

TEST REPORT FOR CERTIFICATION
(Class II Change)
On Behalf of
Philips Electronics Industries (Taiwan) Ltd.
18" Flat Panel Color Monitor
Model : P4830**
FCC ID : A3KM106
Brand : HP

Prepared for : Philips Electronics Industries (Taiwan) Ltd.
5, Tze Chiang 1 Rd, Chungli Ind. Park,
PO Box 123, Chungli, Taoyuan Hsien,
Taiwan, R.O.C.

Prepared By : Taiwan Tokin EMC Eng. Corp.
No. 53-11, Tin-Fu Tsun, Lin-Kou,
Taipei Hsien, Taiwan, R.O.C.

Tel : (02) 2609-9301, 2609-2133
Fax : (02) 2609-9303

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TEST REPORT CERTIFICATION

(Class II Change)

Applicant : Philips Electronics Industries (Taiwan) Ltd.
 Manufacturer : Philips Electronics Industries (Taiwan) Ltd.
 EUT Description : 18" Flat Panel Color Monitor
 FCC ID : A3KM106
 (A) MODEL NO. : P4830**
 (B) SERIAL NO. : N/A
 (D) BRAND NAME : A3KM106
 (C) PRODUCT NAME : L1815
 (E) POWER SUPPLY : AC 100-240V~, 50-60Hz

Measurement Procedure Used:

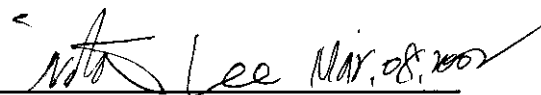
FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B MAY 2001
 AND FCC / ANSI C63.4-1992

The device described above was tested by TAIWAN TOKIN EMC ENG. CORP. to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15B Class B limits both radiated and conducted emissions.

The measurement results are contained in this test report and TAIWAN TOKIN EMC ENG. CORP. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Taiwan Tokin EMC Eng. corp.

Date of Test : Feb. 25 ~ Mar. 07, 2002

Prepared by : 
 (Nita Lee/Assistant Officer)

Test Engineer : 
 (Allen Wang/Deputy Manager)

Approve & Authorized Signer : 
 (Leon Liu/Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	18" Flat Panel Color Monitor
FCC ID	:	A3KM106
Model Number	:	P4830** The symbols ** can be any alphanumeric character including blank.
Brand	:	HP
Product Name	:	L1815
Applicant	:	Philips Electronics Industries (Taiwan) Ltd. 5, Tze Chiang 1 Rd, Chungli Ind. Park, PO Box 123, Chungli, Taoyuan Hsien, Taiwan, R.O.C.
Manufacturer	:	Philips Electronics Industries (Taiwan) Ltd. 5, Tze Chiang 1 Rd, Chungli Ind. Park, Chungli, Taoyuan, Taiwan, R.O.C.
LCD Panel	:	LG, M/N LM181E05
Scanning Frequency	:	Horizontal: 30-80kHz Vertical: 56-75Hz
Data Cable (D-Sub)	:	Shielded, Detachable, 1.8m Bonded two ferrite cores
Data Cable (DVI)	:	Shielded, Detachable, 1.8m Bonded two ferrite cores
Power Cord	:	Non-Shielded, Detachable, 1.8m
Date of Receipt of Sample	:	Feb. 25, 2002
Date of Test	:	Feb. 25 ~ Mar. 07, 2002

1.2. Tested Supporting System Details

【Mode 1 ~2 : 1024*768/75Hz, 60KHz & 1280*1024/75Hz, 80KHz (D-Sub)】

1.2.1. PERSONAL COMPUTER

Type Name	:	HP VL800 PC
Model Number	:	VECTRA VL800
Serial Number	:	FR12314087
FCC ID	:	By DoC
Manufacturer	:	Hewlett Packard
VGA Card	:	Nvidia GeforeII GTS Card
Power Cord	:	Non-Shielded, Detachable, 1.8m

1.2.2. KEYBOARD

Model Number	:	SK-2511A
Serial Number	:	N/A
FCC ID	:	GYUR73SK
BSMI ID	:	3882A499
Manufacturer	:	Hewlett Packard
Data Cable	:	Shielded, Undetachable, 2.0m

1.2.3. PRINTER

Model Number	:	2225C+
Serial Number	:	3121S96627
FCC ID	:	DSI6XU2225
Manufacturer	:	Hewlett Packard
Power Adapter	:	Hewlett Packard, M/N 82241A
		Non-Shielded, Undetachable, 2.0m
Data Cable	:	Shielded, Detachable, 1.2m

1.2.4. MODEM # 1

Model Number	:	DM-1414
Serial Number	:	980034394
FCC ID	:	IFAXDM1414
Manufacturer	:	Aceex
Data Cable	:	Shielded, Detachable, 1.2m
Power Adapter	:	Amigo, Model AM-91000A
		Non-Shielded, Undetachable, 1.8m

1.2.5. MODEM # 2

Model Number	:	DM-1414
Serial Number	:	980034387
FCC ID	:	IFAXDM1414
Manufacturer	:	Aceex
Data Cable	:	Shielded, Detachable, 1.2m
Power Adapter	:	Amigo, Model AM-91000A
		Non-Shielded, Undetachable, 1.8m

1.2.6. MOUSE

Model Number	:	HPX4000
Serial Number	:	LZB03801074
FCC ID	:	DZL211029
BSMI ID	:	4862A011
Manufacturer	:	Hewlett Packard
Data Cable	:	Non-Shielded, Undetachable, 2.0m

1.2.7. USB MOUSE #1

Model Number	:	M-UB48
Serial Number	:	LZB81900208
FCC ID	:	DZL211137
Manufacturer	:	Logitech
Data Cable	:	Shielded, Undetachable, 1.8m

1.2.8. USB MOUSE #2

Model Number	:	M-UB48
Serial Number	:	LZB81900205
FCC ID	:	DZL211137
Manufacturer	:	Logitech
Data Cable	:	Shielded, Undetachable, 1.8m

1.2.9. WALKMAN

Model Number	:	RQ-P35LT-K
Serial Number	:	HA08717
Manufacturer	:	Panasonic
Data Cable	:	Non-Shielded, Detachable, 1.8m

1.2.10. HUB

Model Number	:	8222-008
Serial Number	:	23-F4014
FCC ID	:	By DoC
Manufacturer	:	IBM
Data Cable	:	Shielded, Detachable, 1.8m
Power Cord	:	Non-Shielded, Detachable, 1.8m

【Mode 3 : 1280*1024/60Hz, 64KHz (DVI)】

1.2.11. PERSONAL COMPUTER

Type Name	:	HP VL420 MT
Model Number	:	DTPC-16
Serial Number	:	SG20402611
FCC ID	:	By DoC
Manufacturer	:	Hewlett Packard
DVI Card	:	Elsa 511A
Power Cord	:	Non-Shielded, Detachable, 1.8m

1.2.12. KEYBOARD

Model Number	:	5121
Serial Number	:	J83300801
FCC ID	:	E5XKBM104M10UC
Manufacturer	:	Behavior Tech Computer Corp.
Data Cable	:	Shielded, Undetachable, 1.0m

1.2.13. PRINTER

Model Number	:	2225C
Serial Number	:	2615S40752
FCC ID	:	BS46XU2225C
Manufacturer	:	Hewlett Packard
Power Cord	:	Non-Shielded, Undetachable, 1.8m
Data Cable	:	Shielded, Detachable, 1.2m

1.2.14. MODEM # 1

Model Number	:	DM-1414
Serial Number	:	980034398
FCC ID	:	IFAXDM1414
Manufacturer	:	Aceex
Data Cable	:	Shielded, Detachable, 1.2m
Power Adapter	:	Amigo, Model AM-91000A Non-Shielded, Undetachable, 1.8m

1.2.15. MODEM # 2

Model Number	:	DM-1414
Serial Number	:	980034394
FCC ID	:	IFAXDM1414
Manufacturer	:	Aceex
Data Cable	:	Shielded, Detachable, 1.2m
Power Adapter	:	Amigo, Model AM-91000A Non-Shielded, Undetachable, 1.8m

1.2.16.MOUSE

Model Number	:	M-S35
Serial Number	:	LZA82103152
FCC ID	:	DZL211029
Manufacturer	:	Logitech
Data Cable	:	Non-Shielded, Undetachable, 1.8m

1.2.17. USB MOUSE #1

Model Number	:	M-UB48
Serial Number	:	LZB81900208
FCC ID	:	DZL211137
Manufacturer	:	Logitech
Data Cable	:	Shielded, Undetachable, 1.8m

1.2.18. USB MOUSE #2

Model Number	:	M-UB48
Serial Number	:	LZB81900205
FCC ID	:	DZL211137
Manufacturer	:	Logitech
Data Cable	:	Shielded, Undetachable, 1.8m

1.2.19. USB MOUSE #3

Model Number	:	M-UB48
Serial Number	:	LZB81900205
FCC ID	:	DZL211137
Manufacturer	:	Logitech
Data Cable	:	Shielded, Undetachable, 1.8m

1.2.20. USB MOUSE #4

Model Number	:	M-UB48
Serial Number	:	LZB81900205
FCC ID	:	DZL211137
Manufacturer	:	Logitech
Data Cable	:	Shielded, Undetachable, 1.8m

1.2.21. MICROPHONE

Model Number	:	HD-303
Serial Number	:	N/A
Manufacturer	:	Multimedia Microphone System
Data Cable	:	Non-Shielded, Undetachable, 2.2m

1.2.22. SPEAKER

Model Number	:	J-008
Serial Number	:	97-C-008923-T
Manufacturer	:	(J-S) JAZZ HIPSTER
Data Cable	:	Non-Shielded, Undetachable, 1m

1.2.23. WALKMAN

Model Number : RQ-P35LT-K
 Serial Number : HA08697
 Manufacturer : Panasonic
 Data Cable : Non-Shielded, Detachable, 1.8m

1.2.24. EARPHONE

Model Number : RQ-P35LT-K
 Serial Number : HA08697
 Manufacturer : Panasonic
 Earphone Cable : Non-Shielded, Undetachable, 1.1m

1.2.25. HUB

Model Number : 8222-008
 Serial Number : 23-F4014
 FCC ID : By DoC
 Manufacturer : IBM
 Data Cable : Shielded, Detachable, 1.8m
 Power Cord : Non-Shielded, Detachable, 1.8m

1.3. Description of Test Facility

Site Description : Feb. 09, 2000 Re-file on
 (No. 3 Open Site) Federal Communication Commission
 FCC Engineering Laboratory
 7435 Oakland Mills Road
 Columbia, MD 21046, U.S.A.
 Registration Number: 90996

Name of Firm : Taiwan Tokin EMC Eng. Corp.
 9th Fl., No. 38, Fushing N. Rd.,
 Taipei, Taiwan, R.O.C.

Site Location #1 : No. 53-11, Tin-Fu Tsun, Lin-Kou,
 Taipei Hsien, Taiwan, R.O.C.

Site Location #2 : No. 67-4, Tin-Fu Tsun, Lin-Kou,
 Taipei Hsien, Taiwan, R.O.C.

NVLAP Lab Code : 200077-0

1.4. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conduction Test	150KHz~30MHz	±2.66dB
Radiation Test (Distance: 3m)	30MHz~300MHz	+4.26dB / -4.22dB
	300MHz~1000MHz	+5.28dB / -4.0dB

Remark : Uncertainty = $K_{uc}(y)$

2. POWERLINE CONDUCTED TEST

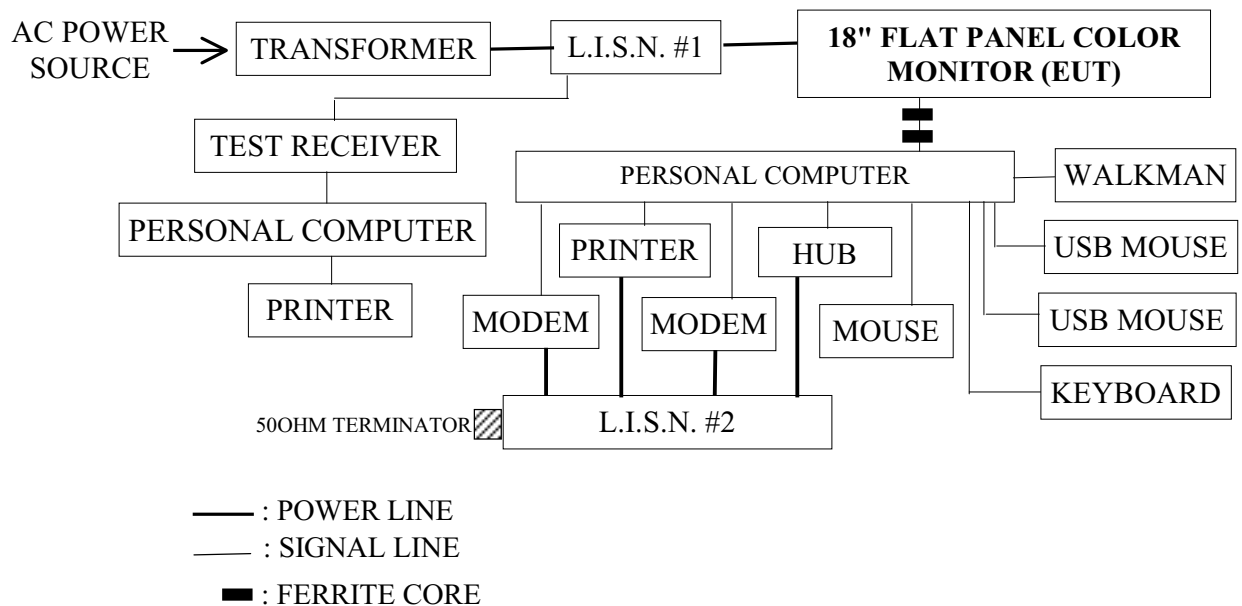
2.1. Test Equipment

The following test equipment are used during the power line conducted tests :

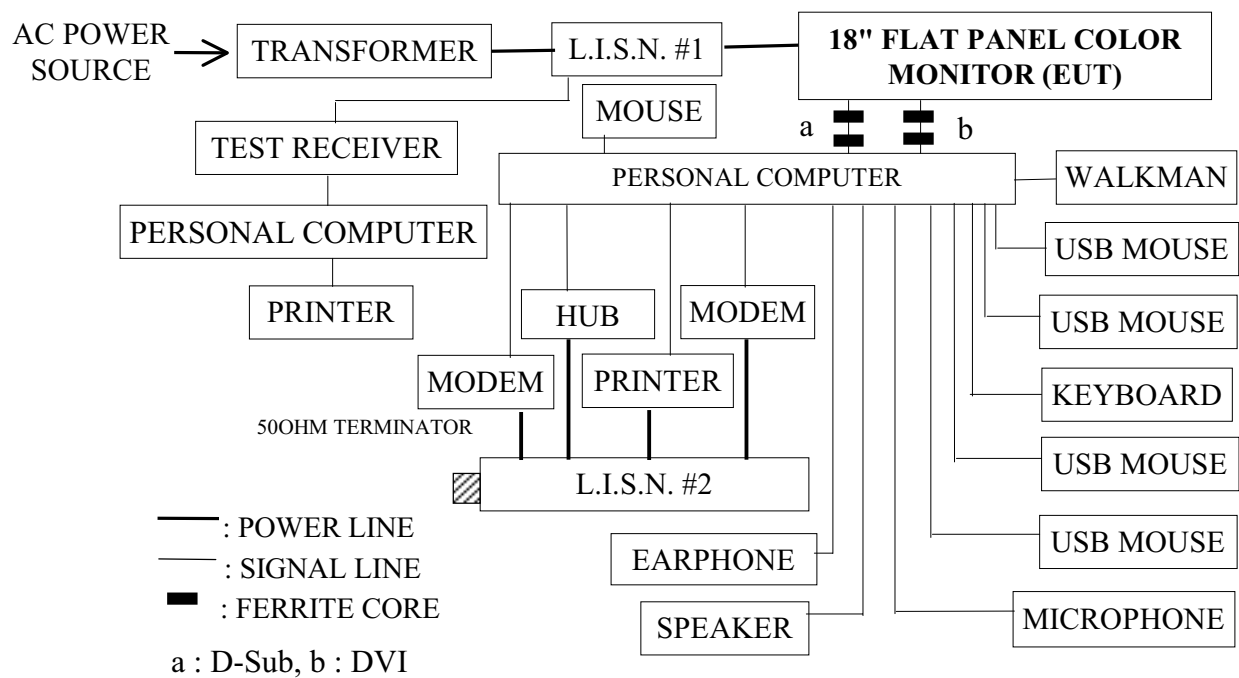
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCS 30	825442/020	Jun. 29, 01'	1 Year
2.	L.I.S.N. #1	Kyoritsu	KNW-407	8-1370-10	May 28, 01'	1 Year
3.	L.I.S.N. #2	Kyoritsu	KNW-407	8-1370-9	May 28, 01'	1 Year

2.2. Block Diagram of Test Setup

【Mode 1 ~2 : 1024*768/75Hz, 60KHz & 1280*1024/75Hz, 80KHz (D-Sub)】



【Mode 3 : 1280*1024/60Hz, 64KHz (DVI)】



2.3. Powerline Conducted Emission Limit (CLASS B)

Frequency	Maximum RF Line Voltage	
	μV	dBμV
0.45MHz ~ 30MHz	250	48

REMARKS : RF LINE VOLTAGE (dBμV) = 20 log RF LINE VOLTAGE (μV)

2.4. EUT's Configuration during Compliance Measurement

The following equipment were installed on RF LINE VOLTAGE measurement to meet the Commission requirement and operating in a manner which tended to maximize its emission characteristics in a normal application.

2.4.1. 18" Flat Panel Color Monitor (EUT)

Model Number	:	P4830**
Serial Number	:	N/A
FCC ID	:	A3KM106
Brand	:	HP
Product Name	:	L1815
Manufacturer	:	Philips Electronics Industries (Taiwan) Ltd.
LCD Panel	:	LG, M/N LM181E05
Data Cable (D-Sub)	:	Shielded, Detachable, 1.8m Bonded two ferrite cores
Data Cable (DVI)	:	Shielded, Detachable, 1.8m Bonded two ferrite cores
Power Cord	:	Non-Shielded, Detachable, 1.8m

2.4.2. Supporting System : As in section 1.2.

2.5. Operating Condition of EUT

- 2.5.1. Setup the EUT and simulator as shown on 2.2.
- 2.5.2. Turn on the power of all equipment.
- 2.5.3. Personal Computer read data from disk.
- 2.5.4. Personal Computer sent "H" character to the 18" Flat Panel Color Monitor(EUT) and the screen displayed and filled with "H" pattern by EUT's resolution via D-Sub or DVI (The software HP test "WIN RFI" was used).
- 2.5.5. The other peripheral devices were driven and operated in turn during all testing.
- 2.5.6. Repeat the above procedures from 2.5.3 to 2.5.4.

2.6. Test Procedure

The EUT was connect to PC, then PC's power cord was connect to the power mains through a line impedance stabilization network (L.I.S.N. #1) and the other peripheral devices power cord were connected to the power mains through a line impedance stabilization network (L.I.S.N. #2). This provided a 50ohm coupling impedance for the measuring equipment. (Please refer to the block diagram of the test setup and photographs.).

Both sides of A.C. line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables were changed according to FCC ANSI C63.4-1992 on conducted measurement.

The bandwidth of the R&S Test Receiver ESCS 30 was set at 9KHz.

The frequency range from 150KHz to 30MHz was checked.

The test voltage was AC 120V/60Hz.

2.7. Line Conducted RF Voltage Measurement Results

PASSED. Please refer to the following pages.

EUT with three kinds of horizontal working frequency and two kinds of data cable were done during conducted measurement separately and all the test results are listed in following pages. (EUT's power cord was connected to L.I.S.N.)

Test Date : Feb. 25, 2002 Temperature : 17°C Humidity : 66%

The details of test modes are as follows :

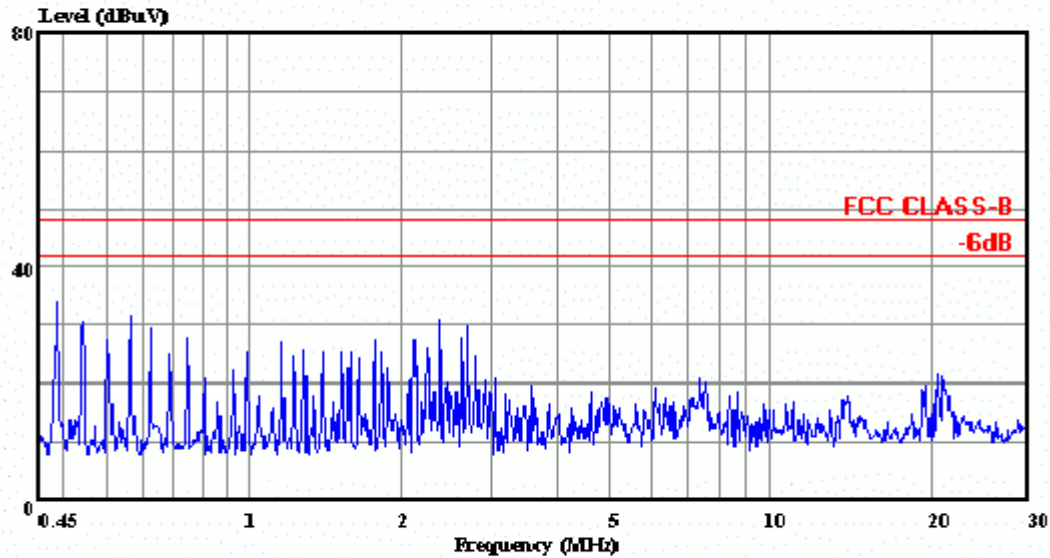
Mode	Frequency Resolution	Cable	Reference Data #
1.	1024*768/75Hz, 60KHz	D-Sub	# 31 (32), # 29 (30)
2.	1280*1024/75Hz, 80KHz	D-Sub	# 25 (26), # 27 (28)
3.	1280*1024/60Hz, 64KHz	DVI	# 33 (34), # 35 (36)

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TAIWAN TOKIN EMC ENG. CORP.
台灣東金科技股份有限公司

No.53-11, Tin-fu Tsun, Lin-kou Hsiang,
Taipei Country, Taiwan, R.O.C.
Tel:02-26092133 Fax:02-26099303
Email:ttemc@ttemc.com.tw

Data#: 31 File#: philips-7.EMI Date: 2002-02-25 Time: 23:38:07



Site : No.3 Shielded room
Condition: FCC CLASS-B KMW-407 LINE
EUT : 18"FLAT PANEL COLOR MONITOR M/N:P4830**
Power : 120Vac/60Hz
Memo : 1024*768/75Hz 60KHz (D-SUB)

Data#: 32 File#: D:\philips-7.EMI Date: 2002-02-25 Time: 23:41:17

Site : No.3 Shielded room
Condition : FCC CLASS-B KMW-407 LINE
EUT : 18"FLAT PANEL COLOR MONITOR M/N:P4830**
Power : 120Vac/60Hz
Memo : 1024*768/75Hz 60KHz (D-SUB)

			Over	Limit	Read	Probe	Cable	
	Freq	Level	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.487	33.79	-14.21	48.00	33.19	0.40	0.20	QP
2	0.541	30.14	-17.86	48.00	29.54	0.40	0.20	QP
3	0.665	31.54	-16.46	48.00	30.94	0.40	0.20	QP
4	0.848	27.63	-20.37	48.00	27.03	0.40	0.20	QP
5	1.264	26.94	-21.06	48.00	26.14	0.40	0.40	QP
6	2.476	30.79	-17.21	48.00	29.99	0.40	0.40	QP

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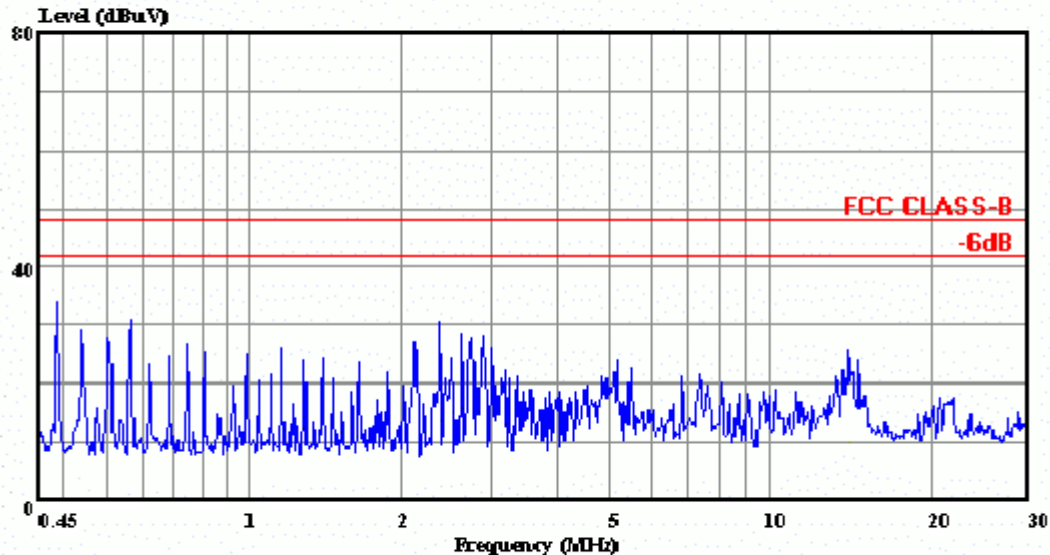
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台灣東金科技股份有限公司

No.53-11, Tin-fu Tsun, Lin-kou Hsiang,
Taipei Country, Taiwan, R.O.C.
Tel:02-26092133 Fax:02-26099303
Email:ttemc@ttemc.com.tw

Data#: 29

File#: philips-7.EMI

Date: 2002-02-25 Time: 23:36:28



Site : No.3 Shielded room
Condition: FCC CLASS-B KNW-407 NEUTRAL
EUT : 18"FLAT PANEL COLOR MONITOR M/N:P4830**
Power : 120Vac/60Hz
Memo : 1024*768/75Hz 60KHz (D-SUB)

Data#: 30

File#: D:\philips-7.EMI

Date: 2002-02-25 Time: 23:37:54

Site : No.3 Shielded room
Condition : FCC CLASS-B KNW-407 NEUTRAL
EUT : 18"FLAT PANEL COLOR MONITOR M/N:P4830**
Power : 120Vac/60Hz
Memo : 1024*768/75Hz 60KHz (D-SUB)

			Over	Limit	Read	Probe	Cable	
	Freq	Level	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.487	31.35	-16.65	48.00	30.75	0.40	0.20	QP
2	0.539	26.11	-21.89	48.00	25.51	0.40	0.20	QP
3	0.668	26.54	-21.46	48.00	25.94	0.40	0.20	QP
4	0.848	24.65	-23.35	48.00	24.05	0.40	0.20	QP
5	2.476	27.48	-20.52	48.00	26.68	0.40	0.40	QP
6	14.446	18.19	-29.81	48.00	16.69	0.80	0.70	QP

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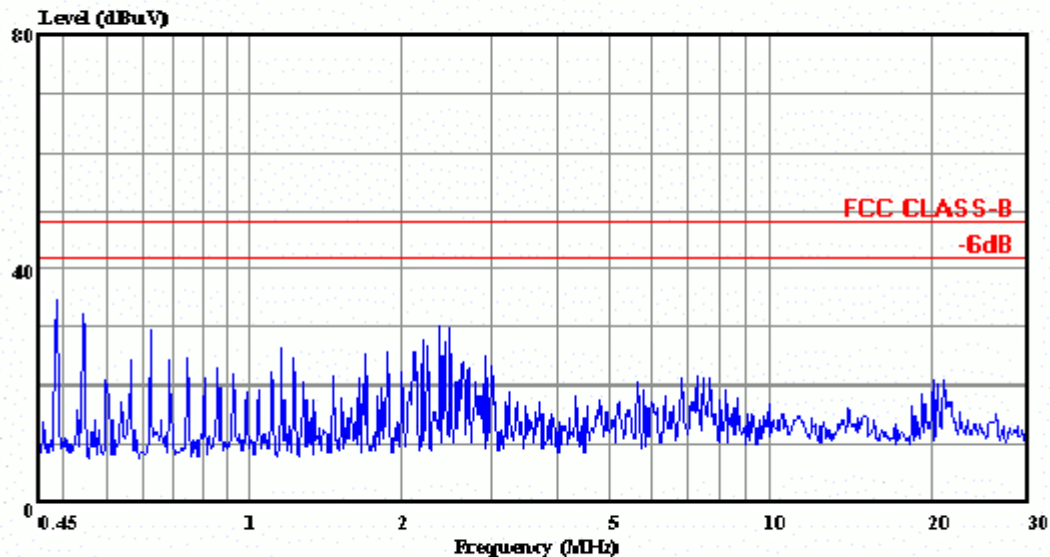
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台灣東金科技股份有限公司

No.53-11, Tin-fu Tsun, Lin-kou Hsiang,
Taipei Country, Taiwan, R.O.C.
Tel:02-26092133 Fax:02-26099303
Email:ttemc@ttemc.com.tw

Data#: 25

File#: philips-7.EMI

Date: 2002-02-25 Time: 23:31:49



Site : No.3 Shielded room
Condition: FCC CLASS-B KMW-407 LINE
EUT : 18"FLAT PANEL COLOR MONITOR M/N:P4830**
Power : 120Vac/60Hz
Memo : 1280*1024/75Hz 80KHz (D-SUB)

Data#: 26

File#: D:\philips-7.EMI

Date: 2002-02-25 Time: 23:34:10

Site : No.3 Shielded room
Condition: FCC CLASS-B KMW-407 LINE
EUT : 18"FLAT PANEL COLOR MONITOR M/N:P4830**
Power : 120Vac/60Hz
Memo : 1280*1024/75Hz 80KHz (D-SUB)

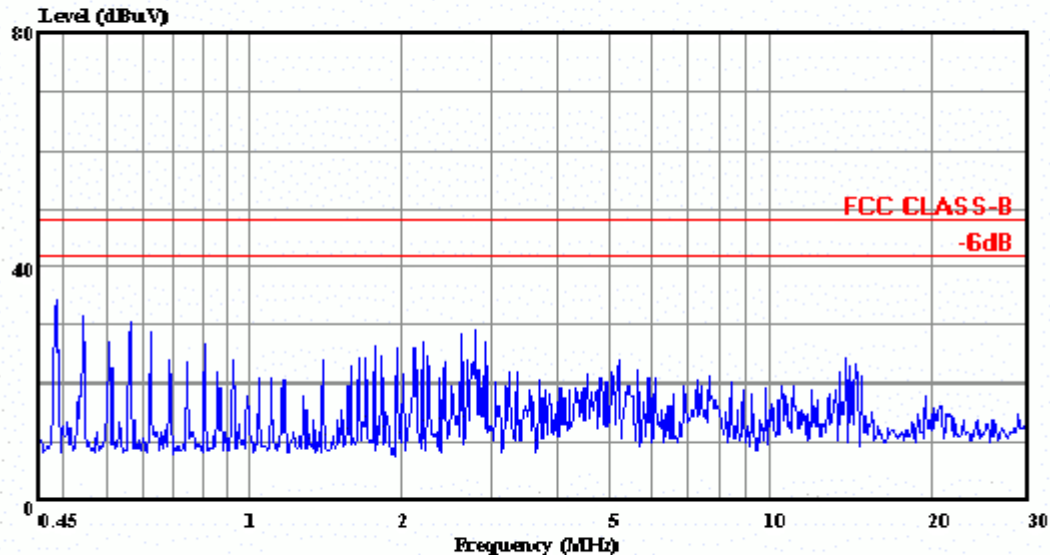
			Over	Limit	Read	Probe	Cable	
	Freq	Level	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.487	31.57	-16.43	48.00	30.97	0.40	0.20	QP
2	0.544	29.27	-18.73	48.00	28.67	0.40	0.20	QP
3	0.723	27.51	-20.49	48.00	26.91	0.40	0.20	QP
4	2.593	27.84	-20.16	48.00	27.04	0.40	0.40	QP
5	7.378	20.49	-27.51	48.00	19.39	0.50	0.60	QP
6	21.260	19.64	-28.36	48.00	17.84	1.10	0.70	QP

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TAIWAN TOKIN EMC ENG. CORP.
台灣東金科技股份有限公司

No.53-11, Tin-fu Tsun, Lin-kou Hsiang,
Taipei Country, Taiwan, R.O.C.
Tel:02-26092133 Fax:02-26099303
Email:tttemc@tttemc.com.tw

Data#: 27 File#: philips-7.EMI Date: 2002-02-25 Time: 23:34:20



Site : No.3 Shielded room
Condition: FCC CLASS-B KNW-407 NEUTRAL
EUT : 18"FLAT PANEL COLOR MONITOR M/N:P4830**
Power : 120Vac/60Hz
Memo : 1280*1024/75Hz 80KHz (D-SUB)

Data#: 28 File#: D:\philips-7.EMI Date: 2002-02-25 Time: 23:35:27

Site : No.3 Shielded room
Condition : FCC CLASS-B KNW-407 NEUTRAL
EUT : 18"FLAT PANEL COLOR MONITOR M/N:P4830**
Power : 120Vac/60Hz
Memo : 1280*1024/75Hz 80KHz (D-SUB)

			Over	Limit	Read	Probe	Cable	
	Freq	Level	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.485	29.86	-18.14	48.00	29.26	0.40	0.20	QP
2	0.544	31.64	-16.36	48.00	31.04	0.40	0.20	QP
3	0.665	30.54	-17.46	48.00	29.94	0.40	0.20	QP
4	0.907	26.54	-21.46	48.00	25.94	0.40	0.20	QP
5	2.904	29.26	-18.74	48.00	28.46	0.40	0.40	QP
6	14.206	21.24	-26.76	48.00	19.74	0.80	0.70	QP



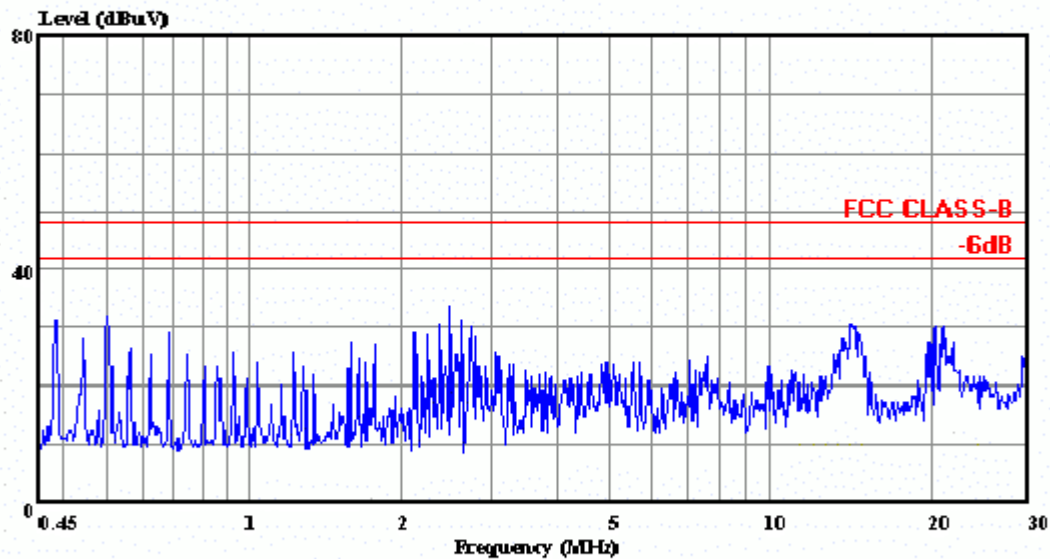
TAIWAN TOKIN EMC ENG. CORP.
台灣東金科技股份有限公司

No.53-11, Tin-fu Tsun, Lin-kou Hsiang,
Taipei Country, Taiwan, R.O.C.
Tel:02-26092133 Fax:02-26099303
Email:ttemc@ttemc.com.tw

Data#: 33

File#: philips-7.EMI

Date: 2002-03-07 Time: 16:17:24



Site : No.3 Shielded room
Condition: FCC CLASS-B KMW-407 LINE
EUT : 18"FLAT PANEL COLOR MONITOR M/N:P4830**
Power : 120Vac/60Hz
Memo : 1280*1024/60Hz 64KHz (DVI)

Data#: 34

File#: D:\philips-7.EMI

Date: 2002-03-07 Time: 16:18:28

Site : No.3 Shielded room
Condition : FCC CLASS-B KMW-407 LINE
EUT : 18"FLAT PANEL COLOR MONITOR M/N:P4830**
Power : 120Vac/60Hz
Memo : 1280*1024/60Hz 64KHz (DVI)

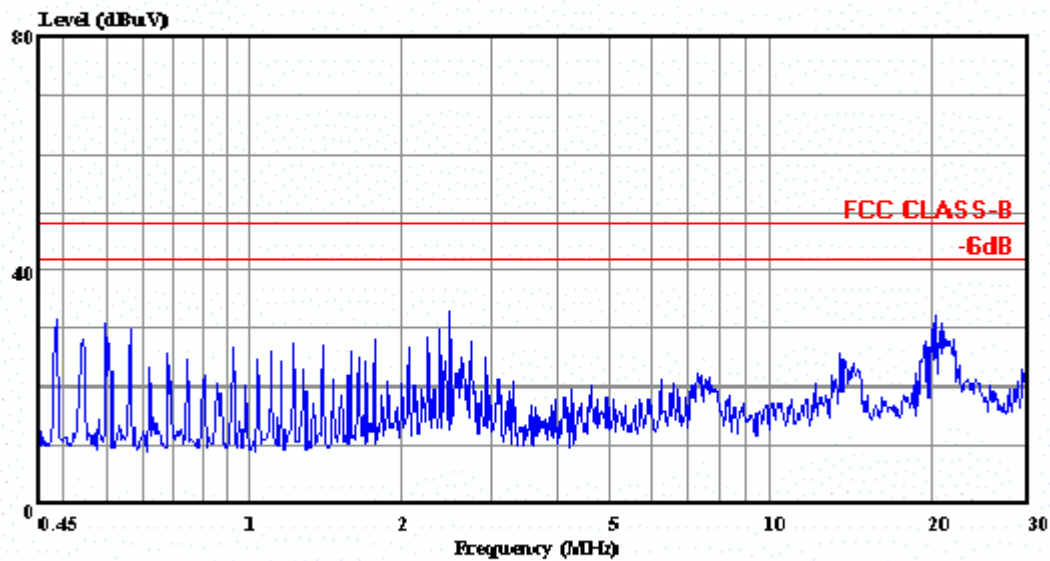
			Over	Limit	Read	Probe	Cable	
	Freq	Level	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.485	28.70	-19.30	48.00	28.10	0.40	0.20	QP
2	0.606	29.15	-18.85	48.00	28.55	0.40	0.20	QP
3	0.783	29.14	-18.86	48.00	28.54	0.40	0.20	QP
4	2.593	33.45	-14.55	48.00	32.65	0.40	0.40	QP
5	14.446	29.96	-18.04	48.00	28.46	0.80	0.70	QP
6	20.386	30.08	-17.92	48.00	28.28	1.10	0.70	QP

TOKIN

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台灣東金科技股份有限公司

No.53-11, Tin-fu Tsun, Lin-kou Hsiang,
Taipei Country, Taiwan, R.O.C.
Tel:02-26092133 Fax:02-26099303
Email:ttemc@ttemc.com.tw

Data#: 35 File#: philips-7.EMI Date: 2002-03-07 Time: 16:18:31



Site : No.3 Shielded room
Condition: FCC CLASS-B KNW-407 NEUTRAL
EUT : 18"FLAT PANEL COLOR MONITOR M/N:P4830**
Power : 120Vac/60Hz
Memo : 1280*1024/60Hz 64KHz (DVI)

Data#: 36 File#: D:\philips-7.EMI Date: 2002-03-07 Time: 16:19:26

Site : No.3 Shielded room
Condition : FCC CLASS-B KNW-407 NEUTRAL
EUT : 18"FLAT PANEL COLOR MONITOR M/N:P4830**
Power : 120Vac/60Hz
Memo : 1280*1024/60Hz 64KHz (DVI)

			Over	Limit	Read	Probe	Cable	
	Freq	Level	Limit	Line	Level	Factor	Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.487	31.49	-16.51	48.00	30.89	0.40	0.20	QP
2	0.599	30.72	-17.28	48.00	30.12	0.40	0.20	QP
3	0.665	29.75	-18.25	48.00	29.15	0.40	0.20	QP
4	2.593	32.85	-15.15	48.00	32.05	0.40	0.40	QP
5	14.146	22.43	-25.57	48.00	20.93	0.80	0.70	QP
6	19.962	29.76	-18.24	48.00	27.96	1.10	0.70	QP

3. RADIATED EMISSION TEST

3.1. Test Equipment

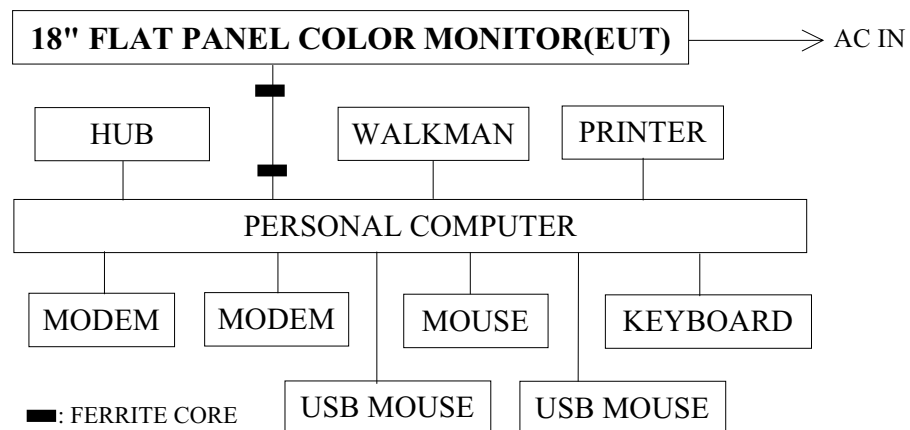
The following test equipment were used during the radiated emission tests :

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Advantest	R3361A	91720097	N/A	N/A
2.	Test Receiver	R & S	ESVP	861190/011	Apr.25, 01'	1 Year
3.	Biconical Antenna	Chase	VBA6106A	1231	Apr.16, 01'	1 Year
4.	Biconical Antenna	Chase	UPA6109	1027	Apr.16, 01'	1 Year

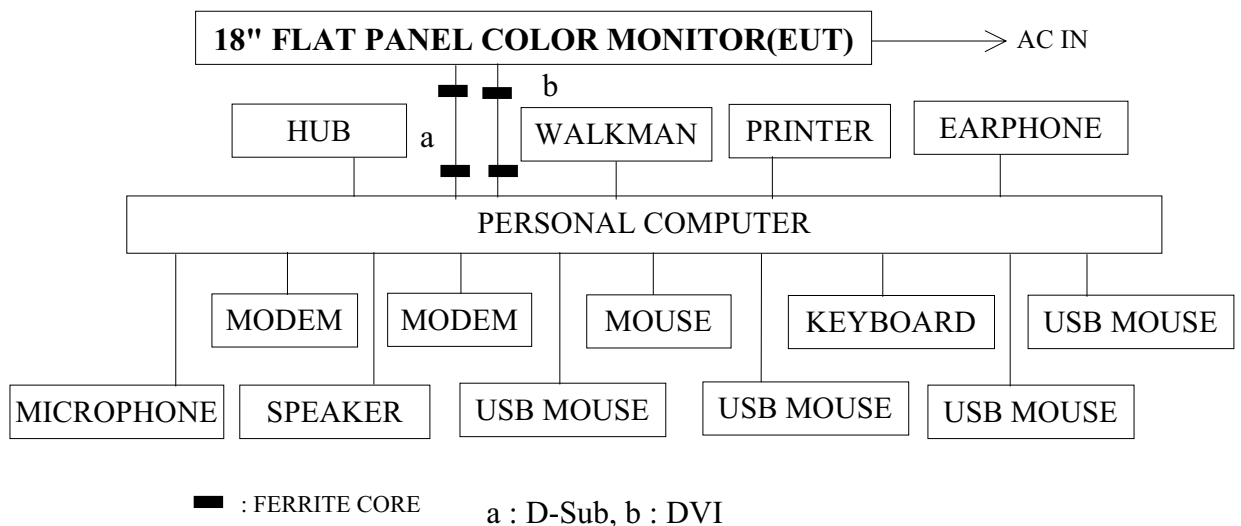
3.2. Block Diagram of Test Setup

3.2.1. Block Diagram of connection between EUT and simulators

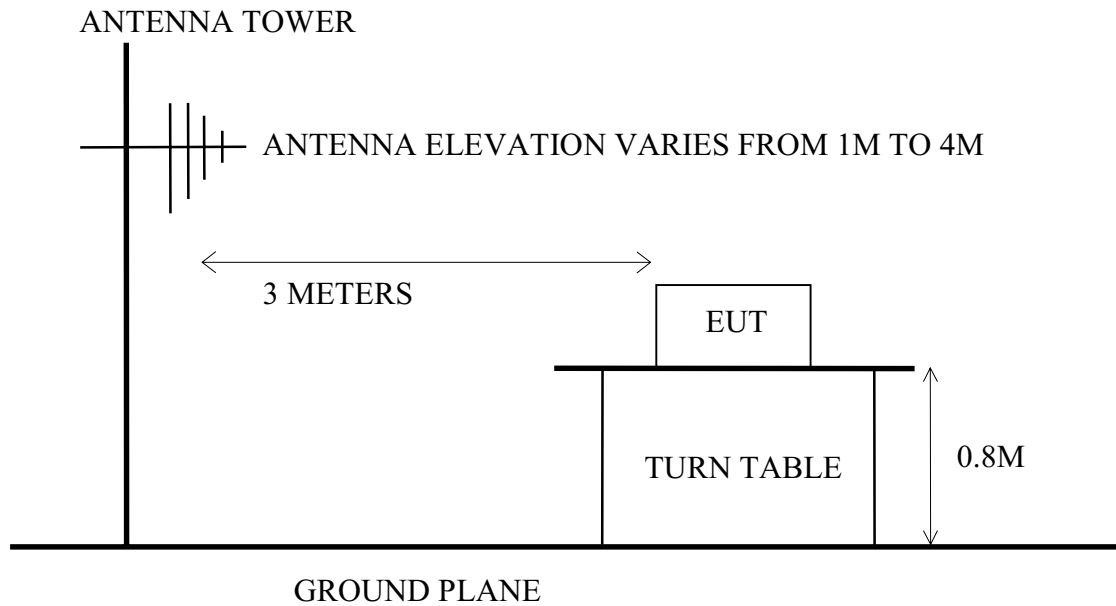
【Mode 1 ~2 : 1024*768/75Hz, 60KHz & 1280*1024/75Hz, 80KHz (D-Sub)】



【Mode 3 : 1280*1024/60Hz, 64KHz (DVI)】



3.2.2. Open Field Test Site (3M) Setup Diagram



3.3. Radiation Limit (CLASS B)

FREQUENCY	DISTANCE	FIELD STRENGTHS LIMITS	
MHz	Meters	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0

Remark :

- (1) Emission level ($\text{dB}\mu\text{V/m}$) = $20 \log$ Emission level ($\mu\text{V/m}$)
- (2) The tighter limit applies at the edge between two frequency bands.
- (3) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

3.4. EUT's Configuration during Compliance Measurement

The configuration of EUT and its supporting system were same as those used in conducted measurement. Please refer to section 2.4.

3.5. Operating Condition of EUT

Same as conducted measurement which was listed in 2.5. except the test set up replaced by section 3.2.

3.6. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above ground. The turn table rotate 360 degrees to determine the position of the maximum emission level. EUT was set 3 meters away from the receiving antenna which were mounted on a antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) and dipole antenna were used as receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4-1992 on radiated measurement.

The bandwidth of the R&S Test Receiver ESVP was set at 120KHz.

The frequency range from 30MHz to 1000MHz was checked.

The test voltage was AC 120V/60Hz.

EUT with two kinds of horizontal working frequency and two kinds of data cable were done during radiated measurement separately and all the test results are listed in section 3.7.

Three kinds of test modes are as follows:

Mode	Frequency Resolution	Cable
1.	1024*768/75Hz, 60KHz	D-Sub
2.	1280*1024/75Hz, 80KHz	D-Sub
3.	1280*1024/60Hz, 64KHz	DVI

3.7. Radiated Emission Measurement Results

PASSED.

All the emissions not reported below are against the FCC PART 15 SUBPART B CLASS B limit.

Date of Test : Feb. 25, 2001 Temperature : 21°C
 EUT : 18" Flat Panel Color Monitor Humidity : 70%
 Test Mode : 1024*768/75Hz, 60KHz (D-Sub)

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Limits dBμV/m	Margin dB
54.001	14.29	1.20	8.41	23.90	40.00	16.10
79.204	14.00	1.40	4.93	20.33	40.00	19.67
108.007	18.30	1.60	8.21	28.11	43.50	15.39
162.013	20.53	2.00	1.96	24.49	43.50	19.01
201.618	21.64	2.20	0.95	24.79	43.50	18.71
216.019	22.03	2.20	4.56	28.79	46.00	17.21
270.025	24.30	2.60	5.53	32.43	46.00	13.57
* 378.036	16.62	3.10	14.65	34.37	46.00	11.63
432.042	16.68	3.40	12.58	32.66	46.00	13.34
486.048	17.66	3.60	5.47	26.73	46.00	19.27
540.054	18.99	4.00	4.86	27.85	46.00	18.15
702.072	21.60	4.40	0.57	26.57	46.00	19.43
756.073	21.83	4.60	4.75	31.18	46.00	14.82

- Remarks :
1. All reading are Quasi-Peak values.
 2. '*' The worst emission is detected at 378.036MHz with corrected signal level of 34.37dBμV/m (limit is 46.0dBμV/m) when the antenna is at horizontal polarization and is at 1.9m high and the turn table is at 295°
 3. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

Date of Test : Feb. 25, 2001 Temperature : 21°C
 EUT : 18" Flat Panel Color Monitor Humidity : 70%
 Test Mode : 1024*768/75Hz, 60KHz (D-Sub)

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading		Emission Level		Margin dB
			Vertical dBμV	Vertical dBμV/m	Vertical dBμV/m	Limits dBμV/m	
54.001	14.42	1.20	13.71	29.33	40.00	40.00	10.67
79.204	14.08	1.40	9.05	24.53	40.00	40.00	15.47
108.007	17.87	1.60	6.15	25.62	43.50	43.50	17.88
147.612	18.57	1.80	1.01	21.38	43.50	43.50	22.12
176.415	19.02	2.00	1.93	22.95	43.50	43.50	20.55
230.421	24.10	2.40	5.52	32.02	46.00	46.00	13.98
270.028	24.59	2.60	10.12	37.31	46.00	46.00	8.69
* 284.430	24.96	2.80	10.55	38.31	46.00	46.00	7.69
324.029	14.89	2.80	13.83	31.52	46.00	46.00	14.48
378.035	15.56	3.10	18.81	37.47	46.00	46.00	8.53
432.041	16.49	3.40	12.66	32.55	46.00	46.00	13.45
500.445	18.50	3.80	6.65	28.95	46.00	46.00	17.05
540.049	18.97	4.00	7.80	30.77	46.00	46.00	15.23
648.061	20.33	4.20	5.49	30.02	46.00	46.00	15.98
756.073	21.84	4.60	5.05	31.49	46.00	46.00	14.51

- Remarks :
1. All reading are Quasi-Peak values.
 2. "*"The worst emission is detected at 284.430MHz with corrected signal level of 38.31dBμV/m (limit is 46.0dBμV/m) when the antenna is at vertical polarization and is at 1m high and the turn table is at 70°
 3. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

Date of Test : Feb. 25, 2001 Temperature : 21°C
 EUT : 18" Flat Panel Color Monitor Humidity : 70%
 Test Mode : 1280*1024/75Hz, 80KHz (D-Sub)

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading		Emission Level		Margin dB
			Horizontal dB μ V		Horizontal dB μ V/m	Limits dB μ V/m	
54.003	14.29	1.20	5.95		21.44	40.00	18.56
81.004	14.26	1.60	6.69		22.55	40.00	17.45
108.006	18.30	1.60	7.23		27.13	43.50	16.37
162.009	20.53	2.00	2.52		25.05	43.50	18.45
175.509	20.94	2.00	4.81		27.75	43.50	15.75
216.011	22.03	2.20	6.06		30.29	46.00	15.71
270.014	24.30	2.60	6.35		33.25	46.00	12.75
378.016	16.62	3.15	15.18		34.95	46.00	11.05
432.016	16.68	3.40	11.93		32.01	46.00	13.99
540.022	18.99	4.00	3.20		26.19	46.00	19.81
675.029	20.95	4.40	2.14		27.49	46.00	18.51
756.033	21.83	4.60	3.91		30.34	46.00	15.66
918.043	22.95	5.20	3.10		31.25	46.00	14.75

Remarks : 1. All reading are Quasi-Peak values.

Date of Test : Feb. 25, 2001 Temperature : 21°C
 EUT : 18" Flat Panel Color Monitor Humidity : 70%
 Test Mode : 1280*1024/75Hz, 80KHz (D-Sub)

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading		Emission Level	
			Vertical dB μ V	Vertical dB μ V/m	Limits dB μ V/m	Margin dB
54.003	14.42	1.20	11.28	26.90	40.00	13.10
81.004	14.25	1.60	9.11	24.96	40.00	15.04
108.006	17.87	1.60	5.35	24.82	43.50	18.68
175.509	19.19	2.00	0.88	22.07	43.50	21.43
216.011	23.34	2.20	1.74	27.28	46.00	18.72
270.014	24.59	2.60	9.39	36.58	46.00	9.42
283.515	24.86	2.80	7.28	34.94	46.00	11.06
324.017	14.89	2.80	13.83	31.52	46.00	14.48
378.020	15.56	3.10	18.60	37.26	46.00	8.74
432.023	16.49	3.40	10.17	30.06	46.00	15.94
540.028	18.97	4.00	4.96	27.93	46.00	18.07
675.030	21.35	4.40	4.44	30.19	46.00	15.81
756.034	21.84	4.60	4.65	31.09	46.00	14.91
918.043	24.05	5.20	3.50	32.75	46.00	13.25

Remarks : 1. All reading are Quasi-Peak values.

Date of Test : Feb. 25, 2001 Temperature : 21°C
 EUT : 18" Flat Panel Color Monitor Humidity : 70%
 Test Mode : 1280*1024/60Hz, 64KHz (DVI)

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading		Emission Level		Margin dB
			Horizontal dBμV		Horizontal dBμV/m	Limits dBμV/m	
40.502	19.49	1.00	6.47		26.96	40.00	13.04
81.001	14.26	1.60	7.45		23.31	40.00	16.69
87.751	15.72	1.40	10.51		27.63	40.00	12.37
148.499	20.09	1.80	5.50		27.39	43.50	16.11
202.497	21.66	2.20	4.27		28.13	43.50	15.37
215.997	22.03	2.20	7.80		32.03	43.50	11.47
229.496	22.49	2.40	10.32		35.21	46.00	10.79
245.212	23.76	2.50	2.86		29.12	46.00	16.88
283.494	24.89	2.80	5.89		33.58	46.00	12.42
375.040	16.61	3.20	11.18		30.99	46.00	15.01
445.483	17.05	3.40	8.10		28.55	46.00	17.45
526.525	18.72	3.80	6.26		28.78	46.00	17.22
647.984	20.39	4.20	4.79		29.38	46.00	16.62
755.994	21.83	4.60	7.51		33.94	46.00	12.06
* 863.980	23.51	5.10	12.15		40.76	46.00	5.24
971.978	24.69	5.60	16.76		47.05	54.00	6.95

- Remarks :
1. All reading are Quasi-Peak values.
 2. '*' The worst emission is detected at 863.980MHz with corrected signal level of 40.76dBμV/m (limit is 46.0dBμV/m) when the antenna is at horizontal polarization and is at 1.9m high and the turn table is at 100°
 3. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

Date of Test : Feb. 25, 2001 Temperature : 21°C

EUT : 18" Flat Panel Color Monitor Humidity : 70%

Test Mode : 1280*1024/60Hz, 64KHz (DVI)

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading		Emission Level		Margin dB
			Vertical dB μ V		Vertical dB μ V/m	Limits dB μ V/m	
49.170	16.29	1.00	10.24		27.53	40.00	12.47
76.050	13.45	1.40	12.76		27.61	40.00	12.39
81.000	14.25	1.60	8.84		24.69	40.00	15.31
148.494	18.42	1.80	2.62		22.84	43.50	20.66
175.493	19.19	2.00	2.66		23.85	43.50	19.65
215.992	23.34	2.20	1.33		26.87	43.50	16.63
229.492	24.25	2.40	7.50		34.15	46.00	11.85
236.242	23.47	2.40	7.19		33.06	46.00	12.94
256.491	24.74	2.60	6.11		33.45	46.00	12.55
* 283.490	24.86	2.80	11.48		39.14	46.00	6.86
377.990	15.56	3.15	13.88		32.59	46.00	13.41
445.487	16.82	3.40	14.47		34.69	46.00	11.31
539.984	18.97	4.00	14.92		37.89	46.00	8.11
755.977	21.84	4.60	6.76		33.20	46.00	12.80
816.760	22.34	5.00	8.48		35.82	46.00	10.18
944.625	25.28	5.40	2.95		33.63	46.00	12.37
971.970	25.39	5.60	7.49		38.48	54.00	15.52

- Remarks :
1. All reading are Quasi-Peak values.
 2. “*”The worst emission is detected at 283.490MHz with corrected signal level of 39.14dB μ V/m (limit is 46.0dB μ V/m) when the antenna is at vertical polarization and is at 1.5m high and the turn table is at 45°
 3. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

4. DEVIATION TO TEST SPECIFICATIONS

【NONE】

5. PHOTOGRAPHS

5.1. Photos of Powerline Conducted Measurement

Mode 1 ~2 : 1024*768/75Hz, 60KHz & 1280*1024/75Hz, 80KHz (D-Sub)



FRONT VIEW OF CONDUCTED TEST



BACK VIEW OF CONDUCTED TEST

Mode 3 : 1280*1024/60Hz, 64KHz (DVI)



FRONT VIEW OF CONDUCTED TEST



BACK VIEW OF CONDUCTED TEST

5.2. Photos of Radiated Measurement at Open Field Test Site

Mode 1 ~2 : 1024*768/75Hz, 60KHz & 1280*1024/75Hz, 80KHz (D-Sub)



FRONT VIEW OF RADIATED TEST



BACK VIEW OF RADIATED TEST

Mode 1 : 1024*768/75Hz, 60KHz (D-Sub)



SETUP WITH MAXIMUM DETECTED EMISSION AT HORIZONTAL POLARIZATION



SETUP WITH MAXIMUM DETECTED EMISSION AT VERTICAL POLARIZATION

Mode 3 : 1280*1024/60Hz, 64KHz (DVI)



FRONT VIEW OF RADIATED TEST



BACK VIEW OF RADIATED TEST



SETUP WITH MAXIMUM DETECTED EMISSION AT HORIZONTAL POLARIZATION



SETUP WITH MAXIMUM DETECTED EMISSION AT VERTICAL POLARIZATION