35.38	79.00	43.49	0.10	0.03	QP
4	0.240	41.99	-24.01	66.00	41.86	0.10	0.03	Average
5	0.301	39.19	-39.81	79.00	39.03	0.10	0.06	QP
6	0.301	38.56	-27.44	66.00	38.40	0.10	0.06	Average
7	0.361	37.10	-41.90	79.00	36.91	0.10	0.09	QP
8	0.361	36.63	-29.37	66.00	36.44	0.10	0.09	Average
9	0.421	35.86	-43.14	79.00	35.66	0.10	0.10	QP
10	0.421	35.41	-30.59	66.00	35.21	0.10	0.10	Average
11	0.483	33.30	-45.62	79.00	33.10	0.10	0.10	QP
12	0.483	33.03	-32.97	66.00	32.83	0.10	0.10	Average

Test Engineer : Neil Huang

5.5 Photographs of Conducted Powerline Test Configuration

- The photographs show the configuration that generates the maximum emission.

FRONT VIEW



REAR VIEW



6. Test of Radiated Emission

Radiated emissions from 30 MHz to 1000 MHz were measured with a bandwidth of 120 kHz according to the methods defines in European Standard EN 55011 & EN 55022. The EUT was placed on a nonmetallic stand, 0.8 meter above the ground plane, as shown in section 6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

6.1 Description of Major Test Instruments

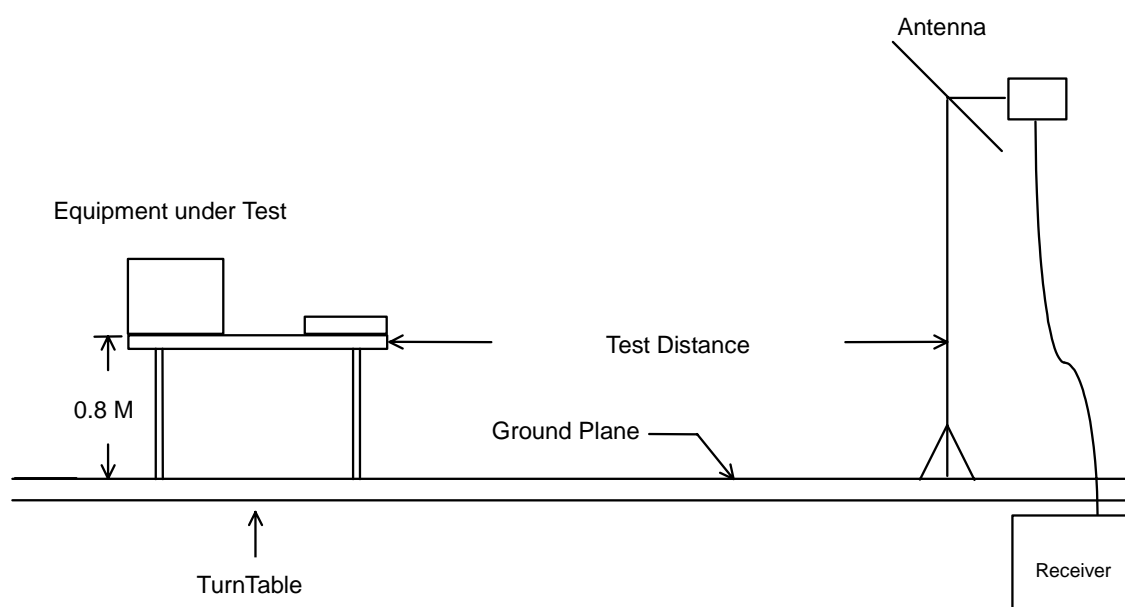
- Amplifier (HP 8447D)
 - RF Gain 25 dB
 - Signal Input 0.1 MHz -1.3 GHz

- Spectrum Analyzer (ADVANTEST R3261C)
 - Attenuation 10 dB
 - Start Frequency 30 MHz
 - Stop Frequency 1000 MHz
 - Resolution Bandwidth 120 KHz
 - Signal Input 30MHz – 2.6GHz

6.2 Test Procedures

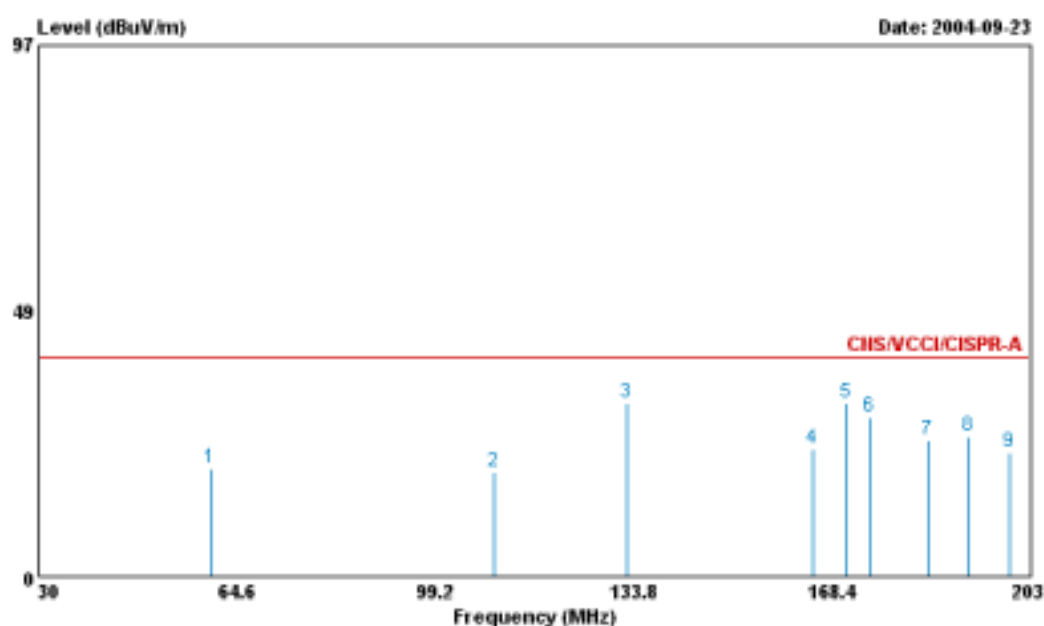
- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 10 meters from the interference-receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The antenna is a half wave dipole and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
- e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
- f. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.

6.3 Typical Test Setup Layout of Radiated Emission



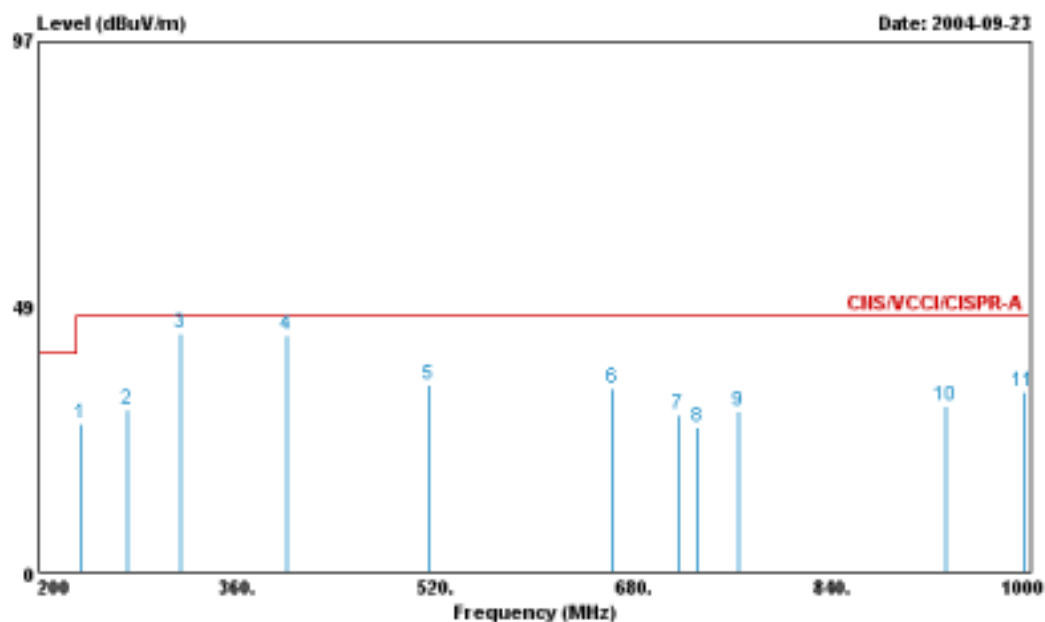
6.4 Test Result of Radiated Emission

- Frequency Range of Test : from 30 MHz to 1000 MHz
 - Temperature : 29°C
 - Relative Humidity : 54%
 - Emission level (dBuV/m) = 20 log Emission level (uV/m)
 - Corrected Reading : Antenna Factor + Cable Loss + Read Level – Preamp Factor = Level
- The test was passed at the minimum margin that marked by a frame in the following data.



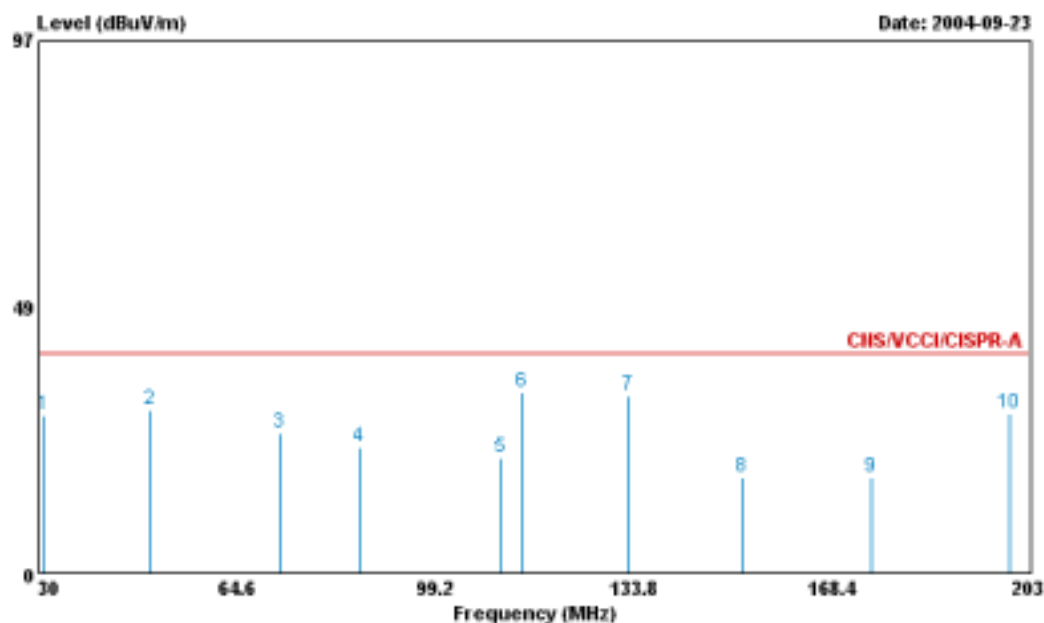
Site : OS01-LK
 Condition : CNS/VCCI/CISPR-A 10m 2672-JUNE-05-2004 HORIZONTAL
 EUT : VIDEO ENCODER MODULE
 Power : FROM SYSTEM
 Memo :

	Freq	Level	Over	Limit	Read	Cable	Preamp	Antenna		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Factor	Remark	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB/m		cm	deg
1	60.100	19.86	-20.14	40.00	40.41	1.10	27.08	5.43	Peak	---	---
2	109.580	19.02	-20.98	40.00	33.24	1.47	26.99	11.30	Peak	---	---
3	132.760	31.84	-8.16	40.00	45.60	1.61	26.97	11.60	Peak	---	---
4	165.290	23.19	-16.81	40.00	38.38	1.78	26.93	9.96	Peak	---	---
5	171.170	31.82	-8.18	40.00	47.20	1.84	26.93	9.71	Peak	---	---
6	175.150	29.03	-10.97	40.00	44.49	1.88	26.92	9.58	Peak	---	---
7	185.350	24.84	-15.16	40.00	40.39	1.93	26.91	9.43	Peak	---	---
8	192.620	25.43	-14.57	40.00	41.00	1.97	26.91	9.37	Peak	---	---
9	199.710	22.68	-17.32	40.00	38.22	2.05	26.90	9.31	Peak	---	---



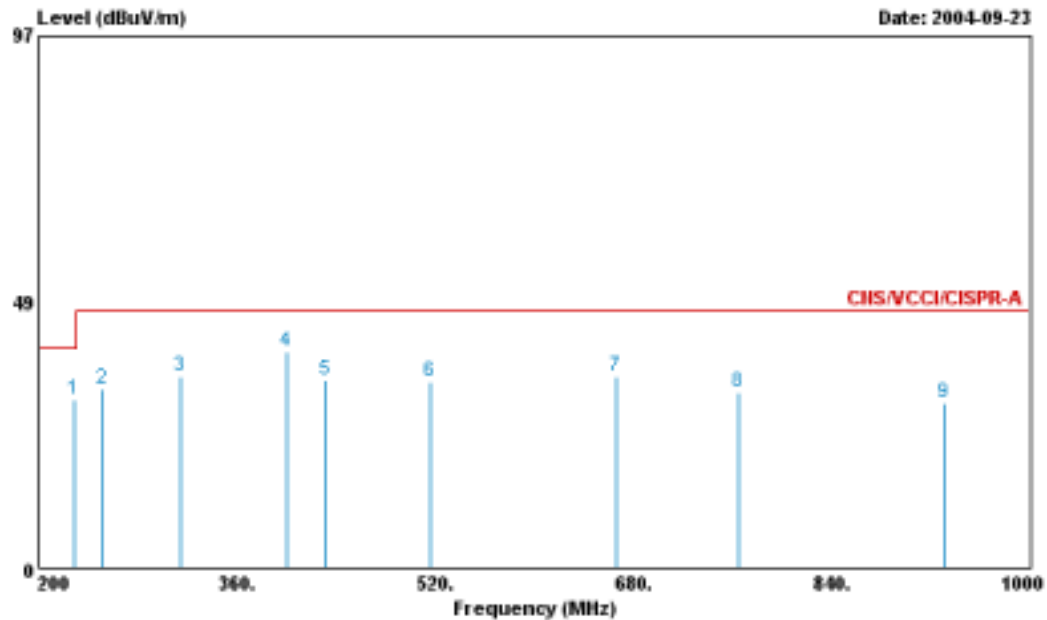
Site : OS01-LK
 Condition : CNS/VCCI/CISPR-A 10m 2672-JUNE-05-2004 HORIZONTAL
 EUT : VIDEO ENCODER MODULE
 Power : FROM SYSTEM
 Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Cable Loss	Preamp Factor	Antenna Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB/m		cm	deg
1	234.000	27.19	-19.81	47.00	40.59	2.22	26.76	11.14	Peak	---	---
2	272.000	29.67	-17.33	47.00	41.19	2.37	26.61	12.72	Peak	---	---
3 @	314.000	43.74	-3.26	47.00	53.40	2.82	26.44	13.96	Peak	300	240
4	400.000	43.18	-3.82	47.00	50.20	3.13	26.10	15.95	Peak	---	---
5	515.000	34.27	-12.73	47.00	40.01	3.61	27.40	18.05	Peak	---	---
6	664.000	33.53	-13.47	47.00	38.60	4.44	27.72	18.21	Peak	---	---
7	716.000	28.91	-18.09	47.00	34.61	4.60	27.82	17.52	Peak	---	---
8	732.000	26.42	-20.58	47.00	31.81	4.67	27.74	17.68	Peak	---	---
9	766.000	29.47	-17.53	47.00	34.19	4.83	27.57	18.02	Peak	---	---
10	933.000	30.43	-16.57	47.00	31.80	5.67	27.60	20.56	Peak	---	---
11	996.000	33.08	-13.92	47.00	31.59	6.00	27.22	22.71	Peak	---	---



Site : OS01-LK
 Condition : CNS/VCCI/CISPR-A 10m 2672-JUNE-05-2004 VERTICAL
 EUT : VIDEO ENCODER MODULE
 Power : FROM SYSTEM
 Memo :

	Freq	Level	Over	Limit	Read	Cable	Preamp	Antenna		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Factor	Remark	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB/m		cm	deg
1	30.870	28.65	-11.35	40.00	38.35	0.79	27.10	16.61	Peak	---	---
2	49.350	29.71	-10.29	40.00	46.52	0.97	27.10	9.32	Peak	---	---
3	72.040	25.66	-14.34	40.00	45.37	1.16	27.06	6.19	Peak	---	---
4	86.050	22.88	-17.12	40.00	40.02	1.29	27.03	8.60	Peak	---	---
5	110.620	21.11	-18.89	40.00	35.25	1.47	26.99	11.38	Peak	---	---
6	114.420	32.86	-7.14	40.00	46.64	1.49	26.99	11.72	Peak	---	---
7	133.110	32.43	-7.57	40.00	46.19	1.61	26.97	11.60	Peak	---	---
8	153.000	17.46	-22.54	40.00	32.20	1.75	26.95	10.46	Peak	---	---
9	175.320	17.33	-22.67	40.00	32.79	1.88	26.92	9.58	Peak	---	---
10	199.710	29.08	-10.92	40.00	44.62	2.05	26.90	9.31	Peak	---	---



Site : OS01-LK
 Condition : CNS/VCCI/CISPR-A 10m 2672-JUNE-05-2004 VERTICAL
 EUT : VIDEO ENCODER MODULE
 Power : FROM SYSTEM
 Memo :

	Freq	Level	Over	Limit	Read	Cable	Preamp	Antenna		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Factor	Remark	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB/m		cm	deg
1	228.000	30.62	-9.38	40.00	44.39	2.19	26.79	10.83	Peak	---	---
2	252.000	32.71	-14.29	47.00	45.00	2.31	26.69	12.09	Peak	---	---
3	314.000	34.94	-12.06	47.00	44.60	2.82	26.44	13.96	Peak	---	---
4	400.000	39.58	-7.42	47.00	46.60	3.13	26.10	15.95	Peak	---	---
5	432.000	34.28	-12.72	47.00	41.01	3.25	26.51	16.53	Peak	---	---
6	516.000	33.89	-13.11	47.00	39.60	3.62	27.40	18.07	Peak	---	---
7	666.000	34.86	-12.14	47.00	39.97	4.45	27.73	18.17	Peak	---	---
8	765.000	31.86	-15.14	47.00	36.60	4.82	27.57	18.01	Peak	---	---
9	932.000	29.99	-17.01	47.00	31.40	5.67	27.61	20.53	Peak	---	---

Test Engineer :

William Lee

6.5 Photographs of Radiated Emission Test Configuration

- The photographs show the configuration that generates the maximum emission.

FRONT VIEW



REAR VIEW



7. Harmonics Test

As specified on clause 7 of EN 61000-3-2:2000, the limits are not specified for equipment with a rated power of 75W or less. So the Harmonic test is not applicable to this EUT

8. Voltage Fluctuations Test

8.1 Standard

- Standard : EN 61000-3-3:1995/A1:2001

8.2 Test Procedure

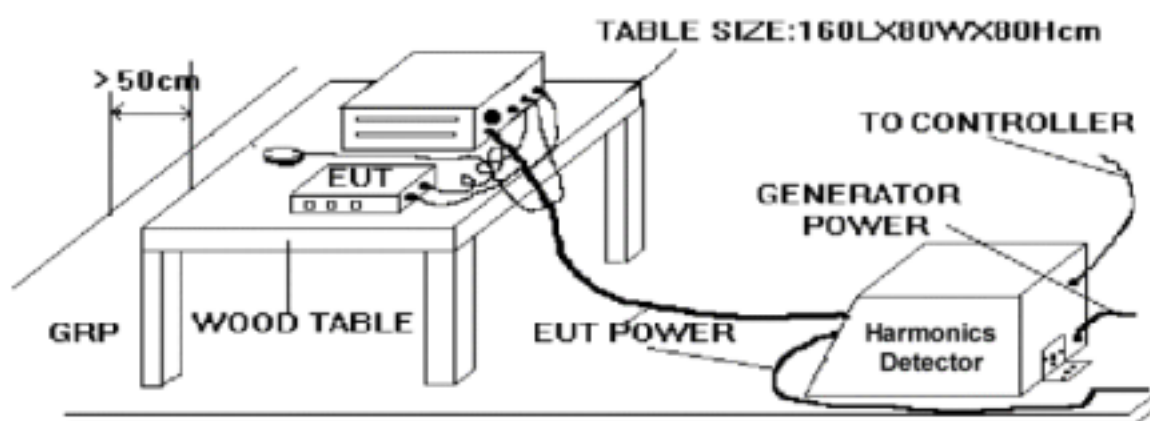
The equipment shall be tested under the conditions of **Clause 5**.

The total impedance of the test circuit, excluding the appliance under test, but including the internal impedance of the supply source, shall be equal to the reference impedance. The stability and tolerance of the reference impedance shall be adequate to ensure that the overall accuracy of $\pm 8\%$ is achieved during the whole assessment procedure.

8.3 Test Equipment Settings

- Line Voltage : 230 V
- Line Frequency : 50 Hz
- Measurement Delay : 10.0 seconds
- Pst Integration Time : 10 minutes
- Pst Integration Periods : 1
- Test Duration : 00:10:00 minutes

8.4 Test Setup



8.5 Test Result Of Voltage Fluctuation And Flicker Test

8.5.1 Test Data Of Voltage Fluctuation And Flicker

- FINAL TEST RESULT : **PASS**
- Temperature : 21°C
- Relative Humidity : 53%
- Test Date : Sep. 29, 2004

Urms = 229.1V Freq = 50.000 Range: 2 A
Irms = 0.301A Ipk = 1.268A cf = 4.214
P = 30.73W Pap = 68.92VA pf = 0.446

Test - Time : 1 x 10min = 10min (100 %)

LIN (Line Impedance Network) : SLIN 0.24ohm +j0.15ohm N:0.16ohm +j0.10ohm

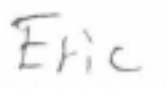
Limits : Plt : 0.65 Pst : 1.00
 dmax : 4.00 % dc : 3.30 %
 dtLim : 3.30 % dt>Lim: 500ms

Test completed, Result: PASSED

Plt = 0.072

	Pst	P50s	P10s	P3s	P1s	P0.1s	dmax	dc	dt>Lim
1	0.072	0.010	0.010	0.010	0.010	0.010	0.000	0.020	0.000

Test Engineer :


Eric Liu

8.6 Photographs Of Harmonics Test, Voltage Fluctuation And Flicker Test

FRONT VIEW



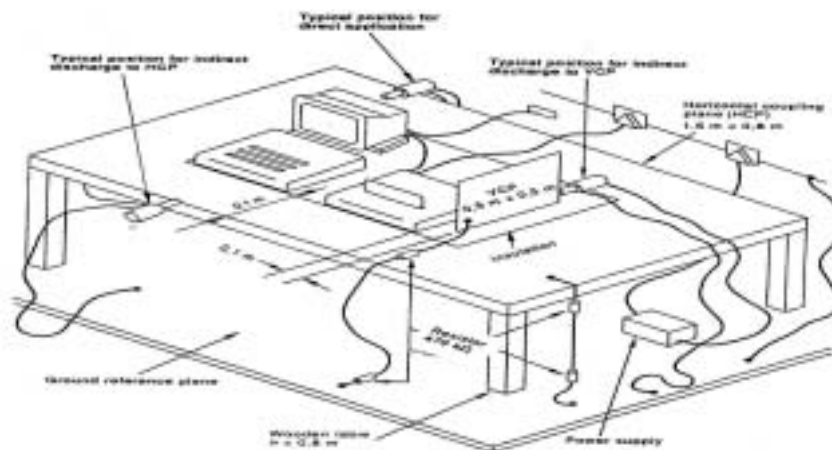
REAR VIEW



9. Electrostatic Discharge Immunity Test (ESD)

- FINAL TEST RESULT : **PASS**
- Pass Performance Criteria : A
- Required performance criteria : B
- Basic Standard : IEC 61000-4-2:1995
- Product Standard : EN 55024:1998/A1:2001
- Level : 3 for air discharge
: 2 for contact discharge
- Test Voltage : $\pm 2 / \pm 4 / \pm 8$ KV for air discharge
: $\pm 2 / \pm 4$ KV for contact discharge
- Temperature : 22°C
- Relative Humidity : 53%
- Atmospheric Pressure : 98.6kPa
- Test Date : Oct. 05, 2004
- Observation : Normal
- Remark : The EUT has no slots, apertures, or insulating surfaces. So, the air discharge test is not applicable.

9.1 Test setup



setup consists of the test generator, EUT and auxiliary instrumentation necessary to perform DIRECT and INDIRECT application of discharges to the EUT as applicable, in the follow manner :

- a. CONTACT DISCHARGE to the conductive surfaces and to coupling plane;
- b. AIR DISCHARGE at insulating surfaces.

The preferred test method is that of type tests performed in laboratories and the only accepted method of demonstrating conformance with this standard. The EUT was arranged as closely as possible to arrangement in final installed conditions.

9.2 Test Setup for Tests Performed in Laboratory

A ground reference plane was provided on the floor of the test site. It was a metallic sheet (copper or aluminum) of 0.25 mm, minimum thickness; other metallic may be used but they shall have at least 0.65 mm thickness. In the SPORTON EMC LAB., we provided 1 mm thickness aluminum ground reference plane or 1 mm thickness stainless steel ground reference plane. The minimum size of the ground reference plane is 1 m x 1 m, the exact size depending on the dimensions of the EUT. It was connected to the protective grounding system.

The EUT was arranged and connected according to its functional requirements. A distance of 1m minimum was provided between the EUT and the wall of the lab. and any other metallic structure. In cases where this length exceeds the length necessary to apply the discharges to the selected points, the excess length shall, where possible, be placed non-inductively off the ground reference plane and shall not come closer than 0.2m to other conductive parts in the test setup.

Where the EUT is installed on a metal table, the table was connected to the reference plane via a cable with a 470k ohm resistor located at each end, to prevent a build-up of charge. The test setup was consist a wooden table, 0.8m high, standing on the ground reference plane. A HCP, 1.6 m x 0.8 m, was placed on the table. The EUT and cables was isolated from the HCP by an insulating support 0.5 mm thick. The VCP size, 0.5 m x 0.5 m.

9.3 ESD Test Procedure

- a. In the case of air discharge testing the climatic conditions shall be within the following ranges:
 - ambient temperature: 15 to 35 ;
 - relative humidity : 30% to 60%;
 - atmospheric pressure : 86 kPa (860 mbar) to 106 kPa (1060 mbar).
- b. Test programs and software shall be chosen so as to exercise all normal modes of operation of the EUT. The use of special exercising software is encouraged, but permitted only where it can be shown that the EUT is being comprehensively exercised.
- c. The test voltage shall be increased from the minimum to the selected test severity level, in order to determine any threshold of failure. The final severity level should not exceed the product specification value in order to avoid damage to the equipment.
- d. The test shall be performed with both air discharge and contact discharge. On preselected points at least 10 single discharges (in the most sensitive polarity) shall be applied on air discharge. On preselected points at least 25 single discharges (in the most sensitive polarity) shall be applied on contact discharge.
- e. For the time interval between successive single discharges an initial value of one second is recommended. Longer intervals may be necessary to determine whether a system failure has occurred.
- f. In the case of contact discharges, the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.
- g. In the case of painted surface covering a conducting substrate, the following procedure shall be adopted :
 - If the coating is not declared to be an insulating coating by the equipment manufacturer, then the pointed tip of the generator shall penetrate the coating so as to make contact with the conducting substrate.
 - Coating declared as insulating by the manufacturer shall only be submitted to the air discharge.
 - The contact discharge test shall not be applied to such surfaces.
- h. In the case of air discharges, the round discharge tip of the discharge electrode shall be approached as fast as possible (without causing mechanical damage) to touch the EUT . After each discharge, the ESD generator (discharge electrode) shall be removed from the EUT. The generator is then retriggered for a new single discharge. This procedure shall be repeated until the discharges are completed. In the case of an air discharge test, the discharge switch, which is used for contact discharge, shall be closed.

9.4 Test Severity Levels

9.4.1 Contact Discharge

Level	Test Voltage (KV) of Contact discharge
1	± 2
2	± 4
3	± 6
4	± 8
X	Specified

Remark : "X" is an open level.

9.4.2 Air Discharge

Level	Test Voltage (KV) of Air Discharge
1	± 2
2	± 4
3	± 8
4	± 15
X	Specified

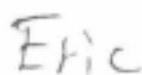
Remark : "X" is an open level.

9.5 Test Points

9.5.1 Test Result of Contact Discharge

Polarity	Voltage	Tested No.
Horizontal(At Front)	$\pm 2 / \pm 4$ KV	BY 25
Horizontal (At Left)	$\pm 2 / \pm 4$ KV	BY 25
Horizontal (At Right)	$\pm 2 / \pm 4$ KV	BY 25
Horizontal (At Rear)	$\pm 2 / \pm 4$ KV	BY 25
Vertical (At Front)	$\pm 2 / \pm 4$ KV	BY 25
Vertical (At Left)	$\pm 2 / \pm 4$ KV	BY 25
Vertical (At Right)	$\pm 2 / \pm 4$ KV	BY 25
Vertical (At Rear)	$\pm 2 / \pm 4$ KV	BY 25
Case	$\pm 2 / \pm 4$ KV	BY 25
Bracket	$\pm 2 / \pm 4$ KV	BY 25
BNC Port	$\pm 2 / \pm 4$ KV	BY 25

Test Engineer :



Eric Liu

9.6 Photographs of Electrostatic Discharge Immunity Test

FRONT VIEW



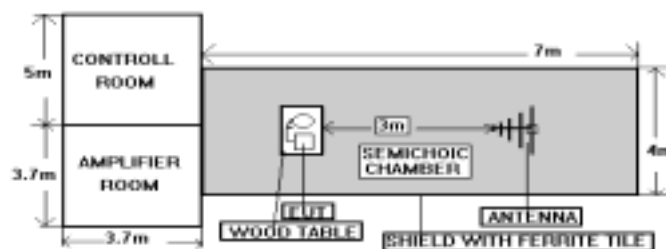
REAR VIEW



10. Radio Frequency Electromagnetic Field Immunity Test (RS)

- FINAL TEST RESULT : **PASS**
- Pass Performance Criteria : A
- Required performance criteria : A
- Basic Standard : IEC 61000-4-3:1995
- Product Standard : EN 55024:1998/A1:2001
- Level : 2
- Frequency Range : 80-1000 MHz
- Field Strength : 3 V/m (Modulated 80% AM)
- Temperature : 22°C
- Relative Humidity : 51%
- Atmospheric Pressure : 98.6kPa
- Test Date : Oct. 05, 2004
- Observation : Normal

10.1 Test setup



NOTE : The SPORTON 7m x 4m x 4m semichoice chamber is compliance with the sixteen points uniform field requirement as stated in IEC 1000-4-3 Section 6.2.

The procedure defined in this part requires the generation of electromagnetic fields within which the test sample is placed and its operation observed. To generate fields that are useful for simulation of actual (field) conditions may require significant antenna drive power and the resultant high field strength levels. To comply with local regulations and to prevent biological hazards to the testing personnel, it is recommended that these tests be carried out in a shielded enclosure or semichoice chamber.

10.2 Test Procedure

- a. The equipment to be tested is placed in the center of the enclosure on a wooden table. The equipment is then connected to power and signal leads according to pertinent installation instructions.
- b. The bilog antenna which is enabling the complete frequency range of 80-1000 MHz is placed 3m away from the equipment. The required field strength is determined by placing the field strength meter(s) on top of or directly alongside the equipment under test and monitoring the field strength meter via a remote field strength indicator outside the enclosure while adjusting the continuous-wave to the applicable antennae.
- c. The test is normally performed with the antenna facing the most sensitive side of the EUT. The polarization of the field generated by the biconical antenna necessitates testing each position twice, once with the antenna positioned vertically and again with the antenna positioned horizontally. The circular polarization of the field from the log-spiral antenna makes a change of position of the antenna unnecessary.
- d. At each of the above conditions, the frequency range is swept 80-1000 MHz, pausing to adjust the R.F. signal level or to switch oscillators and antenna. The rate of sweep is in the order of 1.5×10^{-3} decades/s. The sensitive frequencies or frequencies of dominant interest may be discretely analyzed.

10.3 Test Severity Levels

Frequency Band : 80-1000 MHz

Level	Test field strength (V/m)
1	1
2	3
3	10
X	Specified

Remark : "X" is an open class.

Test Engineer :

Eric

Eric Liu

10.4 Photographs of Radio Frequency Electromagnetic Field Immunity Test

FRONT VIEW



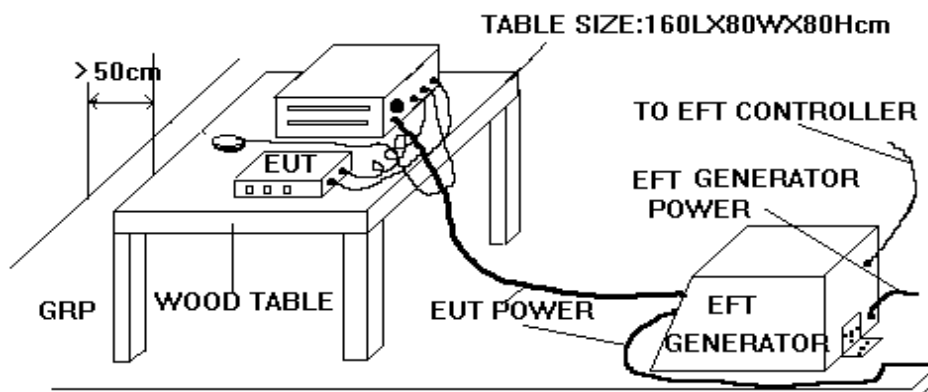
REAR VIEW



11. Electrical Fast Transient/Burst Immunity Test (EFT/BURST)

- FINAL TEST RESULT : **PASS**
- Pass Performance Criteria : A
- Required performance criteria : B
- Basic Standard : IEC 61000-4-4:1995
- Product Standard : EN 55024:1998/A1:2001
- Level : on Power Supply -- 2
- : on I/O signal, data and control line -- 2
- Test Voltage : on Power Supply -- $\pm 0.5 / \pm 1.0$ KV
- : on I/O signal, data and control line -- $\pm 0.25 / \pm 0.5$ KV
- Temperature : 21°C
- Relative Humidity : 53%
- Atmospheric Pressure : 98.6kPa
- Test Date : Oct. 05, 2004
- Observation : Normal

11.1 Test setup



The EUT was placed on a ground reference plane and was insulated from it by an insulating support about 0.1m thick. If the EUT is table-top equipment, it was located approximately 0.8m above the GRP. The GRP was a metallic sheet (copper or aluminum) of 0.25 mm ,minimum thickness; other metallic may be used but they shall have at least 0.65 mm thickness. It shall project beyond the EUT by at least 0.1m on all sides and connected to the protective earth. In the SPORTON EMC LAB. we provided 1 mm thickness aluminum ground reference plane or 1 mm thickness stainless steel ground reference plane. The minimum size of the ground reference plane is 1 m x 1 m, the exact size depending on the dimensions of the EUT. It was connected to the protective grounding system. The EUT was arranged and connected according to its functional requirements. The minimum distance between the EUT and other conductive structures, except the GRP. beneath the EUT, was more than 0.5 m. Using the coupling clamp, the minimum distance between the coupling plates and all other conductive structures, except the GRP. beneath the EUT, was more than 0.5 m. The length of the signal and power lines between the coupling device and the EUT was 1m or less.

11.2 Test on Power Line

- a. The EFT/B-generator was located on the GRP.. The length from the EFT/B-generator to the EUT as not exceed 1 m.
- b. The EFT/B-generator provides the ability to apply the test voltage in a non-symmetrical condition to the power supply input terminals of the EUT.

11.3 Test on Communication Lines

- a. The coupling clamp is composed of a clamp unit for housing the cable (length more than 3 m), and was placed on the GRP..
- b. The coupling clamp provides the ability of coupling the fast transient/bursts to the cable under test.

11.4 Test Procedure

- a. In order to minimize the effect of environmental parameters on test results, the climatic conditions when test is carrying out shall comply with the following requirements:
 - ambient temperature: 15 to 35 ;
 - relative humidity : 45% to 75%;
 - atmospheric pressure : 86 kPa (860 mbar) to 106 kPa (1060 mbar).
- b. In order to minimize the effect of environmental parameters on test results, the electromagnetic environment of the laboratory shall not influence the test results.
- c. The variety and diversity of equipment and systems to be tested make it difficult to establish general criteria for the evaluation of the effects of fast transients/bursts on equipment and systems.
- d. The test results may be classified on the basic of the operating conditions and the functional specification of the equipment under test, according to the following performance criteria :
 - Normal performance within the specification limits.
 - Temporary degradation or loss of function or performance which is self-recoverable.
 - Temporary degradation or loss of function or performance which requires operator intervention or system reset.
 - Degradation or loss of function which is not recoverable due to damage of equipment (components).

11.5 Test Severity Levels

The following test severity levels are recommended for the fast transient/burst test :

Open circuit output test voltage $\pm 10\%$		
Level	On Power Supply	On I/O signal, data and control line
1	0.5 KV	0.25 KV
2	1.0 KV	0.50 KV
3	2.0 KV	1.00 KV
4	4.0 KV	2.00 KV
X	Specified	Specified

Remark : " X " is an open level. The level is subject to negotiation between the user and the manufacturer or is specified by the manufacturer.

Test Engineer :

Eric

Eric Liu

11.6 Photographs of Electrical Fast Transient/Burst Immunity Test

FRONT VIEW



REAR VIEW



CLAMP



12. Surge Immunity Test

- FINAL TEST RESULT : **PASS**
- Pass performance Criteria : A
- Required performance criteria : B
- Basic Standard : IEC 61000-4-5:1995
- Product Standard : EN 55024:1998/A1:2001
- Surge wave form (Tr/Th) : 1, 2/50 (8/20) μ s
- Level : 3 for AC power port,
2 for BNC port
- Test Voltage : $\pm 0.5 / \pm 1.0 / \pm 2.0$ KV for AC power port,
 $\pm 0.5 / \pm 1.0$ KV for BNC port
- Temperature : 23°C
- Relative Humidity : 54%
- Atmospheric Pressure : 98.6kPa
- Test Date : Oct. 05, 2004
- Observation : Normal

12.1 Test Record

< AC power port >

Voltage (KV)	Test Location	Polarity	Phase Angle			
			0°	90°	180°	270°
1 KV	L - N	+	A	A	A	A
		-	A	A	A	A
2 KV	L - PE	+	A	A	A	A
		-	A	A	A	A
	N - PE	+	A	A	A	A
		-	A	A	A	A

⊕ Remark : PE = DC output GND

< AC power port >

Voltage (KV)	Test Location	Polarity	Phase Angle			
			0°	90°	180°	270°
1 KV	L - N	+	A	A	A	A
		-	A	A	A	A

⊕ Remark : PE = DC output GND

12.2 Test Level

Level	Open-circuit test voltage, $\pm 10\%$, KV
1	0.5
2	1.0
3	2.0
4	4.0
x	Specified
NOTE - x is an open class. This level can be specified in the product specification.	

12.3 Test Procedure

- a. Climatic conditions
The climatic conditions shall comply with the following requirements :
 - ambient temperature : 15 to 35
 - relative humidity : 10 % to 75 %
 - atmospheric pressure : 86 kPa to 106 kPa (860 mbar to 1060 mbar)
- b. Electromagnetic conditions
The electromagnetic environment of the laboratory shall not influence the test results.
- c. The test shall be performed according the test plan that shall specify the test set-up with
 - generator and other equipment utilized;
 - test level (voltage/current);
 - generator source impedance;
 - internal or external generator trigger;
 - number of tests : at least five positive and five negative at the selected points;
 - repetition rate : maximum 1/min.
 - inputs and outputs to be tested;
 - representative operating conditions of the EUT;
 - sequence of application of the surge to the circuit;
 - phase angle in the case of a.c. power supply;
 - actual installation conditions, for example :
 - AC : neutral earthed,
 - DC : (+) or (-) earthed to simulated the actual earthing conditions.



- d. If not otherwise specified the surges have to be applied synchronized to the voltage phase at the zero-crossing and the peak value of the a.c. voltage wave (positive and negative).
- e. The surges have to be applied line to line and line(s) and earth. When testing line to earth, the test voltage has to be applied successively between each of the lines and earth, if there is no other specification.
- f. The test procedure shall also consider the non-linear current-voltage characteristics of the equipment under test. Therefore the test voltage has to be increased by steps up to the test level specified in the product standard or test plan.
- g. All lower levels including the selected test level shall be satisfied. For testing the secondary protection, the output voltage of the generator shall be increased up to the worstcase voltage breakdown level (let-through level) of the primary protection.
- h. If the actual operating signal sources are not available, the may be simulated. Under no circumstances may the test level exceed the product specification. The test shall be carried out according the a test plan.
- i. To find all critical points of the duty cycle of the equipment, a sufficient number of positive and negative test pulses shall be applied. For acceptance test a previously unstressed equipment shall be used to the protection devices shall be replaced.

Test Engineer :

Eric

Eric Liu

12.4 Photographs of Surge Immunity Test

FRONT VIEW



REAR VIEW



13. Conducted Disturbances Induced by Radio-Frequency Field Immunity Test (CS)

- FINAL TEST RESULT : **PASS**
- Pass performance Criteria : A
- Required performance criteria : A
- Basic Standard : IEC 61000-4-6:1996
- Product Standard : EN 55024:1998/A1:2001
- Level : 2
- Test Voltage : 3 V/rms (Modulated, 1KHz, 80%, AM)
- Frequency Range : 0.15 MHz to 80 MHz
- Dwell time : 2.9 seconds
- Frequency step size : 1 %
- Coupling mode : CDN-M16 SW M3 for AC power port, CDN S1/75 for signal port
- Temperature : 21°C
- Relative Humidity : 53%
- Atmospheric Pressure : 98.6kPa
- Test Date : Oct. 05, 2004
- Observation : Normal

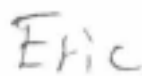
13.1 Test Level

Level	Voltage Level (EMF),
1	1 V
2	3 V
3	10 V
x	Specified
NOTE - x is an open class. This level can be specified in the product specification.	

13.2 Test Procedure

- a. The EUT shall be operated within its intended climatic conditions. The temperature and relative humidity should be recorded.
- b. This test method test can be performed without using a sell shielded enclosure. This is because the disturbance levels applied and the geometry of the setups are not likely to radiated a high amount of energy, especially at the lower frequencies. If under certain circumstances the radiated energy is too high, a shielded enclosure has to be used.
- c. The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn while the other non-excited RF-input ports of the coupling devices are terminated by a 50 ohm load resistor.
- d. The frequency range is swept from 150 KHz to 80 MHz, using the signal levels established during the setting process, and with the disturbance signal 80% amplitude modulated with a 1KHz sinewave, pausing to adjust the RF-signal level or to switch coupling devices as necessary. The rate of sweep shall no exceed 1.5×10^{-3} decades/s. Where the frequency is swept incrementally, the step size shall no exceed 1% of the start and thereafter 1% of the preceding frequency value.
- e. The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies e.g. clock frequency(ies) and harmonics or frequencies of dominant interest shall be analyzed separately.
- f. An alternative test procedure may be adopted, wherein the frequency range is swept incrementally, with a step size not exceeding 4% of the start ad thereafter 4% of the preceding frequency value. The test level should be at least twice the value of the specified test level.
- g. In cases of dispute, the test procedure using a step size not exceeding 1% of the start and thereafter 1% of preceding frequency value shall take precedence.
- h. Attempts should be made to fully exercise the EUT during testing, and to fully interrogate all exercise modes selected for susceptibility.
- i. The use of special exercising programs is recommended.
- j. Testing shall be performed according to a Test Plan, which shall be included in the test report.
- k. It may be necessary to carry out some investigatory testing in order to establish some aspects of the test plan.

Test Engineer :



Eric Liu

13.3 Photographs of CS Immunity Test

FRONT VIEW



REAR VIEW



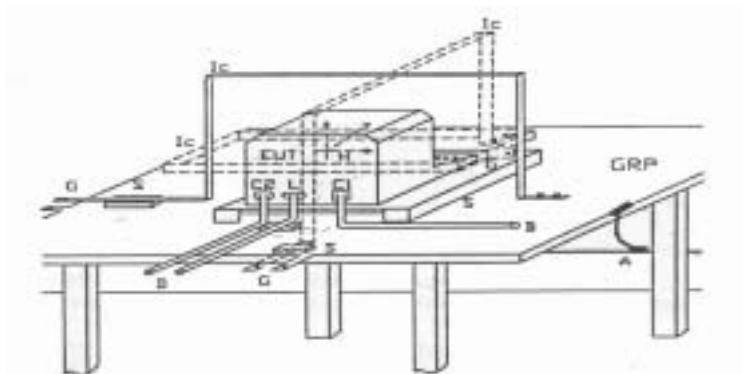
14. Power Frequency Magnetic Field Immunity Tests

- FINAL TEST RESULT : **PASS**
- Pass performance Criteria : A
- Required performance criteria : A
- Basic Standard : IEC 61000-4-8:1993
- Product Standard : EN 55024:1998/A1:2001
- Temperature : 21°C
- Relative Humidity : 52%
- Atmospheric Pressure : 98.6kPa
- Test Date : Oct. 05, 2004
- Observation : Normal

14.1 Test Record

Power Frequency Magnetic Field	Testing duration	Coil Orientation
50Hz, 1A/m	1.0 Min	X-axis
50Hz, 1A/m	1.0 Min	Y-axis
50Hz, 1A/m	1.0 Min	Z-axis

14.2 Test Setup



GRP : Ground plane
 A : Safety earth
 S : Insulating support
 EUT : Equipment under test
 Lc : Induction coil
 E : Earth terminal

C1 : Power supply circuit
 C2 : Signal circuit
 L : Communication line
 B : To power supply source
 D : To signal source, simulator
 G : To the test generator

Test Engineer :

Eric
 Eric Liu

14.3 Photographs of Power Frequency Magnetic Field Immunity Tests

FRONT VIEW



REAR VIEW



15. Voltage Dips and Voltage Interruption Immunity Tests

- FINAL TEST RESULT : **PASS**
- Pass performance Criteria : C for voltage interruption, A voltage dips
- Required performance criteria : C for voltage interruption, B/C for voltage dips
- Basic Standard : IEC 61000-4-11:1994
- Product Standard : EN 55024:1998/A1:2001
- Temperature : 21°C
- Relative Humidity : 53%
- Atmospheric Pressure : 98.6kPa
- Test Date : Oct. 05, 2004
- Observation : Normal

15.1 Test Record of Voltage Interruption

Voltage (V)	Phase Angle		% Reduction	Duration (periods)	Observation
	0 °	180 °			
230	C	C	>95%	250	After the interruption, the power of EUT was off. The power of the EUT must be reset by the operator

15.2 Test Record of Voltage Dips

Voltage (V)	Phase Angle		% Reduction	Duration (periods)	Observation
	0 °	180 °			
230	A	A	30%	25	Normal
230	A	A	>95%	0.5	Normal

15.3 Testing Requirement and Procedure

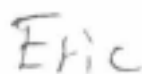
The test was based on IEC 61000-4-11:1994

15.4 Test Conditions

1. Source voltage and frequency : 230V / 50Hz, Single phase.
2. Test of interval : 10 sec.
3. Level and duration : Sequency of 3 dips/interrupts.
4. Voltage rise (and fall) time : 1 ~ 5 μ s.
5. Test severity :

Voltage dip and Interrupt reduction (%)	Test Duration (ms)
30	500
60	100
100	10
100	80
100	5000

Test Engineer :



Eric Liu

15.5 Photographs of Voltage Dips and Voltage Interruption Immunity Tests

FRONT VIEW



REAR VIEW



16. List of Measuring Equipment Used

< EMI >

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Receiver	R&S	ESCS 30	836858/024	9 KHz - 2.75 GHz	Jul. 09, 2004	Conduction (CO01-LK)
LISN	Rolf Hoine	NNB-2/16Z	98087	9KHz ~ 30MHz	Aug. 30, 2004	Conduction (CO01-LK)
LISN	Rolf Hoine	NNB-2/16Z	98009	9KHz ~ 30MHz	Aug. 30, 2004	Conduction (CO01-LK)
RF Cable-CON	Suhner Switzerland	RG223/U	CB017	9KHz~30MHz	Dec. 18, 2003	Conduction (CO01-LK)
Open Area Test Site	SPORTON	OATS-10	OS01-LK	30MHz~1GHz 10m,3m	Nov. 22, 2003	Radiation (OS01-LK)
Spectrum Analyzer	Advantest	R3261C	81720145	9KHz-2.6GHz	May 21, 2004	Radiation (OS01-LK)
Amplifier	HP	8447D	2944A08291	100KHz -1.3GHz	Feb. 11, 2004	Radiation (OS01-LK)
Bilog Antenna	CHASE	CBL6112A	2672	30MHz -2GHz	Jun. 05, 2004	Radiation (OS01-LK)
Turn Table	EMCO	2080	9711-2022	0 ~ 360 degree	N/A	Radiation (OS01-LK)
Antenna Mast	EMCO	2075	9710-2101	1 m- 4 m	N/A	Radiation (OS01-LK)
RF Cable-R10m	BELDEN	RG8/U	CB005	30MHz~1GHz	Jan. 20, 2004	Radiation (OS01-LK)
RF Cable-R03m	BELDEN	RG8/U	CB006	30MHz~1GHz	Jan. 20, 2004	Radiation (OS01-LK)

Calibration Interval of instruments listed above is one year.

< EMS >

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
ESD Simulator	EM test	ESD30C P30C	1101-21	Air: 0 KV - 25 KV Contact: 0 KV -25KV	Aug. 02, 2004	ESD
Antenna	CHASE	CBL6121A	1027	26 MHz - 1 GHz	Dec. 08, 2003	RS01
Field Strength Monitoring Antennas (Probe)	AR	FP3000A	16077	0.1 MHz - 1 GHz	Aug. 12, 2004	RS
RS immunity Test system	HP	EMS test System	2062	80 MHz - 1 GHz 3V/m 10v/m	Dec. 08, 2003	RS
Amplifier	AR	100W 1000M3	16060	80 MHz - 1 GHz	Dec. 08, 2003	RS
Power Meter	EMC Automation	438A	3513U04050	100 KHz -4.2 GHz	Dec. 08, 2003	RS
Signal Generator	HP	8648A	3426A00771	100 KHz - 1 GHz	Dec. 04, 2003	RS
Power Sensor	HP	8481D	3318A13140	100 KHz - 1 GHz	Dec. 08, 2003	RS
Power Sensor	HP	8482A	3318A26464	100 KHz - 1 GHz	Dec. 08, 2003	RS
Attenuator	HP	8491A	53603	100 KHz - 1 GHz	Dec. 08, 2003	RS
EFT Generator	EMC -PARTNER	TRANSIENT -2000	TRA2000-376	0KV - 4.4 KV	Apr. 29, 2004	EFT
EFT/Clamp	EMC -PARTNER	CH4242	CNEFT1000 -200	0 KV -1 KV	N/A	EFT
SURGE Generator	EMC -PARTNER	TRANSIENT -2000	TRA2000-376	0 KV -6 KV/2 0KV-500V/12	Apr. 29, 2004	SURGE
SURGE/CDN	EMC -PARTNER	DN-T1+CN-T1	CDNKIT1000T-22	0.5KV~2KV	N/A	SURGE
Conducted Immunity Test System	FRANKONIA	CIT-10	102C3115	100KHz ~ 266MHz	Apr. 08, 2004	CS
Conducted Immunity Test System Amplifier	A.R	75A220	16980	15~230MHz FM1KHz80 % 75W	Apr. 09, 2004	CS
Coupling and Decoupling Network	SCHAFFNER	CDN M016	16670	150KHz ~ 230MHz	Apr. 17, 2004	CS
Coupling and Decoupling Network	FRANKONIA	CDN S1/75	A3005008	150KHz ~ 230MHz	Apr. 17, 2004	CS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Magnetic Generator	FCC (KEYTEK)	F-1000-4-8-G-125A	03007	30A//CONTINUOUS 100A/2Hrs 230A/30SEC	Apr. 13, 2004	PFMF
Magnetic field Immunity Loop	FCC (KEYTEK)	F-1000-4-8/9/10-L-M	03003	30A//CONTINUOUS 100A/2Hrs 230A/30SEC	Apr. 13, 2004	PFMF
DIP Generator	EMC -PARTNER	TRANSIENT -2000	TRA2000-376	230VA/50Hz/60Hz 0%Open/5S 0%Short/5S 40%/0.10S 70%/0.01S	Apr. 29, 2004	DIP
Harmonic/Flicker Test System	EMC PARTNER	Harmonics -1000	HAR1000-41	4000VA 16A PEAK	Nov. 18, 2003	Harmonics, Flicker

Calibration Interval of instruments listed above is one year.

17. Notice for Class A Product

This Notice is for class A product only. If the Equipment under Test is a class B product, this notice should be disregarded.

Class A ITE is a category of all other ITE which satisfies the class A ITE limits but not the class B ITE limits. Such equipment should not be restricted in its sale but the following warning shall be included in the instructions for use:

Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

18. Declaration of Conformity and the CE Mark

There are three possible procedures pertaining to the declaration of conformity :

18.1 Conformity Testing and Declaration of Conformity by the Manufacturer or His Authorized Representative Established within the Community or by an Importer.

- Article 10 (1) of the EMC Directive,
- § 3 (1) no. 2a of the EMC Act.

18.2 Declaration of Conformity Issued by the Manufacturer or His Authorized Representative Established within the Community or by an Importer Following Testing of the Product and Issued of an EC certificate of conformity by a competent body.

- Article 10 (2) of the EMC Directive,
- § 3 (1) no. 2b of the EMC Act.

18.3 Declaration of Conformity Issued by the Manufacturer or His Authorized Representative Established within the Community or by an Importer Following Testing and Certification of the Product by a Notified Body.

- Article 10 (5) of the EMC Directive,
- § 3 (1) no. 2b of the EMC Act (radio transmitting installations).

18.4 Specimen For The CE Marking Of Electrical / Electronical Equipment

The components of the CE marking shall have substantially the same vertical dimension, which may not be less than 5 mm.



APPENDIX A. Photographs of EUT



