



EMC

TEST REPORT

REPORT NO. : F87071008

MODEL NO. : PR710TU, PR710T,
PR710, PR700TU,
PR700T, PR700

DATE OF TEST : July 31, 1998

PREPARED FOR : CHUNTEX ELECTRONIC CO., LTD.

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PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION



Accredited Laboratory

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1.

CERTIFICATION

Issue Date: Aug. 5, 1998

Product : COLOR MONITOR
Trade Name : CTX
Model No. : PR710TU, PR710T, PR710,
 PR700TU, PR700T, PR700
Applicant : CHUNTEX ELECTRONIC CO., LTD.
Standard : FCC Part 15, Subpart B, Class B
 ANSI C63.4-1992
 CISPR 22:1993+A1+A2

We hereby certify that one sample (PR710TU) of the designation has been tested in our facility on July 31, 1998. The test record, data evaluation and Equipment Under Test (EUT) configurations represent herein are true and accurate representation of the measurements of the sample's EMC characteristics under the conditions herein specified.

The test results show that the EUT as described in this report is in compliance with the Class B limits of conducted and radiated emission of applicable standards.

TESTED BY: Jone Lin, DATE: 8/5/98'
(Jone Lin)

CHECKED BY: Ariel Hsieh, DATE: 8/5/98
(Ariel Hsieh)

APPROVED BY: Mike Su, DATE: 8/5/98
(Mike Su)

ADVANCE DATA TECHNOLOGY CORPORATION

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	COLOR MONITOR
Model No.	:	PR710TU, PR710T, PR710, PR700TU, PR700T, PR700
Power Supply Type	:	Switching
Power Cord	:	Shielded (1.8m)
Data Cable	:	Shielded (1.8m)

Note: The EUT is a 17" color monitor with resolution up to 1600x1200 (93.7 kHz).

The EUT has six model names, which are identical to each other in all aspects except for the following:

- MODEL: PR710TU: resolution: 30~95 kHz; with TCO Monitor & USB port
- MODEL: PR710T: resolution: 30~95 kHz;
with TCO Monitor but without USB port
- MODEL: PR710: resolution: 30~95 kHz;
with MPR II Monitor but without USB port
- MODEL: PR700TU: resolution: 30~70 kHz; with TCO Monitor & USB port
- MODEL: PR700T: resolution: 30~70 kHz;
with TCO Monitor but without USB port
- MODEL: PR700: resolution: 30~70 kHz;
with MPR II Monitor but without USB port

From the above models, model: PR710TU was selected as the representative during the test, and therefore only its data is recorded in this report.

The EUT was tested with a USB box, which acted as a base for the EUT.

There are two ferrite cores on the video cable outside the monitor.

For more detailed features description, please refer to ATTACHMENT 1 - TECHNICAL DESCRIPTION OF EUT and User's Manual.



2.2 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories are used to form representative test configuration during the tests.

No.	Product	Brand	Model No.	FCC ID	I/O Cable
1	PERSONAL COMPUTER	HP	D4579A	DoC Approved	Shielded USB Cable (1.8m) Nonshielded Power (1.8m)
2	KEYBOARD	FORWARD	FDA-104GA	F4ZDA-104G	Shielded Signal (1.4m)
3	MOUSE	ACER	M-S34	DZL211029	Shielded Signal (1.5m)
4	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.0m) Nonshielded Power (1.8m)
5	MODEM	ACEEX	1414	IFAXDM1414	Shielded Signal (1.2m) Nonshielded Power (1.8m)
6	CCD CAMERA	COMPAQ	YC72-CPQ	EDUYC72-CPQ	Shielded Signal (1.8m)
7	VGA CARD	DIAMOND	STEALTH 64 VIDEO	FTUPCI968524	N/A

Note: 1. Support unit 6 was connected to the USB port of EUT.
 2. Three USB cables (1.8m) were connected to the three USB ports of EUT to form three open loop cables.

2.3 TEST METHODOLOGY AND CONFIGURATION

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4: 1992. Radiated testing was performed at an antenna to EUT distance of 3/10 m on an open area test site.

Please refer to the photos of test configuration in Item 5.

3.1 TEST INSTRUMENTS (MISSION)

3. TEST INSTRUMENTS

RADIATED EMISSIONS MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated until	Calibrated until	Calibrated until
HP Spectrum Analyzer	8590L	3544A00941	Dec. 14, 1998	Sept. 10, 1998	Sept. 4, 1998
HP Pre-Amplifier	8447D	2944A08312	Sept. 10, 1998	Sept. 10, 1998	Sept. 10, 1998
HP Pre-Amplifier	8347A	3307A01088	Sept. 4, 1998	Sept. 4, 1998	Sept. 4, 1998
R&S Receiver	ESV10	844591/010	Sept. 23, 1998	Sept. 23, 1998	Sept. 23, 1998
SCHWARTZBECK Tunable Dipole Antenna	VHA 9103	E101051	Nov. 28, 1998	Nov. 28, 1998	Nov. 28, 1998
CHASE BILLIG Antenna	CBL611A	1500	Sept. 12, 1998	Sept. 12, 1998	Sept. 12, 1998
EMCO Double Ridge Guide Antenna	3115	9312-4192	April 3, 1999	April 3, 1999	April 3, 1999
EMCO Tum Table	1060-04	1196	N/A	N/A	N/A
EMCO Tower	1051	1264	N/A	N/A	N/A
Open Field Test Site		Site 1	ADT-R01	Sept. 5, 1998	Sept. 5, 1998

Note: 1. The measurement uncertainty is less than +/- 3dB, which is calculated as per NAMA's document NIS81.

2. The calibration interval of the above test instruments is 12 months.

And the calibrations are traceable to NML/ROC and NIST/USA.

CONDUCTED EMISSIONS MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated until	Calibrated until	Calibrated until
ROHDE & SCHWARZ Spectrum Monitor	EZM	893787/013	July 16, 1999	July 16, 1999	July 16, 1999
ROHDE & SCHWARZ Artificial Mains Network	ESHS-25	839135/006	July 14, 1999	July 14, 1999	July 14, 1999
EMCO-L.I.S.N.	3825/2	9204-1964	July 14, 1999	July 14, 1999	July 14, 1999
Shielded Room		Site 2	ADT-C02	N/A	N/A

Note: 1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per NAMA's document NIS81.

2. The calibration interval of the above test instruments is 12 months.

And the calibrations are traceable to NML/ROC and NIST/USA.



3.2 LIMITS OF CONDUCTED AND RADIATED EMISSION

LIMIT OF RADIATED EMISSION OF CISPR 22

FREQUENCY (MHz)	Class A (at 10m)	Class B (at 10m)
	dBuV/m	dBuV/m
30 - 230	40	30
230 - 1000	47	37

LIMIT OF RADIATED EMISSION OF FCC PART 15, SUBPART B FOR FREQUENCY ABOVE 1000 MHz

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	uV/m	dBuV/m	uV/m	dBuV/m
Above 1000	300	49.5	500	54.0

Note: (1) The lower limit shall apply at the transition frequencies.

- (2) Emission level (dBuV/m) = 20 log Emission level (uV/m).
- (3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

LIMIT OF CONDUCTED EMISSION OF CISPR 22

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.5	79	66	66 - 56	56 - 46
0.50 - 5.0	73	60	56	46
5.0 - 30.0	73	60	60	50

Note: (1) The lower limit shall apply at the transition frequencies.

- (2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 to 0.50 MHz
- (3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.



4. TEST RESULTS (EMISSION)

4.1 RADIO DISTURBANCE

Frequency Range : 0.15 - 30 MHz (Conducted Emission)
 : 30 - 2000 MHz (Radiated Emission)
 Input Voltage : 120 Vac, 60 Hz
 Temperature : 26 °C
 Humidity : 55 %
 Atmospheric Pressure : 994 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -19.7 dB at 0.286 MHz Minimum passing margin of radiated emission: -2.2 dB at 31.14 MHz

Note: The EUT was pretested under the following resolution & horizontal synchronization speed mode:

- * 1600x1200 mode (93.7kHz),
- * 1280x1024 mode (80 kHz),
- * 640x480 mode (31.5 kHz)

The worst emission levels were found under 1600x1200 mode (93.7 kHz) and therefore the test data of only this mode is recorded.

4.2 EUT OPERATION CONDITION

1. Turn on the power of all equipments.
2. PC runs a test program to enable all functions.
3. PC reads and writes messages from FDD and HDD.
4. PC sends "H" messages to monitor (EUT) and monitor displays "H" patterns on screen.
5. CCD camera captures images and sends video messages to monitor, and then monitor displays them on the screen.
6. PC sends "H" messages to modem.
7. PC sends "H" messages to printer, and printer prints them on paper.
8. Repeat steps 3-8.



4.3 TEST DATA OF CONDUCTED EMISSION

EUT: **COLOR MONITOR**MODEL: **PR710TU**MODE: **1600x1200 (93.7 kHz)**

6 dB Bandwidth: 10 kHz

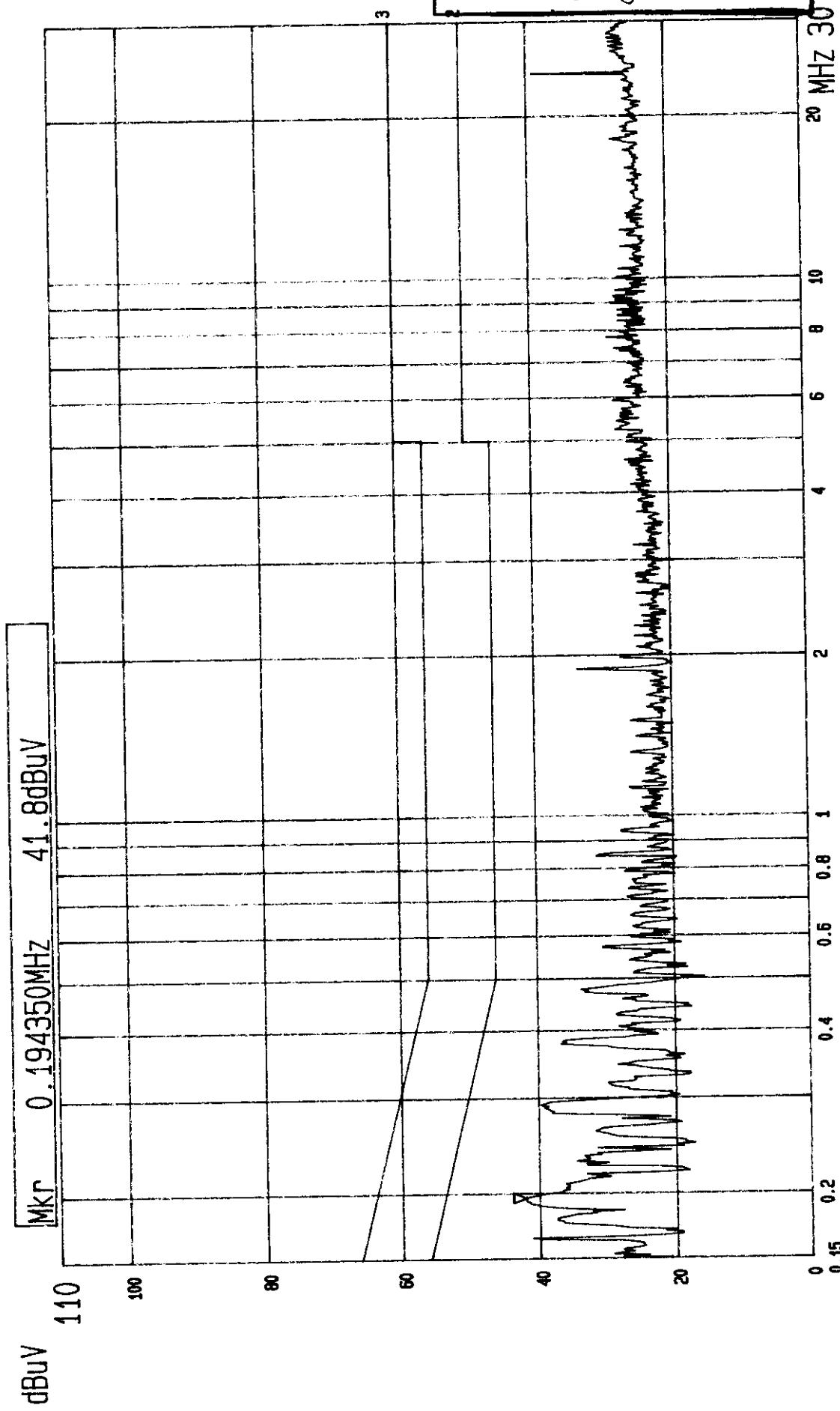
TEST PERSONNEL: *John Lin*

Freq. [MHz]	L Level		N Level		Limit		Margin [dB (μ V)]			
	[dB (μ V)]		[dB (μ V)]		[dB (μ V)]		L		N	
	QP	AV	QP	AV	QP	AV	QP	AV	QP	AV
0.185	40.10	-	42.30	-	64.26	54.26	-24.2	-	-22.0	-
0.286	39.00	-	40.90	-	60.62	50.62	-21.6	-	-19.7	-
0.570	30.20	-	29.40	-	56.00	46.00	-25.8	-	-26.6	-
1.874	33.50	-	28.60	-	56.00	46.00	-22.5	-	-27.4	-
7.746	28.60	-	22.10	-	60.00	50.00	-31.4	-	-37.9	-
23.986	39.00	-	36.50	-	60.00	50.00	-21.0	-	-23.5	-

Remarks:

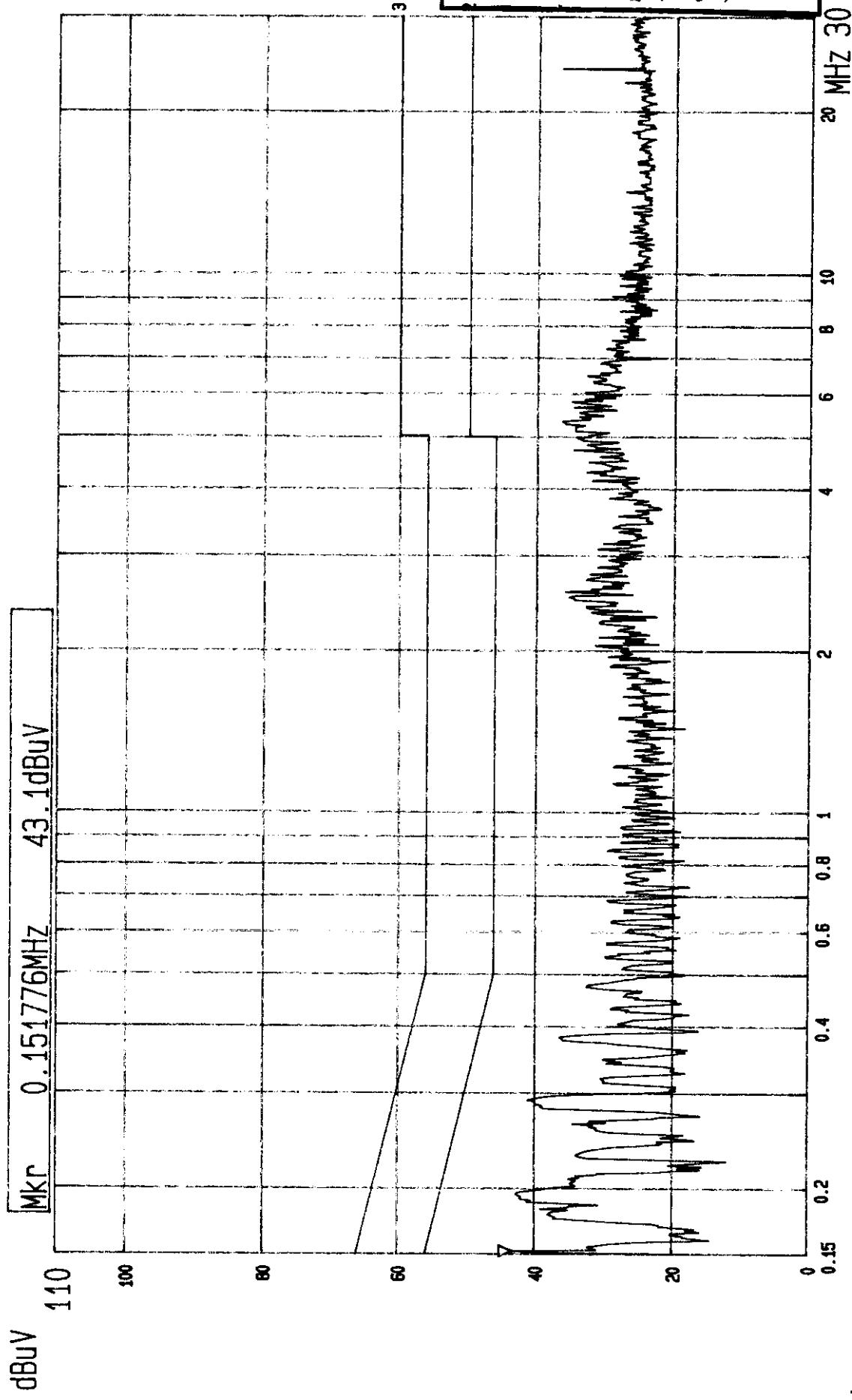
1. "*": Undetectable
2. Q.P. and AV. are abbreviations of quasi-peak and average individually.
3. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
4. The emission levels of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value

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Tested by Jone Lin



ADT CORP
LTSN: L
--- Date 31 JUL '98 Time 09:49:44
CISPR 22 CLASS B CONDUCTION TEST (PEAK VALUE)
MODEL: PR710TU 1600X1200 93KHZ 4WIN

Report No. F87021008
Page 9-2
Tested by John L. L.



--- Date 31 JUL '98 Time 09:52:51
CISPR 22 CLASS B CONDUCTION TEST (PEAK VALUE)
MODEL: PR710TU 1600X1200 93KHZ 4WIN
ADT CORP
LISN: N



4.4 TEST DATA OF RADIATED EMISSION

EUT: **COLOR MONITOR**MODEL: **PR710TU**MODE: **1600x1200 (93.7 kHz)**POLARITY: **Horizontal**

ANTENNA: CHASE BILOG CBL6111A/EMCO Horn 3115

DETECTOR FUNCTION AND BANDWIDTH: Quasi peak, 120 kHz (30-1000 MHz)
Peak, 1 MHz (1000 MHz-2000 MHz)

FREQUENCY RANGE: 30-1000 MHz

MEASURED DISTANCE: 10 M

FREQUENCY RANGE: 1000-2000 MHz

MEASURED DISTANCE: 3 MTEST PERSONNEL: John L. H.

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
30.29	19.9	7.6	27.5	30.0	-2.5
38.33	17.0	4.3	21.3	30.0	-8.7
46.79	12.9	7.4	20.3	30.0	-9.7
124.65	14.8	7.1	21.9	30.0	-8.1
131.99	14.7	7.5	22.2	30.0	-7.8
202.54	12.9	10.9	23.8	30.0	-6.2
204.01	13.0	8.6	21.6	30.0	-8.4
216.02	14.2	10.1	24.3	30.0	-5.7

REMARKS:

1. Emission level (dBuV/m) = Correction Factor (dB/m) + Meter Reading (dBuV).
2. Correction Factor (dB/m) = Ant. Factor (dB/m) + Cable loss (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level - Limit value

TEST DATA OF RADIATED EMISSION

EUT: COLOR MONITOR
MODEL: PR710TU
MODE: 1600x1200 (93.7 kHz)
POLARITY: Vertical

ANTENNA: CHASE BILLIG CBL6111A/EMCO Hom 3115
DETECTOR FUNCTION AND BANDWIDTH: Quasi peak, 120 kHz (30-1000 MHz)
Peak, 1 MHz (1000-2000 MHz)
FREQUENCY RANGE: 30-1000 MHz
MEASURED DISTANCE: 10 M

FREQUENCY RANGE: 1000-2000 MHz
MEASURED DISTANCE: 3 M

TEST PERSONNEL: John 619

Frequency (MHz)	Correction Factor (dB/m)	Readings Level (dBuV)	Emission Level (dBuV/m)	Margin (dB)
31.14	19.0	8.8	27.8	30.0
40.46	14.8	12.1	26.9	30.0
46.84	12.4	14.3	26.7	30.0
57.28	8.6	16.0	24.6	30.0
59.38	8.0	13.2	21.2	30.0
78.01	8.0	14.9	22.9	30.0
108.73	13.3	13.7	27.0	30.0
124.61	15.8	9.6	25.4	30.0
144.02	16.5	8.0	24.5	30.0
182.83	12.8	7.5	20.3	30.0
202.52	13.9	12.3	26.2	30.0
218.22	14.8	9.2	24.0	30.0
228.03	15.3	8.0	23.3	30.0

REMARKS: 1. Emission level (dBuV/m) = Correction Factor (dB/m) + Meter Reading (dBuV).

2. Correction Factor (dB/m) = Ant. Factor (dB/m) + Cable loss (dB)

3. The other emission levels were very low against the limit.

4. Margin value = Emission level - Limit value

TEST DATA OF RADIATED EMISSION

Frequency (MHz)	Correction Factor (dB/m)	Readings Level (dBuV)	Emission Level (dBuV/m)	Margin (dB)
31.14	19.0	8.8	27.8	30.0
40.46	14.8	12.1	26.9	30.0
46.84	12.4	14.3	26.7	30.0
57.28	8.6	16.0	24.6	30.0
59.38	8.0	13.2	21.2	30.0
78.01	8.0	14.9	22.9	30.0
108.73	13.3	13.7	27.0	30.0
124.61	15.8	9.6	25.4	30.0
144.02	16.5	8.0	24.5	30.0
182.83	12.8	7.5	20.3	30.0
202.52	13.9	12.3	26.2	30.0
218.22	14.8	9.2	24.0	30.0
228.03	15.3	8.0	23.3	30.0





6. ATTACHMENT I -TECHNICAL DESCRIPTION OF EUT

SPECIFICATIONS:

* Color Picture Tube:	43.1cm/17 inches (viewable 16.0") diagonal measurement 90 degree deflection, Aperture Grille, anti-glare, anti-reflection, anti-static, medium short persistence phosphor, dark bulb.		
* Dot Pitch:	0.25 mm, Aperture Grille		
* Input Signal:	Video: 0.7 Vp-p/75 ohm	Analog Positive	
	Sync.: Separate Sync.	TTL Level	
	Horizontal Sync.	Positive/ Negative	
	Vertical Sync.	Positive/ Negative	
	: Composite Sync.	TTL Level	
	: Composite Sync.	Positive/ Negative	
	0.3 Vp-p	on green video (PR710/710T/710TU)	
* Scan Frequency:	Horizontal 30 to 70 kHz (PR700/700T/700TU) (Automatically) 30 to 95 KHz (PR710/710T/710TU) (Automatically)		
	Vertical 50 to 160 Hz (Automatically)		
* Display Area:	Horizontal 300 mm (Adjustable)		
* Max. Resolution:	1280x1024 (PR700/700T/700TU) / 1600x1200 (PR710/710T/710TU) non-interlaced		
* Display Color:	Analog input unlimited colors		
* Video Bandwidth:	110 MHz (PR700/700T/700TU) / 135 MHz (PR710/710T/710TU)		
* Misconvergence:	Center 0.3 mm, Corner 0.4 mm maximum		
* Plug & Play:	DDC 1/DDC 2B		
* Power Supply:	AC 100-120V/200-240V, 50/60 Hz (Automatically)		
* Power Consumption:	120W (PR700/700T/700TU) / 130W (PR710/710T/710TU) max.		
* Dimensions:	418(W) x 430(H) x 446.5(D) mm		
* Weight:	21.3 Kgs (G.W.) 18.5 Kgs (N.W.)		
* Environmental Consideration:	Operating	Temperature	5°C to 40°C
		Humidity	20% to 80%
	Storage	Temperature	20°C to 60°C
		Humidity	10% to 90%