

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) and EN 61000-6-2:2001
(IEC 61000-4-2:1995/A1:1998, IEC 61000-4-3:1995/A1:1998, 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 : 1-channel MPEG 1/2/4 video encode module

Model No. : DVP-1410

Applicant : **ADVANTECH CO., LTD.**
No. 1, Alley 20, Lane 26, Rueiguang Road,
Neihu District, Taipei, Taiwan, R.O.C.

- The test result refers exclusively to the test presented test model / sample.
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- This test report is only applicable to European Community.

← - - - - **Sformatowano:** Wcięcie: Z
lewej: 2,83 cm, Wysunięcie:
0,56 cm, Punktowane +
Poziom: 1 + Wyrównanie: 0,9
cm + Tabulator po: 1,6 cm +
Wcięcie: 1,6 cm

SPORTON International Inc.

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

SPORTON International Inc.

TEL : 886-2-2696-2468

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History of this test report

Original Report Issue Date: Jan. 14, 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) and EN 61000-6-2:2001
(IEC 61000-4-2:1995/A1:1998, IEC 61000-4-3:1995/A1:1998, 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 : 1-channel MPEG 1/2/4 video encode module

Model No. : DVP-1410

Applicant : **ADVANTECH CO., LTD.**
No. 1, Alley 20, Lane 26, Rueiguang Road,
Neihu District, Taipei, Taiwan, 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) and EN 61000-6-2:2001 (IEC 61000-4-2:1995/A1:1998,
IEC 61000-4-3:1995/A1:1998, 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 Jan. 13, 2004 at **SPORTON International Inc.** LAB.

 Jan. 15, 2004

Alex Chen
Manager

SPORTON International Inc.

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

Usunięto: 61

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, R.O.C.

1.2 Manufacturer

Same as 1.1.

1.3 Basic Description of Equipment under Test

Equipment : 1-channel MPEG 1/2/4 video encode module
Model No. : DVP-1410
Trade Name : ADVANTECH
BNC Cable (x2) : Non-Shielded, 0.7m
Power Supply Type : From System
AC Power Cable : N/A

1.4 Feature of Equipment under Test

- Supporting MPEG-1/2/4 realtime video encoding up to D1 resolution and 30/25fps frame rate
- NTSC/PAL Composite video input through BNC or pin-header
- Hardware video encoding engine on board
- Built-in 128-byte user programmable EEPROM space
- Up to 4-modules installed into one PC system, setting by on-board DIP switch
- USB 1.1 interface, USB-bus powered
- Very low power consumption design
- Supporting MS-Windows 2000/XP/XPe with driver and SDK

Usunięto: 61

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 Class A & EN 55011 Group I Class A.
- b. The complete test system included ViewSonic Monitor, BTC PS/2 Keyboard, LOGITECH PS/2 Mouse, HP Printer, ACEEX Modem, TONICA CCD, Giantec Video Distribute, EUT and Genuine PC for EMI test.
- c. The complete test system included ViewSonic Monitor, DELL PS/2 Keyboard, DELL PS/2 Mouse, TONICA CCD, Giantec Video Distribute, EUT and COMPAQ PC for EMS test.
- d. Frequency range investigated: Conduction 150 KHz to 30 MHz, Radiation 30 MHz to 1000MHz.

Sformatowano: Wcięcie: Z lewej: 1,14 cm, Wysunięcie: 0,56 cm, Numerowanie + Poziom: 1 + Styl numeracji: a, b, c, ... + Rozpocznij od: 1 + Wyrównanie: Na lewo + Wyrównanie: 0 cm + Tabulator po: 0,85 cm + Wcięcie: 0,85 cm

2.2 Description of Test System

< EMI >

Support Unit 1. -- 15" Monitor (ViewSonic)

FCC ID	: N/A
Model No.	: E55
Power Supply Type	: Switching
Power Cord	: Non-Shielded
Serial No.	: SP0004
Data Cable	: Shielded, 1.5m
Remark	: This support device was tested to comply with FCC standards and authorized under a declaration of conformity.

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

FCC ID	: E5XKB9110
Model No.	: 9110
Serial No.	: SP0008
Data Cable	: Shielded, 1.75m

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

FCC ID	: DZL211029
Model No.	: M-S34
Serial No.	: SP0008
Data Cable	: Non-shielded, 1.8m

Usunięto: 61

Support Unit 4. -- Printer (HP)

FCC ID : B94C2642X
Model No. : C2642A
Power Supply Type : Linear
Power Cord : Non-Shielded
Serial No. : SP0015
Data Cable : Braided-Shielded, 1.2m

Support Unit 5. -- Modem (ACEEX)

FCC ID : IFAXDM1414
Model No. : DM1414
Power Supply Type : Linear
Power Cord : Non-Shielded
Serial No. : SP0015
Data Cable : Shielded, 1.15m

Support Unit 6. -- CCD (TONICA)

FCC ID : N/A
Model No. : TL-004
Serial No. : SP0027
BNC Cable : Non-Shielded, 1.0m

Support Unit 7. -- Video Distribute (Giantec)

FCC ID : N/A
Model No. : VD-106
Serial No. : SP0100
BNC Cable : Non-Shielded, 0.7m

Support Unit 8. -- Personal Computer (Genuine)

FCC ID : N/A
Model No. : GP-0 PW888
Power Supply Type : Switching
Power Cord : Non-Shielded
Serial No. : SP0002
Remark : This support device was tested to comply with FCC standards and
authorized under a declaration of conformity.

Usunięto: 61

< EMS >

Support Unit 1. -- Monitor (ViewSonic)

FCC ID : N/A
Model No. : VCDTS21553-3P
Power Supply Type : Switching
Power Cord : Non-Shielded
Serial No. : SP0005
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. : SP0008
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 3. -- PS/2 Mouse (DELL)

FCC ID : N/A
Model No. : M-SAW34
Serial No. : SP0009
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 (TONICA)

FCC ID : N/A
Model No. : TL-004
Serial No. : SP0027
BNC Cable : Non-Shielded, 1.0m

Usunięto: 61

Support Unit 5. – Video Distribute (Giantec)

FCC ID : N/A
Model No. : VD-106
Serial No. : SP0100
BNC Cable : Non-Shielded, 0.7m

Support Unit 6. – Personal Computer (COMPAQ)

FCC ID : N/A
Model No. : DeskPRO
Power Supply Type : Switching
Power Cord : Non-Shielded
Serial No. : SP0002
Remark : This support device was tested to comply with FCC standards and
authorized under a declaration of conformity.

Usunięto: 61

3. Test Software

< EMI >

An executive program, "EMCTEST.EXE" under WIN 2000, which generates a complete line of continuously repeating "H" patterns was used as the test software.

The program was executed as follows :

- a. Turn on the power of all equipment.
- b. The EUT reads the test program from the hard disk drive and runs it.
- c. The EUT sends "H" messages to the monitor, and the monitor displays "H" patterns on the screen.
- d. The PC sends " H " messages to the printer, then the printer prints them on the paper.
- e. The PC sends " H " messages to the modem.
- f. The EUT sends "H" messages to the internal hard disk, and the hard disk reads and writes the message.
- g. Repeat the steps from c to f.

At the same time, executed "Wis Studio 7007" to keep displaying the image captured from CCD on monitor.

< EMS >

During testing, executed "Wis Studio 7007" under WIN XP to keep displaying the image captured from CCD on monitor.

4. General Information of Test

4.1 Test Facility

< EMI >

This test was carried out by SPORTON International Inc.

Openarea Test Site Location : No. 3, Lane 238, Kang Lo Street, Nei Hwu District,
Taipei 11424, Taiwan, R.O.C..
TEL : 886-2-2631-4739
FAX : 886-2-2631-9740

Test Site No. : Conduction : CO01-NH; Radiation : OS02-NH

< 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 & EN 61000-6-2

(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 & EN 61000-6-2

(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.

Sformatowano: Wcięcie: Z
lewej: 1 cm, Wysunięcie: 0,59
cm, Numerowanie + Poziom: 1
+ Styl numeracji: a, b, c, ... +
Rozpocznij od: 1 +
Wyrównanie: Na lewo +
Wyrównanie: 0 cm +
Tabulator po: 0,75 cm +
Wcięcie: 0,75 cm, Tabulatory:
Nie w 0,75 cm

Usunięto: 61

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 ESH3)
 - Attenuation 10 dB
 - Start Frequency 0.15 MHz
 - Stop Frequency 30 MHz
 - IF Bandwidth 9KHz

Usunięto: 61

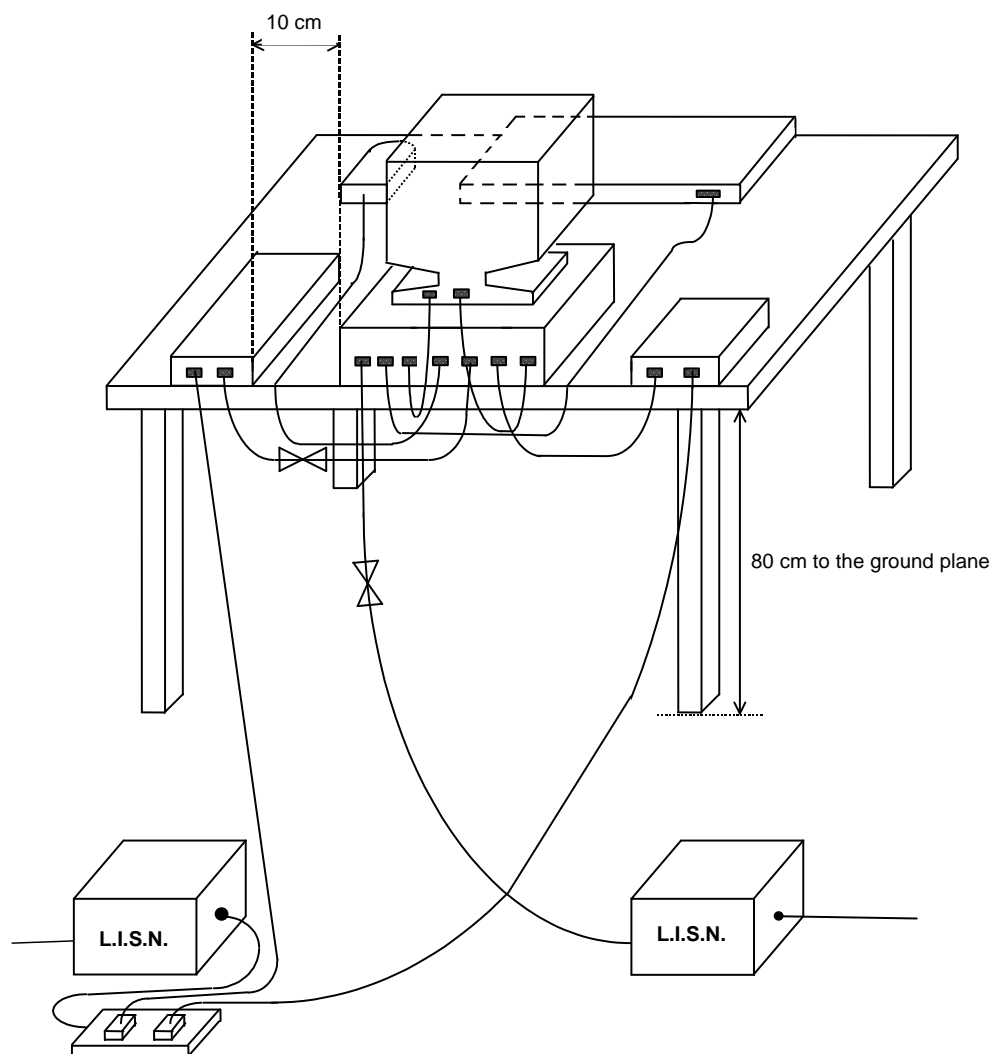
5.2 Test Procedures

- 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.

Sformatowano: Wcięcie: Z lewej: 1,1 cm, Wysunięcie: 0,63 cm, Numerowanie + Poziom: 1 + Styl numeracji: a, b, c, ... + Rozpocznij od: 1 + Wyrównanie: Na lewo + Tabulator po: 1,63 cm + Wcięcie: 1,4 cm, Tabulatory: Nie w 1,63 cm

Usunięto: 61

5.3 Typical Test Setup Layout of Conducted Powerline



Usunięto: 61

5.4 Test Result of AC Powerline Conducted Emission

- Frequency Range of Test : from 0.15 MHz to 30 MHz
- Temperature : 22°C
- Relative Humidity : 51%
- Test Date : Dec. 30, 2003
- All emissions not reported here are more than 10 dB below the prescribed limit.

■ The test was passed at the minimum margin that marked under gray area in the following table.

< Line >

Frequency (MHz)	Level (dBμV)	Over Limit (dB)	Limit Line (dBμV)	Read Level (dBμV)	Insertion Loss (dB)	Cable Loss (dB)	Detect Mode (QP or AV)
0.151	51.62	-27.38	79.00	51.50	0.10	0.02	QP
0.151	37.22	-28.78	66.00	37.10	0.10	0.02	AV
0.226	39.44	-39.56	79.00	39.30	0.10	0.04	QP
0.226	30.34	-35.66	66.00	30.20	0.10	0.04	AV
0.264	37.64	-41.36	79.00	37.50	0.10	0.04	QP
0.264	30.54	-35.46	66.00	30.40	0.10	0.04	AV
3.657	32.99	-33.01	66.00	32.60	0.19	0.19	QP
3.657	31.09	-28.91	60.00	30.70	0.19	0.19	AV
9.283	37.08	-28.92	66.00	36.50	0.29	0.29	QP
9.283	30.78	-29.22	60.00	30.20	0.29	0.29	AV
11.627	37.90	-28.10	66.00	37.30	0.30	0.30	QP
11.627	29.60	-30.40	60.00	29.00	0.30	0.30	AV

Sformatowano: Wcięcie: Z lewej: 0,99 cm, Wysunięcie: 0,78 cm, Punktowane + Poziom: 1 + Wyrównanie: 1 cm + Tabulator po: 1,85 cm + Wcięcie: 1,85 cm

Usunięto: 61

< Neutral >

Frequency (MHz)	Level (dBμV)	Over Limit (dB)	Limit Line (dBμV)	Read Level (dBμV)	Insertion Loss (dB)	Cable Loss (dB)	Detect Mode (QP or AV)
0.151	50.32	-28.68	79.00	50.20	0.10	0.02	QP
0.151	38.12	-27.88	66.00	38.00	0.10	0.02	AV
0.226	39.04	-39.96	79.00	38.90	0.10	0.04	QP
0.226	30.54	-35.46	66.00	30.40	0.10	0.04	AV
0.264	37.44	-41.56	79.00	37.30	0.10	0.04	QP
0.264	29.54	-36.46	66.00	29.40	0.10	0.04	AV
3.657	33.09	-32.91	66.00	32.80	0.10	0.19	QP
3.657	30.69	-29.31	60.00	30.40	0.10	0.19	AV
9.752	41.09	-24.91	66.00	40.50	0.29	0.30	QP
9.752	36.19	-23.81	60.00	35.60	0.29	0.30	AV
12.050	40.40	-25.60	66.00	39.80	0.30	0.30	QP
12.050	33.20	-26.80	60.00	32.60	0.30	0.30	AV

Test Engineer : Castries
Castries Huang

Usunięto: 61

5.5 Photographs of Couducted Powerline Test Configuration

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

Sformatowano: Wcięcie: Z lewej: 0,96 cm, Wysunięcie: 0,59 cm, Punktowane + Poziom: 1 + Wyrównanie: 0 cm + Tabulator po: 0,75 cm + Wcięcie: 0,75 cm, Tabulatory: Nie w 0,75 cm

FRONT VIEW



REAR VIEW



Usunięto: 61

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 9 KHz - 2.6 GHz

Usunięto: 61

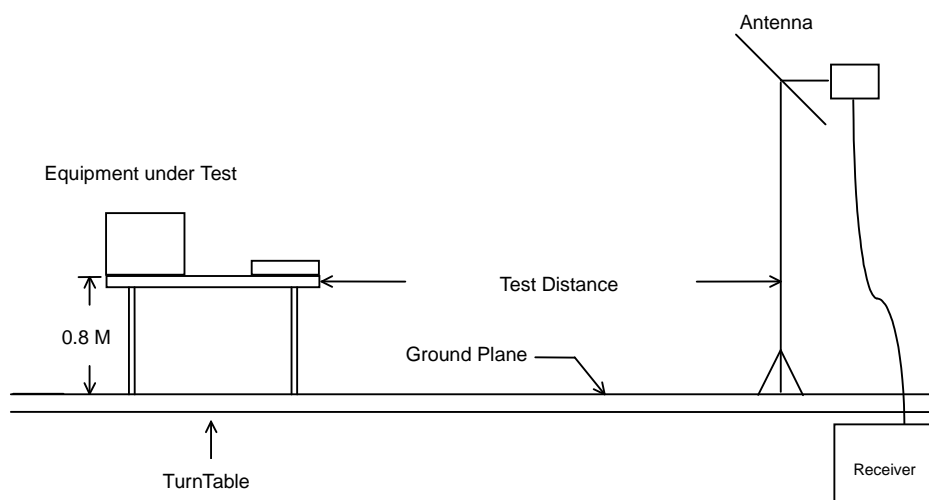
6.2 Test Procedures

- 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.

Sformatowano: Wcięcie: Z lewej: 1,07 cm, Wysunięcie: 0,63 cm, Numerowanie + Poziom: 1 + Styl numeracji: a, b, c, ... + Rozpocznij od: 1 + Wyrównanie: Na lewo + Tabulator po: 1,63 cm + Wcięcie: 1,4 cm, Tabulatory: Nie w 1,63 cm

Usunięto: 61

6.3 Typical Test Setup Layout of Radiated Emission



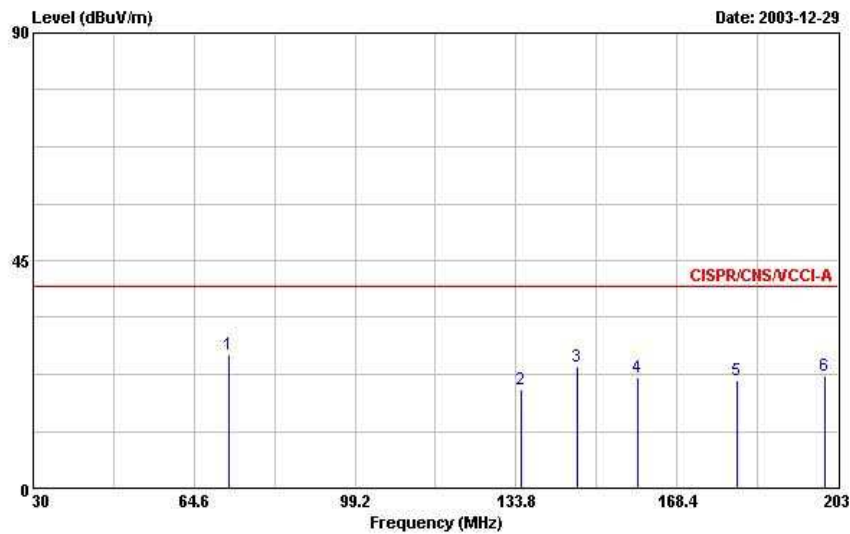
Usunięto: 61

6.4 Test Result of Radiated Emission

- Frequency Range of Test : from 30 MHz to 1000 MHz
- Temperature : 20°C
- Relative Humidity : 61%
- 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

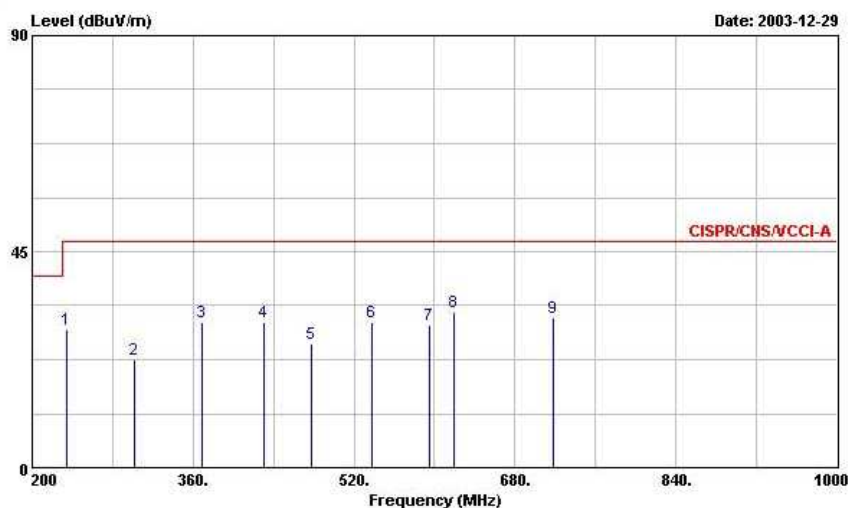
Sformatowano: Wcięcie:
Wysunięcie: 0,92 cm,
Punktowane + Poziom: 1 +
Wyrównanie: 1,06 cm +
Tabulator po: 1,91 cm +
Wcięcie: 1,91 cm



Site : OS02-NH
Condition : CISPR/CNS/VCCI-A 10m OS02-ANT-06-26-2003 HORIZONTAL
EUT : 1-channel MPEG 1/2/4 encode module
POWER : 230VAC
MEMO : DVP-1410

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp		Ant	Table
	MHz	dBuV/m	Limit	Line	Level Factor	Loss	Factor	Remark	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	72.040	26.46	-13.54	40.00	49.33	6.24	2.00	31.11 Peak	---	---
2	135.010	19.47	-20.53	40.00	36.56	11.22	2.62	30.93 Peak	---	---
3	146.950	24.10	-15.90	40.00	41.60	10.60	2.80	30.90 Peak	---	---
4	160.100	21.75	-18.25	40.00	39.37	10.38	2.88	30.88 Peak	---	---
5	181.200	21.43	-18.57	40.00	39.59	9.57	3.11	30.84 Peak	---	---
6	200.060	22.33	-17.67	40.00	41.25	8.65	3.23	30.80 Peak	---	---

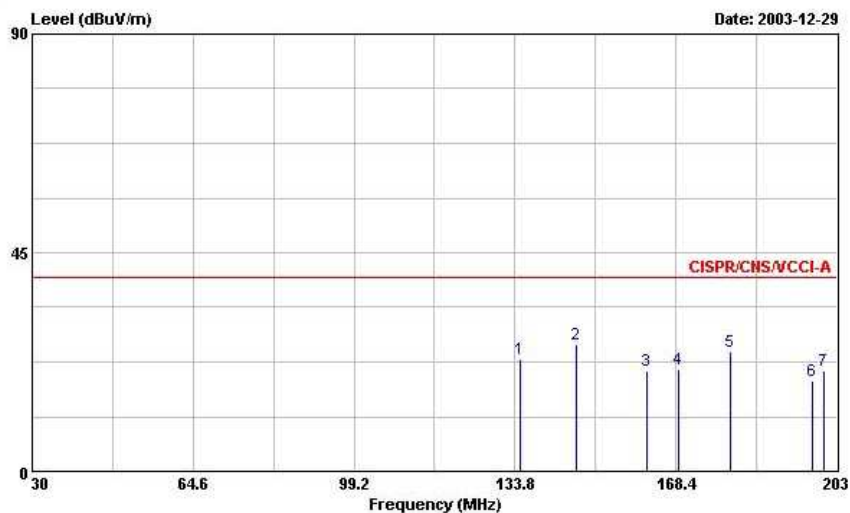
Usunięto: 61



Site : OS02-NH
Condition : CISPR/CNS/VCCI-A 10m OS02-ANT-06-26-2003 HORIZONTAL
EUT : 1-channel MPEG 1/2/4 encode module
POWER : 230VAC
MEMO : DVP-1410

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Remark	Ant	Table
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	Pos	Pos
1	234.400	28.71	-18.29	47.00	45.19	10.57	3.68	30.73	Peak	---
2	301.600	22.38	-24.62	47.00	35.00	13.76	4.22	30.60	Peak	---
3	368.800	30.28	-16.72	47.00	40.80	15.30	4.92	30.74	Peak	---
4	430.400	30.37	-16.63	47.00	39.59	16.27	5.46	30.95	Peak	---
5	477.600	25.89	-21.11	47.00	34.60	16.66	5.81	31.18	Peak	---
6	538.400	30.34	-16.66	47.00	36.99	18.43	6.26	31.34	Peak	---
7	595.200	29.75	-17.25	47.00	33.60	20.81	6.74	31.40	Peak	---
8	619.200	32.30	-14.70	47.00	35.80	20.94	6.90	31.34	Peak	---
9	717.600	31.29	-15.71	47.00	33.80	20.85	7.64	31.00	Peak	---

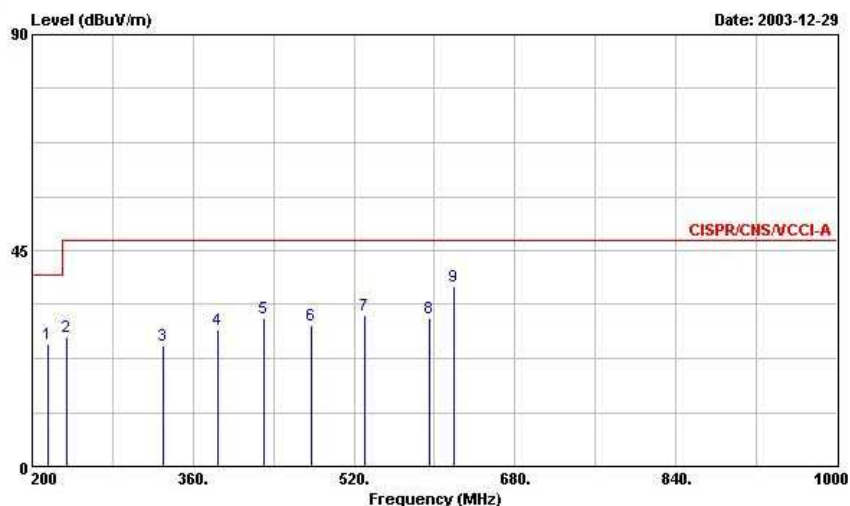
Usunięto: 61



Site : OS02-NH
 Condition : CISPR/CNS/VCCI-A 10m OS02-ANT-06-26-2003 VERTICAL
 EUT : 1-channel MPEG 1/2/4 encode module
 POWER : 230VAC
 MEMO : DVP-1410

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	135.010	23.07	-16.93	40.00	40.16	11.22	2.62	30.93	Peak	---
2	146.950	26.10	-13.90	40.00	43.60	10.60	2.80	30.90	Peak	---
3	162.000	20.81	-19.19	40.00	38.57	10.22	2.90	30.88	Peak	---
4	169.090	20.90	-19.10	40.00	39.14	9.65	2.97	30.86	Peak	---
5	179.990	24.48	-15.52	40.00	42.60	9.62	3.10	30.84	Peak	---
6	197.810	18.55	-21.45	40.00	37.38	8.75	3.22	30.80	Peak	---
7	200.060	20.73	-19.27	40.00	39.65	8.65	3.23	30.80	Peak	---

Usunięto: 61



Site : OS02-NH
 Condition : CISPR/CNS/VCCI-A 10m OS02-ANT-06-26-2003 VERTICAL
 EUT : 1-channel MPEG 1/2/4 encode module
 POWER : 230VAC
 MEMO : DVP-1410

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp		Ant	Table
	MHz	dBuV/m	Limit	Line	Level	Factor	Loss	Factor	Pos	Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	216.000	25.40	-14.60	40.00	43.20	9.56	3.41	30.77	Peak	---
2	234.400	27.11	-19.89	47.00	43.59	10.57	3.68	30.73	Peak	---
3	330.400	25.30	-21.70	47.00	37.00	14.43	4.53	30.66	Peak	---
4	384.800	28.58	-18.42	47.00	38.60	15.68	5.07	30.77	Peak	---
5	430.400	30.97	-16.03	47.00	40.19	16.27	5.46	30.95	Peak	---
6	477.600	29.49	-17.51	47.00	38.20	16.66	5.81	31.18	Peak	---
7	530.400	31.37	-15.63	47.00	38.41	18.10	6.19	31.33	Peak	---
8	595.200	30.75	-16.25	47.00	34.60	20.81	6.74	31.40	Peak	---
9	619.200	37.50	-9.50	47.00	41.00	20.94	6.90	31.34	Peak	100 250

Test Engineer : Castries Huang

Usunięto: 61

6.5 Photographs of Radiated Emission Test Configuration

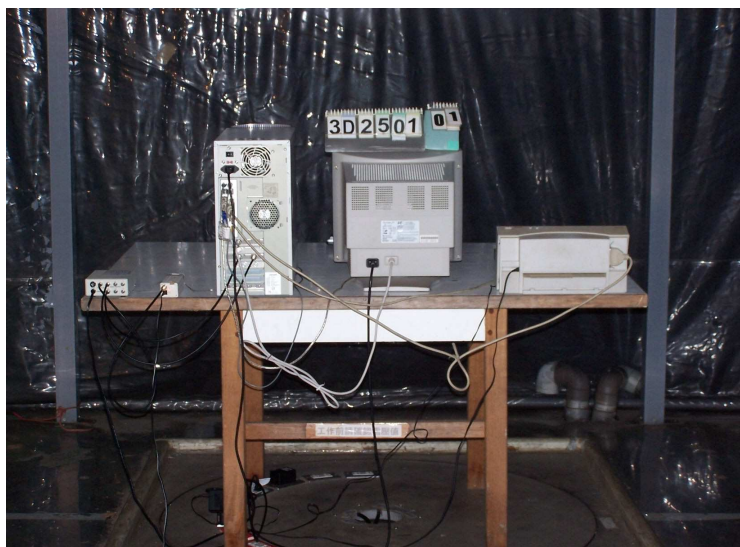
- The photographs show the configuration that generates the maximum emission.

Sformatowano: Wcięcie:
Pierwszy wiersz: 0,24 cm,
Punktowane + Poziom: 1 +
Wyrównanie: 0 cm +
Tabulator po: 0,75 cm +
Wcięcie: 0,75 cm

FRONT VIEW



REAR VIEW



Usunięto: 61

7. Harmonics Test

7.1 Standard

- Standard : EN 61000-3-2: 2000

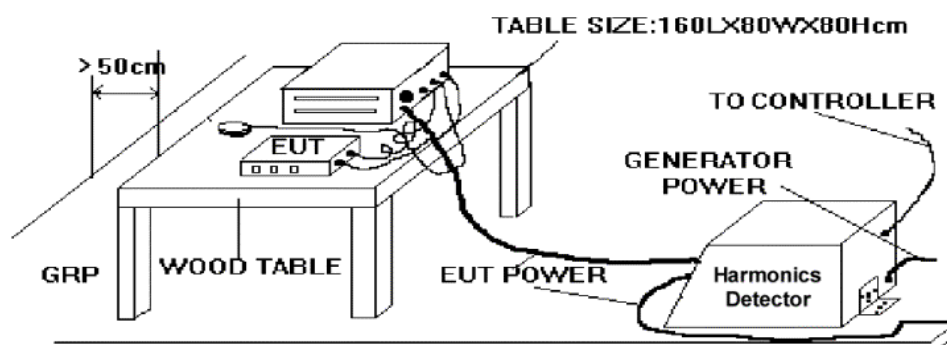
7.2 Test Procedure

The measured values of the harmonics components of the input current, including line current and neutral current, shall be compared with the limits given in Clause 7 of EN 61000-3-2.

7.3 Test Equipment Settings

- Line Voltage : 230 V
- Line Frequency : 50 Hz
- Device Class : A
- Current Measurement Range : High
- Measurement Delay : 10.0 seconds
- Test Duration : 2.00 minutes
- Class determination Pre-test Duration : 10.00 seconds

7.4 Test Setup



Usunięto: 61

7.5 Current Harmonics Test

7.5.1 Test Data Of Current Harmonics

- FINAL TEST RESULT : **PASS**
- Temperature : 23°C
- Relative Humidity : 50%
- Test Date : Jan. 06, 2004

Urms = 230.3V Freq = 50.000 Range: 2 A
 Irms = 0.407A Ipk = 1.187A cf = 2.914
 P = 78.29W Pap = 93.79VA pf = 0.835
 THDi = 25.4 % THDu = 0.10 % Class A
 Test - Time : 2min (100 %)

Test completed, Result: PASSED

Order	Freq. [Hz]	Iavg [A]	Iavg%L [%]	Irms [A]	Irms%L [%]	Imax [A]	Imax%L [%]	Limit [A]
1	50	0.3455		0.3512		0.3549		
2	100	0.0054	0.4973	0.0060	0.5538	0.0088	0.8138	1.0800
3	150	0.0903	3.9275	0.0914	3.9752	0.0922	4.0071	2.3000
4	200	0.0000	0.0000	0.0011	0.2555	0.0021	0.4826	0.4300
5	250	0.0052	0.4604	0.0055	0.4819	0.0057	0.5033	1.1400
6	300	0.0000	0.0000	0.0010	0.3255	0.0018	0.6104	0.3000
7	350	0.0038	0.4915	0.0054	0.6975	0.0061	0.7927	0.7700
8	400	0.0000	0.0000	0.0009	0.3715	0.0013	0.5838	0.2300
9	450	0.0000	0.0000	0.0017	0.4272	0.0028	0.7019	0.4000
10	500	0.0000	0.0000	0.0007	0.3981	0.0011	0.5971	0.1840
11	550	0.0000	0.0000	0.0015	0.4439	0.0022	0.6658	0.3300
12	600	0.0000	0.0000	0.0009	0.5573	0.0011	0.7165	0.1533
13	650	0.0000	0.0000	0.0011	0.5232	0.0017	0.8138	0.2100
14	700	0.0000	0.0000	0.0005	0.3715	0.0010	0.7430	0.1314
15	750	0.0000	0.0000	0.0007	0.4883	0.0009	0.5697	0.1500
16	800	0.0000	0.0000	0.0005	0.4246	0.0010	0.8492	0.1150
17	850	0.0000	0.0000	0.0007	0.5534	0.0010	0.7378	0.1324
18	900	0.0000	0.0000	0.0005	0.4777	0.0011	1.0747	0.1022
19	950	0.0000	0.0000	0.0007	0.6185	0.0013	1.1339	0.1184
20	1000	0.0000	0.0000	0.0006	0.6634	0.0013	1.4595	0.0920
21	1050	0.0000	0.0000	0.0017	1.5951	0.0018	1.7090	0.1071
22	1100	0.0000	0.0000	0.0007	0.8757	0.0013	1.6055	0.0836
23	1150	0.0000	0.0000	0.0012	1.2478	0.0017	1.7470	0.0978
24	1200	0.0000	0.0000	0.0010	1.2738	0.0015	1.9107	0.0767
25	1250	0.0000	0.0000	0.0012	1.3563	0.0017	1.8989	0.0900
26	1300	0.0000	0.0000	0.0007	1.0349	0.0016	2.2424	0.0708
27	1350	0.0000	0.0000	0.0015	1.7578	0.0016	1.9043	0.0833
28	1400	0.0000	0.0000	0.0006	0.9288	0.0015	2.2291	0.0657
29	1450	0.0000	0.0000	0.0009	1.1013	0.0012	1.5734	0.0776
30	1500	0.0000	0.0000	0.0007	1.1942	0.0012	1.9903	0.0613
31	1550	0.0000	0.0000	0.0010	1.3455	0.0012	1.6819	0.0726
32	1600	0.0000	0.0000	0.0006	1.0615	0.0015	2.5476	0.0575
33	1650	0.0000	0.0000	0.0015	2.1484	0.0015	2.1484	0.0682
34	1700	0.0000	0.0000	0.0006	1.1278	0.0012	2.2556	0.0541
35	1750	0.0000	0.0000	0.0010	1.5191	0.0013	2.0888	0.0643
36	1800	0.0000	0.0000	0.0011	2.1495	0.0011	2.1495	0.0511
37	1850	0.0000	0.0000	0.0006	1.0037	0.0011	1.8066	0.0608
38	1900	0.0000	0.0000	0.0007	1.5126	0.0010	2.0168	0.0484
39	1950	0.0000	0.0000	0.0005	0.8464	0.0011	1.9043	0.0577
40	2000	0.0000	0.0000	0.0006	1.3269	0.0009	1.8576	0.0460

Test Engineer : Jason
 Jason Chang

Usunięto: 61

8. Voltage Fluctuations Test

8.1 Standard

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

8.2 Test Procedure

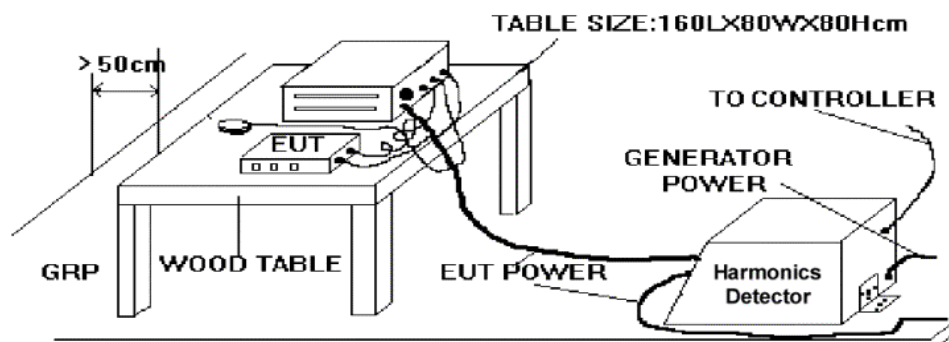
The equipment shall be tested under the conditions of **Clause 5**.

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



Usunięto: 61

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 : 23°C
- Relative Humidity : 50%
- Test Date : Jan. 06, 2004

Urms = 230.1V Freq = 49.987 Range: 2 A
Irms = 0.396A Ipk = 1.181A cf = 2.978
P = 77.55W Pap = 91.23VA pf = 0.850

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

LIN (Line Impedance Network) : Soft LIN 0.24 Ohm +j 0.15 Ohm N: 0.16 Ohm +j 0.10 Ohm

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

Test Engineer :

Jason
Jason Chang

Usunięto: 61

8.6 Photographs Of Harmonics Test, Voltage Fluctuation And Flicker Test

FRONT VIEW



REAR VIEW

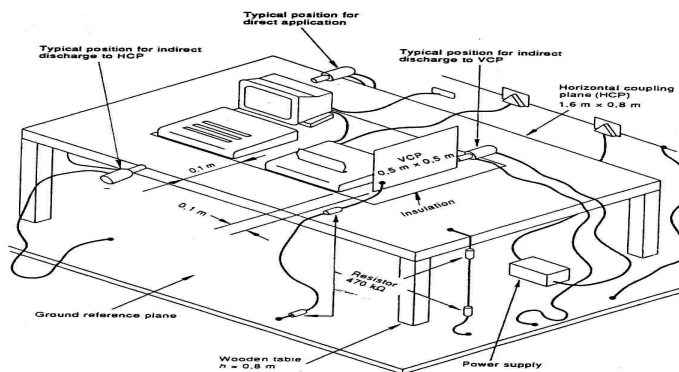


Usunięto: 61

9. Electrostatic Discharge Immunity Test (ESD)

- FINAL TEST RESULT : **PASS**
- Pass Performance Criteria : **B**
- Required performance criteria : B
- Basic Standard : IEC 61000-4-2:1995/A1:1998
- Product Standard : EN 55024:1998/A1:2001 & EN 61000-6-2:2001
- 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 : 23°C
- Relative Humidity : 50%
- Atmospheric Pressure : 96 kPa
- Test Date : Jan. 13, 2004
- Observation : *During testing, the image shown on the screen flickered.
After the test, the equipment continued to operate as intended without operator intervention.*

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.

Usunięto: 61

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.

Usunięto: 61

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°C to 35°C;
 - 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.

Sformatowano:
 Numerowanie + Poziom: 1 +
 Styl numeracji: a, b, c, ... +
 Rozpocznij od: 1 +
 Wyrównanie: Na lewo +
 Wyrównanie: 1 cm +
 Tabulator po: 1,63 cm +
 Wcięcie: 1,4 cm, Tabulatory:

Sformatowano: Wcięcie: Z
 lewej: 1,03 cm, Wysunięcie:
 0,63 cm, Numerowanie +
 Poziom: 1 + Styl numeracji: a,
 b, c, ... + Rozpocznij od: 1 +
 Wyrównanie: Na lewo +
 Wyrównanie: 1 cm +
 Tabulator po: 1,63 cm +
 Wcięcie: 1,4 cm, Tabulatory:
 Nie w 1,85 cm

Sformatowano: Wcięcie: Z
 lewej: 1,03 cm, Wysunięcie:
 0,63 cm, Numerowanie +
 Poziom: 1 + Styl numeracji: a,
 b, c, ... + Rozpocznij od: 1 +
 Wyrównanie: Na lewo +
 Wyrównanie: 1 cm +
 Tabulator po: 1,63 cm +
 Wcięcie: 1,4 cm, Tabulatory:
 Nie w 1,85 cm

Usunięto: 61

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.

Usunięto: 61

9.5 Test Points

9.5.1 Test Result of Air Discharge

Test Point	Voltage	Tested No.
LED	$\pm 2 / \pm 4 / \pm 8$ KV	BY 10
Power Switch	$\pm 2 / \pm 4 / \pm 8$ KV	BY 10
DC Input Jack	$\pm 2 / \pm 4 / \pm 8$ KV	BY 10
AC Socket	$\pm 2 / \pm 4 / \pm 8$ KV	BY 10

Usunięto: 61

9.5.2 Test Result of Contact Discharge

Polarity	Voltage	Tested No. (EN 55024)	Tested No. (EN 61000-6-2)
Horizontal(At Front)	$\pm 2 / \pm 4$ KV	BY 25	BY 10
Horizontal (At Left)	$\pm 2 / \pm 4$ KV	BY 25	BY 10
Horizontal (At Right)	$\pm 2 / \pm 4$ KV	BY 25	BY 10
Horizontal (At Rear)	$\pm 2 / \pm 4$ KV	BY 25	BY 10
Vertical (At Front)	$\pm 2 / \pm 4$ KV	BY 25	BY 10
Vertical (At Left)	$\pm 2 / \pm 4$ KV	BY 25	BY 10
Vertical (At Right)	$\pm 2 / \pm 4$ KV	BY 25	BY 10
Vertical (At Rear)	$\pm 2 / \pm 4$ KV	BY 25	BY 10
Case	$\pm 2 / \pm 4$ KV	BY 25	BY 10
Screw	$\pm 2 / \pm 4$ KV	BY 25	BY 10
Bracket	$\pm 2 / \pm 4$ KV	BY 25	BY 10
VGA Port	$\pm 2 / \pm 4$ KV	BY 25	BY 10
Printer Port	$\pm 2 / \pm 4$ KV	BY 25	BY 10
Com Port	$\pm 2 / \pm 4$ KV	BY 25	BY 10
BNC Port	$\pm 2 / \pm 4$ KV	BY 25	BY 10

Test Engineer : Jason
Jason Chang

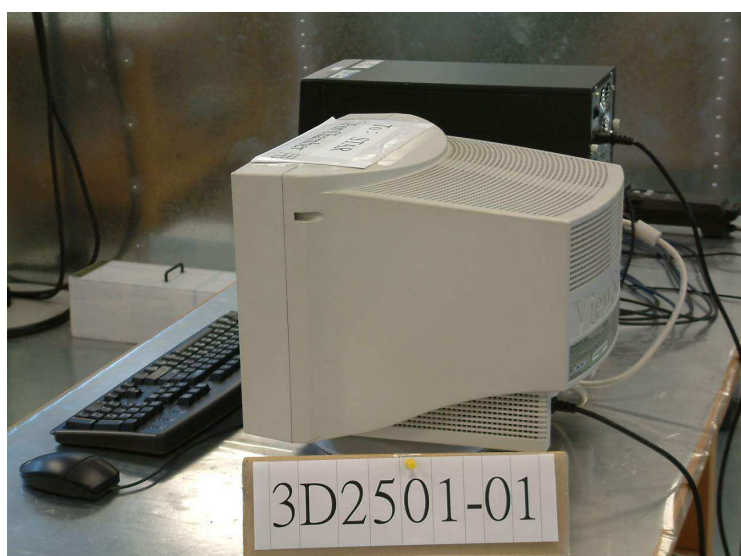
Usunięto: 61

9.6 Photographs of Electrostatic Discharge Immunity Test

FRONT VIEW



REAR VIEW



Usunięto: 61

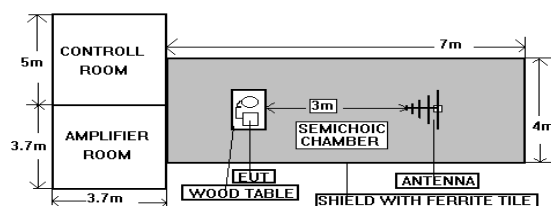
10. Radio Frequency Electromagnetic Field Immunity Test (RS)

- 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 : 23°C
- Relative Humidity : 50%
- Atmospheric Pressure : 96 kPa
- Test Date : Jan. 13, 2004
- Observation : *During testing, there were ripple-pattern image shown on the screen. After the test, the equipment continued to operate as intended without operator intervention.*

- FINAL TEST RESULT : **PASS**
- Pass Performance Criteria : **A**
- Required performance criteria : A
- Basic Standard : IEC 61000-4-3:1995/A1:1998
- Product Standard : EN 61000-6-2:2001
- Level : 3
- Frequency Range : 80-1000 MHz
- Field Strength : 10 V/m (Modulated 80% AM)
- Temperature : 23°C
- Relative Humidity : 50%
- Atmospheric Pressure : 96 kPa
- Test Date : Jan. 13, 2004
- Observation : *During testing, there were ripple-pattern image shown on the screen. After the test, the equipment continued to operate as intended without operator intervention.*

Usunięto: 61

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.

Usunięto: 61

10.2 Test Procedure

- 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.
- 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.
- 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.
- 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.

Sformatowano: Wcięcie: Z lewej: 1,1 cm, Wysunięcie: 0,56 cm, Numerowanie + Poziom: 1 + Styl numeracji: a, b, c, ... + Rozpocznij od: 1 + Wyrównanie: Na lewo + Tabulator po: 1,63 cm + Wcięcie: 1,4 cm, Tabulatory: 1,66 cm, Do lewej + Nie w 1,63 cm

10.3 Test Severity Levels

Frequency Band : 80-1000 MHz

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

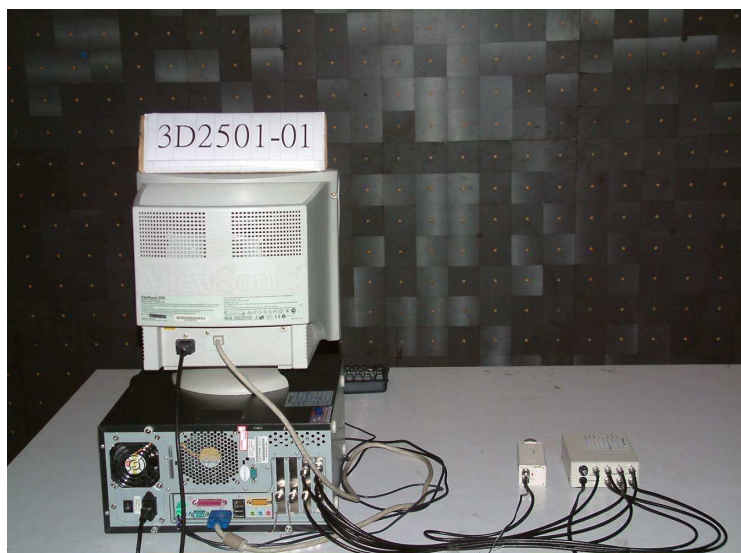
Remark : "X" is an open class.

Test Engineer : Jason
Jason Chang

Usunięto: 61

10.4 Photographs of Radio Frequency Electromagnetic Field Immunity Test

FRONT VIEW



REAR VIEW



Usunięto: 61

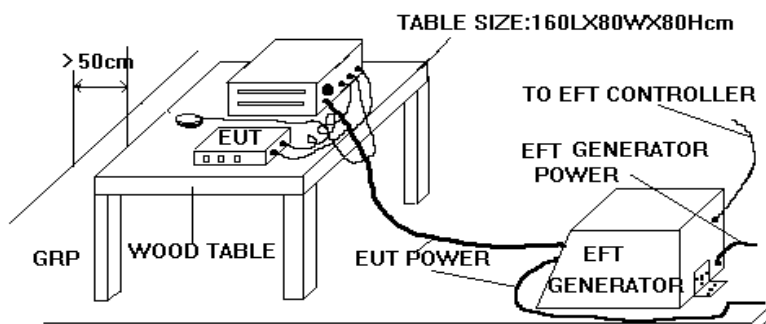
11. Electrical Fast Transient/Burst Immunity Test (EFT/BURST)

- FINAL TEST RESULT : **PASS**
- Pass Performance Criteria : **B**
- Required performance criteria : B
- Basic Standard : IEC 61000-4-4:1995
- Product Standard : EN 55024:1998/A1:2001
- Level : on Power Supply -- 2
- Test Voltage : on Power Supply -- $\pm 0.5 / \pm 1.0$ KV
- Temperature : 23°C
- Relative Humidity : 50%
- Atmospheric Pressure : 96 kPa
- Test Date : Jan. 13, 2004
- Observation : *During testing, the image shown on the screen flickered.
After the test, the equipment continued to operate as intended without operator intervention.*

- FINAL TEST RESULT : **PASS**
- Pass Performance Criteria : **B**
- Required performance criteria : B
- Basic Standard : IEC 61000-4-4:1995
- Product Standard : EN 61000-6-2:2001
- Level : on Power Supply -- 3
- Test Voltage : on Power Supply -- $\pm 0.5 / \pm 1.0 / \pm 2.0$ KV
- Temperature : 23°C
- Relative Humidity : 50%
- Atmospheric Pressure : 96 kPa
- Test Date : Jan. 13, 2004
- Observation : *During testing, the image shown on the screen flickered.
After the test, the equipment continued to operate as intended without operator intervention.*

Usunięto: 61

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.

Usunięto: 61

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.

Sformatowano: Wcięcie: Z lewej: 1 cm, Wysunięcie: 0,7 cm, Numerowanie + Poziom: 1 + Styl numeracji: a, b, c, ... + Rozpocznij od: 1 + Wyrównanie: Na lewo + Wyrównanie: 1 cm + Tabulator po: 1,63 cm + Wcięcie: 1,4 cm

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.

Sformatowano: Wcięcie: Z lewej: 1 cm, Wysunięcie: 0,7 cm, Numerowanie + Poziom: 1 + Styl numeracji: a, b, c, ... + Rozpocznij od: 1 + Wyrównanie: Na lewo + Wyrównanie: 1 cm + Tabulator po: 1,63 cm + Wcięcie: 1,4 cm, Tabulatory:

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°C to 35°C;
 - 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).

Sformatowano: Wcięcie: Z lewej: 1 cm, Wysunięcie: 0,63 cm, Numerowanie + Poziom: 1 + Styl numeracji: a, b, c, ... + Rozpocznij od: 1 + Wyrównanie: Na lewo + Wyrównanie: 1 cm + Tabulator po: 1,63 cm + Wcięcie: 1,4 cm, Tabulatory: 1,63 cm, Do lewej + Nie w

Sformatowano: Wcięcie: Z lewej: 1,03 cm, Wysunięcie: 0,6 cm, Numerowanie + Poziom: 1 + Styl numeracji: a, b, c, ... + Rozpocznij od: 1 + Wyrównanie: Na lewo + Wyrównanie: 1 cm + Tabulator po: 1,63 cm + Wcięcie: 1,4 cm

Usunięto: 61

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 : Jason
Jason Chang

Usunięto: 61

11.6 Photographs of Electrical Fast Transient/Burst Immunity Test

FRONT VIEW



REAR VIEW



Usunięto: 61

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 & EN 61000-6-2:2001
- Surge wave form (Tr/Th) : 1, 2/50 (8/20) μ s
- Level : on BNC Ports – 2
: on Input AC Power Port -- 3
- Test Voltage : on BNC Ports – ± 1.0 KV
: on Input AC Power Port -- ± 1.0 / ± 2.0 KV
- Temperature : 23°C
- Relative Humidity : 50%
- Atmospheric Pressure : 96 kPa
- Test Date : Jan. 13, 2004
- Observation : Normal

12.1 Test Record

■ Input 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

Sformatowano: Wcięcie:
Wysunięcie: 0,63 cm,
Punktowane + Poziom: 1 +
Wyrównanie: 0,85 cm +
Tabulator po: 1,69 cm +
Wcięcie: 1,69 cm

Sformatowano: Wcięcie: Z
lewej: 1,27 cm, Wysunięcie:
0,66 cm, Punktowane +
Poziom: 1 + Wyrównanie: 1,27
cm + Tabulator po: 1,93 cm +
Wcięcie: 1,93 cm

Usunięto: 61

■ Ports for BNC ports:

Tested on	Polarity	Phase Angle	No of Pulse	Pulse Voltage	Sec. / 1 Pulse
L - GND	+	–	5	1.0 KV	60
L - GND	–	–	5	1.0 KV	60

Sformatowano: Wcięcie: Z lewej: 0,97 cm, Wysunięcie: 0,85 cm, Punktowane + Poziom: 1 + Wyrównanie: 0,85 cm + Tabulator po: 1,69 cm + Wcięcie: 1,69 cm

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 °C to 35 °C
- 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;

Usunięto: 61

- 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, they may be simulated. Under no circumstances may the test level exceed the product specification. The test shall be carried out according to the 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 :


Jason Chang

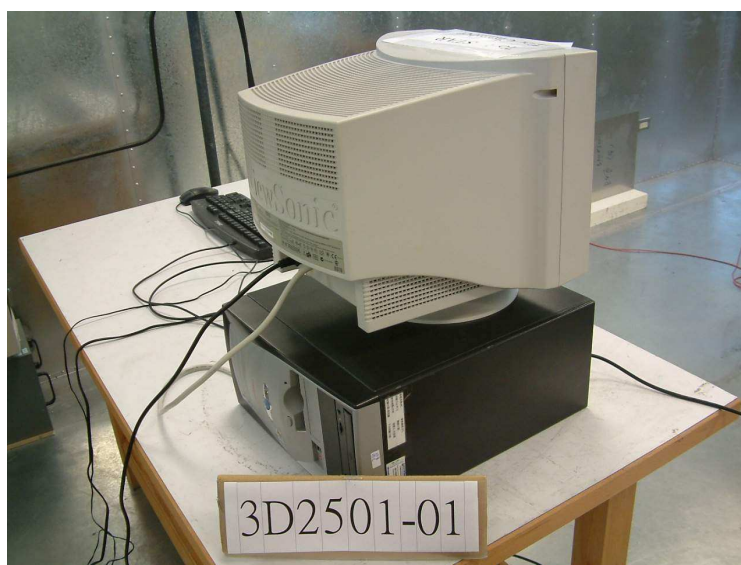
Usunięto: 61

12.4 Photographs of Surge Immunity Test

FRONT VIEW



REAR VIEW



Usunięto: 61

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
- Test Port : on AC Power and Signal Ports
- Dwell time : 2.9 seconds
- Frequency step size : 1 %
- Coupling mode : CDN-M3 for AC power ports,
CDN-S1/75 for Signal Ports
- Temperature : 23°C
- Relative Humidity : 51%
- Atmospheric Pressure : 96 kPa
- Test Date : Jan. 13, 2004
- Observation : *During testing, there were ripple-pattern image shown on the screen. After the test, the equipment continued to operate as intended without operator intervention.*

- FINAL TEST RESULT : **PASS**
- Pass performance Criteria : **A**
- Required performance criteria : A
- Basic Standard : IEC 61000-4-6:1996
- Product Standard : EN 61000-6-2:2001
- Level : 3
- Test Voltage : 10 V/rms (Modulated, 1KHz, 80%, AM)
- Frequency Range : 0.15 MHz to 80 MHz
- Test Port : on AC Power and Signal Ports
- Dwell time : 2.9 seconds
- Frequency step size : 1 %
- Coupling mode : CDN-M3 for AC power ports,
CDN-RJ45/S, CDN-S1/75 for Signal Ports
- Temperature : 23°C
- Relative Humidity : 50%
- Atmospheric Pressure : 96 kPa
- Test Date : Jan. 13, 2004
- Observation : *During testing, there were ripple-pattern image shown on the screen. After the test, the equipment continued to operate as intended without operator intervention.*

Usunięto: 61

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

- The EUT shall be operated within its intended climatic conditions. The temperature and relative humidity should be recorded.
- 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.
- 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.
- 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.
- 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.
- 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.

Sformatowano: Wcięcie: Z lewej: 1,09 cm, Wysunięcie: 0,78 cm, Numerowanie + Poziom: 1 + Styl numeracji: a, b, c, ... + Rozpocznij od: 1 + Wyrównanie: Na lewo + Wyrównanie: 1,09 cm + Tabulator po: 0 cm + Wcięcie: 1,84 cm

Usunięto: 61

- 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.

Sformatowano: Wcięcie: Z lewej: 1,09 cm, Wysunięcie: 0,78 cm, Numerowanie + Poziom: 1 + Styl numeracji: a, b, c, ... + Rozpocznij od: 1 + Wyrównanie: Na lewo + Tabulator po: 0 cm + Wcięcie: 1,84 cm

Test Engineer :

Jason
Jason Chang

Usunięto: 61

13.3 Photographs of CS Immunity Test

FRONT VIEW



REAR VIEW



Usunięto: 61

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 & EN 61000-6-2:2001
- Temperature : 23°C
- Relative Humidity : 51%
- Atmospheric Pressure : 96 kPa
- Test Date : Jan. 13, 2004
- Observation : Normal

14.1 Test Record

< EN 55024 >

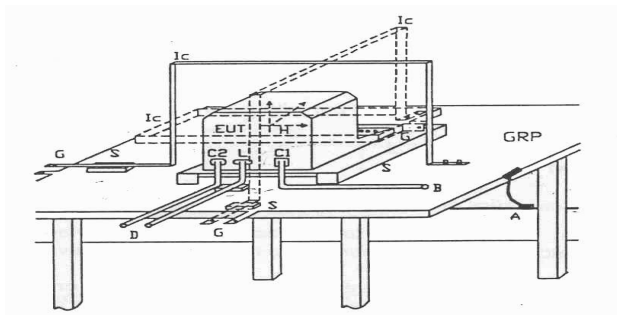
Power Frequency Magnetic Field	Testing duration	Coil Orientation
50Hz, 1A/m	1.0 Min	X-axis
50Hz, 1A/m	1.0 Min	Y-axis
50Hz, 1A/m	1.0 Min	Z-axis

< EN 61000-6-2 >

Power Frequency Magnetic Field	Testing duration	Coil Orientation
50Hz, 30A/m	1.0 Min	X-axis
50Hz, 30A/m	1.0 Min	Y-axis
50Hz, 30A/m	1.0 Min	Z-axis

Usunięto: 61

14.2 Test Setup



GRP : Ground plane	C1 : Power supply circuit
A : Safety earth	C2 : Signal circuit
S : Insulating support	L : Communication line
EUT : Equipment under test	B : To power supply source
Lc : Induction coil	D : To signal source, simulator
E : Earth terminal	G : To the test generator

Test Engineer :

Jason
Jason Chang

Usunięto: 61

14.3 Photographs of Power Frequency Magnetic Field Immunity Tests

FRONT VIEW



REAR VIEW



Usunięto: 61

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 & EN 61000-6-2:2001
- Temperature : 23°C
- Relative Humidity : 50%
- Atmospheric Pressure : 96 kPa
- Test Date : Jan. 13, 2004

15.1 Test Record of Voltage Interruption

< EN 55024 & EN 61000-6-2 >

Voltage (V)	Phase Angle		% Reduction	periods (s)	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

< EN 55024 >

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

< EN 61000-6-2 >

Voltage (V)	Phase Angle		% Reduction	periods (s)	Observation
	0 °	180 °			
230	A	A	60%	50	Normal
230	A	A	60%	5	Normal
230	A	A	30%	0.5	Normal

Usunięto: 61

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

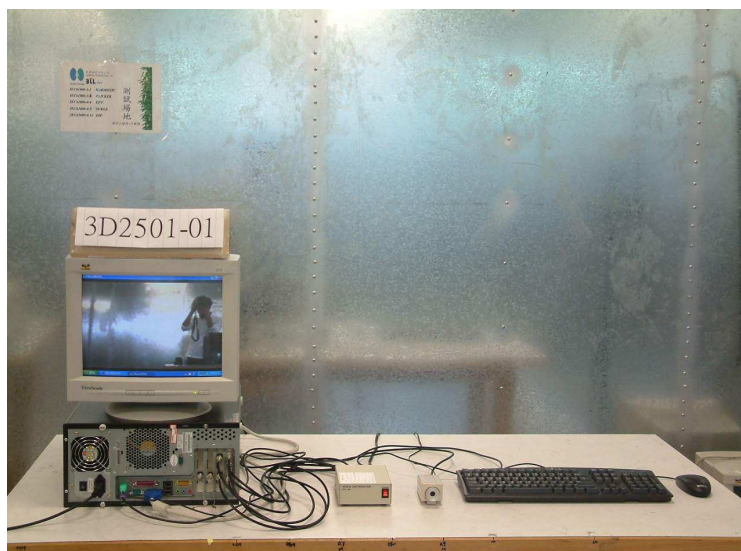
Test Engineer :

Jason
Jason Chang

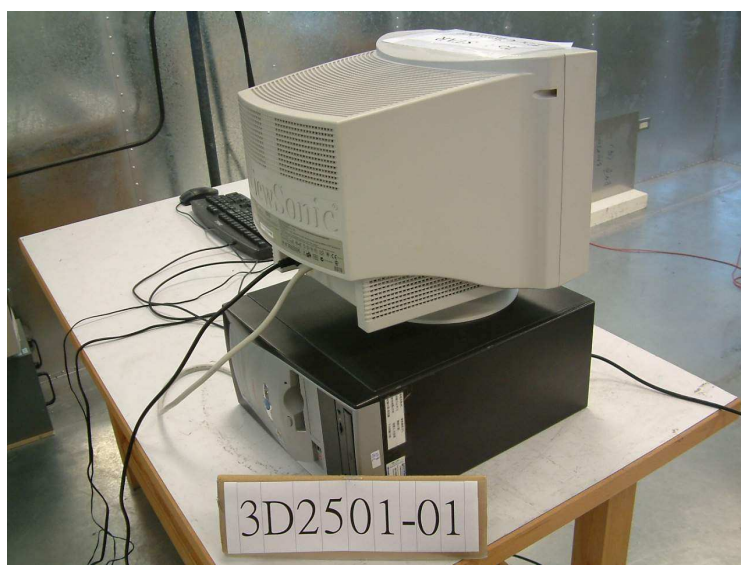
Usunięto: 61

15.5 Photographs of Voltage Dips and Voltage Interruption Immunity Tests

FRONT VIEW



REAR VIEW



Usunięto: 61

16. List of Measuring Equipment Used

< EMI >

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
LISN	Rolf Heine	NNB-2/16Z	2001/004	50uH / 50 ohm	May 31, 2003	Conduction (CO01-NH)
LISN	KYORITSU	KNW-407	8-1010-15	50uH / 50 ohm	Nov. 28, 2003	Conduction (CO01-NH)
Spectrum Monitor	R&S	EZM	894987/011	9KHz ~ 1.3GHz	Aug. 06, 2003	Conduction (CO01-NH)
Test Receiver	R&S	ESH3	893495/013	9 KHz - 30 MHz	Sep. 16, 2003	Conduction (CO01-NH)
RF Cable-CON	Suhner Switzerland	RG223/U	CB004	9KHz~30MHz	Jan. 04, 2003	Conduction (CO01-NH)
50 ohm BNC type Terminal	NOBLE	50ohm	TM001	50 ohm	Apr. 09, 2003	Conduction (CO01-NH)
Power Filter	CORCOM	MR12030	N/A	30A*2	May 31, 2003	Conduction (CO01-NH)
Open Area Test Site	SPORTON	OATS-10	OS02-NH	30MHz~1GHz 10m,3m	Jan. 15, 2003	Radiation (OS02-NH)
Spectrum Analyzer	Advantest	R3261C	71720471	9KHz - 2.6GHz	Feb. 20, 2003	Radiation (OS02-NH)
Amplifier	HP	8447D	2944A07523	0.1MHz ~ 1.3GHz	Apr. 04, 2003	Radiation (OS02-NH)
Bilog Antenna	CHASE	CBL6122B	2631	30MHz - 2GHz	Jun. 26, 2003	Radiation (OS02-NH)
Turn Table	EMCO	2080	9508-1805	0 ~ 360 degree	N/A	Radiation (OS02-NH)
Antenna Mast	EMCO	2075	9804-2151	1 m - 4 m	N/A	Radiation (OS02-NH)
RF Cable-R10m	BELDEN	RG8/U	CB002	30MHz~1GHz	Jan. 04, 2003	Radiation (OS02-NH)

※ Calibration Interval of instruments listed above is one year.

Sformatowano: Wcięcie: Z lewej: 1,29 cm, Pierwszy wiersz: 0,31 cm, Punktowane + Poziom: 1 + Wyrównanie: 0,78 cm + Tabulator po: 1,29 cm + Wcięcie: 1,29 cm

Usunięto: 61

< EMS >

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
ESD Simulator	KEYTEK	MZ-15/EC	9503213	Air: 0 KV - 15 KV Contact: 0 KV -8KV	May 28, 2003	ESD
Antenna	CHASE	CBL6121A	1027	26 MHz - 1 GHz	Mar. 06, 2003	RS
Field Strength Monitoring Antennas (Probe)	AR	FP3000A	16077	0.1 MHz - 1 GHz	Dec. 08, 2003	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. 08, 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	KEYTEK	EMCPRO	0303194	0 KV - 4.4 KV	Mar. 17, 2003	EFT
Harmonic/Flicker Test System	EMC PARTNER	Harmonics -1000	HAR1000-41	4000VA 16A PEAK	June 23, 2003	Harmonics, Flicker
SURGE Generator	KEYTEK	EMCPRO	0303194	0 KV -6 KV/2Ω 0KV-500V/12Ω	Apr. 17, 2003	Surge
SURGE/CDN	KEYTEK	EMCPRO	0303189	0 KV -6 KV/2Ω 0KV-500V/12Ω	Apr. 17, 2003	Surge
Conducted Immunity Test System	FRANKONIA	CIT-10/75	1999010443	100KHz ~ 266MHz	Apr. 01, 2003	CS
Coupling and Decoupling Network	FRANKONIA	CDN M016	16670	150KHz ~ 230MHz	Apr. 23, 2003	CS
Coupling and Decoupling Network	SCHAFFNER	CDN S751	19251	150KHz ~ 230MHz	Mar. 18, 2003	CS
Magnetic Generator	EMC -PARTNER	TRANSIENT -2000	TRA2000-376	230VA/50Hz/60Hz	May 05, 2003	Magnetic
Magnetic field Antenna	EMC PARTNER AG Switzerland	MF-1000	MF-1000-51	0.5 up to 150A / m	May 05, 2003	Magnetic
PQF Generator	KEYTEK	EMCPRO	0303194	230VA/50Hz/60Hz 0%Open/5S 0%Short/5S 40%0.10S 70%/0.01S	Apr. 17, 2003	DIP

Usunięto: 61

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.

Usunięto: 61

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.



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