



# 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.

ADDRESS : 6F, NO. 2, ALLEY 6, LANE 235 PAO CHIAO RD.,  
HSIN TIEN, TAIPEI HSIEN, TAIWAN, R.O.C.

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****NVLAP®**

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## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

|                   |   |                                                   |
|-------------------|---|---------------------------------------------------|
| Product           | : | COLOR MONITOR                                     |
| Model No.         | : | PR710TU, PR710T, PR710,<br>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)<br>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)<br>Nonshielded Power (1.8m)    |
| 5   | MODEM             | ACEEX   | 1414             | IFAXDM1414   | Shielded Signal (1.2m)<br>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. TEST INSTRUMENTS

## 3.1 TEST INSTRUMENTS (EMISSION)

## RADIATED EMISSION MEASUREMENT

| Description & Manufacturer         | Model No. | Serial No. | Calibrated until |
|------------------------------------|-----------|------------|------------------|
| HP Spectrum Analyzer               | 8590L     | 3544A00941 | Dec. 14, 1998    |
| HP Pre-Amplifier                   | 8447D     | 2944A08312 | Sept. 10, 1998   |
| HP Preamplifier                    | 8347A     | 3307A01088 | Sept. 4, 1998    |
| R&S Receiver                       | ESVS10    | 844591/010 | Sept. 23, 1998   |
| SCHWARZBECK Tunable Dipole Antenna | VHA 9103  | E101051    | Nov. 28, 1998    |
| CHASE BILOG Antenna                | CBL611A   | 1500       | Sept. 12, 1998   |
| EMCO Double Ridged Guide Antenna   | 3115      | 9312-4192  | April 3, 1999    |
| EMCO Turn Table                    | 1060-04   | 1196       | N/A              |
| EMCO Tower                         | 1051      | 1264       | N/A              |
| Open Field Test Site               | Site 1    | ADT-R01    | 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 EMISSION MEASUREMENT

| Description & Manufacturer               | Model No. | Serial No. | Calibrated Until |
|------------------------------------------|-----------|------------|------------------|
| ROHDE & SCHWARZ Test Receiver            | ESH3      | 893495/006 | July 15, 1999    |
| ROHDE & SCHWARZ Spectrum Monitor         | EZM       | 893787/013 | July 16, 1999    |
| ROHDE & SCHWARZ Artificial Mains Network | ESH3-Z5   | 839135/006 | July 14, 1999    |
| EMCO-L.T.S.N.                            | 3825/2    | 9204-1964  | July 14, 1999    |
| Shielded Room                            | Site 2    | ADT-C02    | 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<br>(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<br>(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<br>(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                                                                                                                                  |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PASS</b> | Minimum passing margin of conducted emission: -19.7 dB at 0.286 MHz<br>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 MONITORMODEL: PR710TUMODE: 1600x1200 (93.7 kHz)

6 dB Bandwidth: 10 kHz

TEST PERSONNEL: Jone Lin

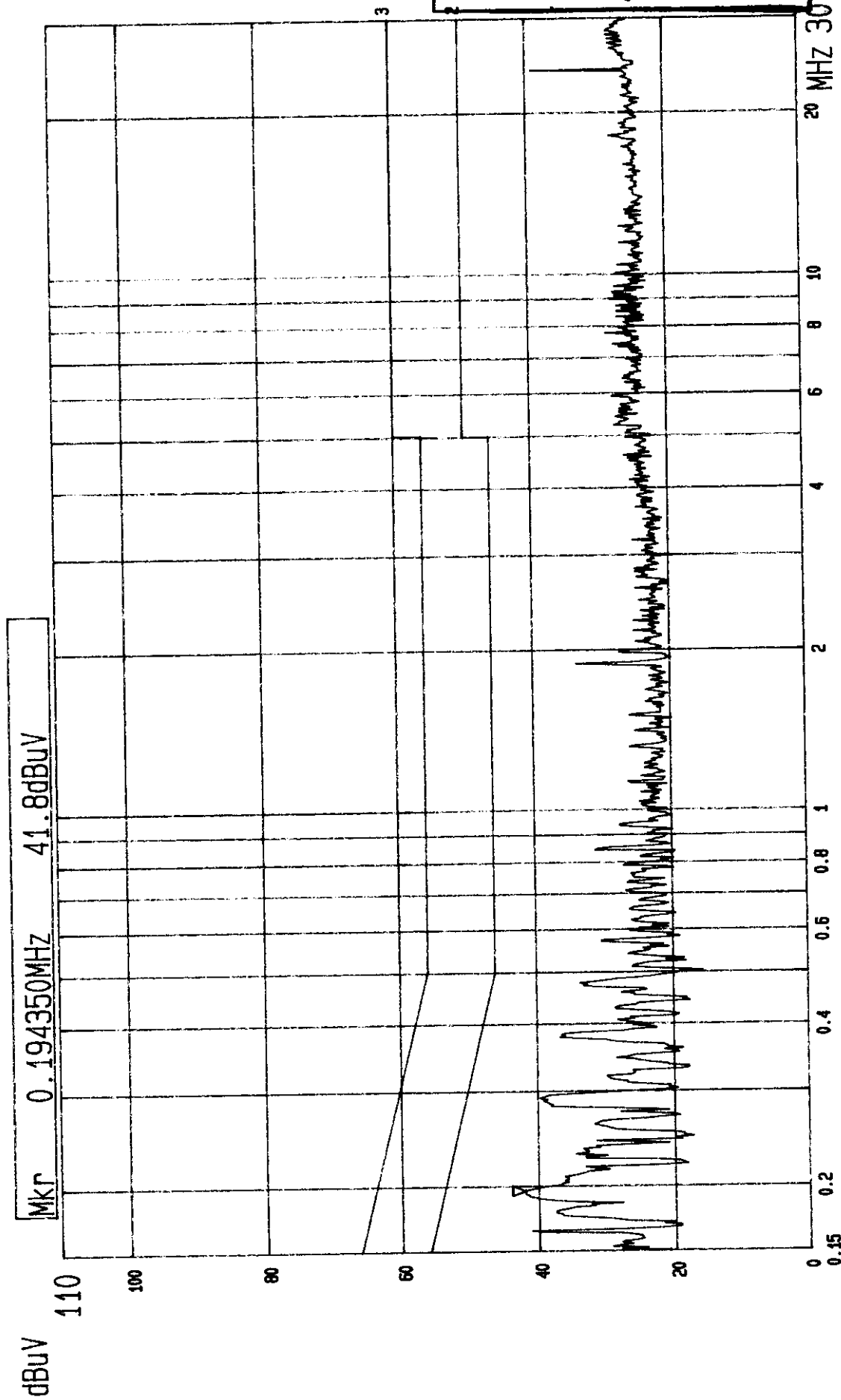
| Freq.  | L Level   |    | N Level   |    | Limit     |       | Margin [dB (μV)] |    |       |    |
|--------|-----------|----|-----------|----|-----------|-------|------------------|----|-------|----|
| [MHz]  | [dB (μV)] |    | [dB (μV)] |    | [dB (μV)] |       | L                |    | N     |    |
|        | 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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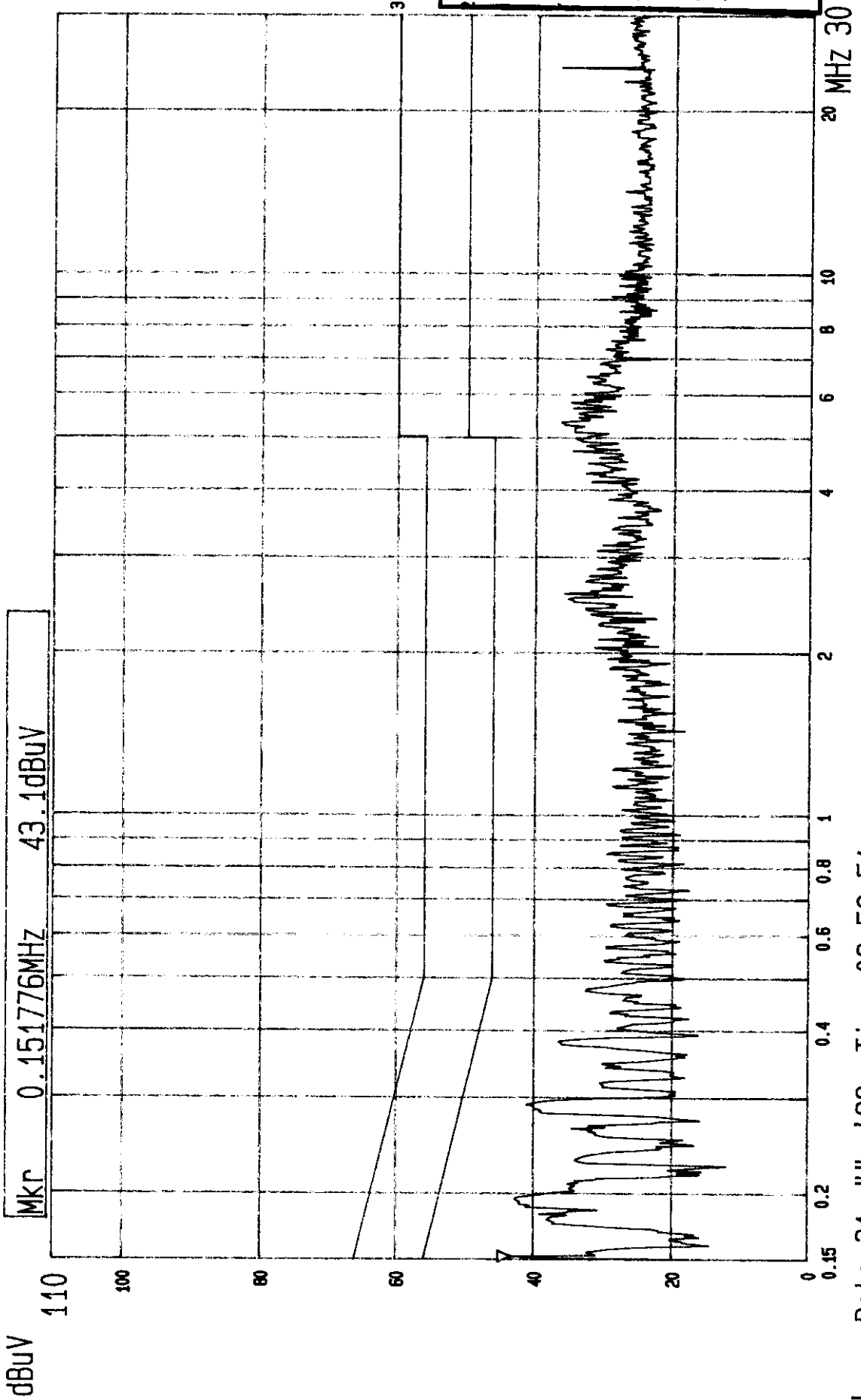
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Tested by Jone Lin



ADT CORP  
LISN: L

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



--- 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 M**

TEST PERSONNEL:

*John Lin*

| Frequency<br>(MHz) | Correction<br>Factor<br>(dB/m) | Reading<br>Data<br>(dBuV) | Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>(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 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 M

TEST PERSONNEL: *John Lin*

| Frequency (MHz) | Correction Factor (dB/m) | Reading Data (dBuV) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|-----------------|--------------------------|---------------------|-------------------------|----------------|-------------|
| 31.14           | 19.0                     | 8.8                 | 27.8                    | 30.0           | -2.2        |
| 40.46           | 14.8                     | 12.1                | 26.9                    | 30.0           | -3.1        |
| 46.84           | 12.4                     | 14.3                | 26.7                    | 30.0           | -3.3        |
| 57.28           | 8.6                      | 16.0                | 24.6                    | 30.0           | -5.4        |
| 59.38           | 8.0                      | 13.2                | 21.2                    | 30.0           | -8.8        |
| 78.01           | 8.0                      | 14.9                | 22.9                    | 30.0           | -7.1        |
| 108.73          | 13.3                     | 13.7                | 27.0                    | 30.0           | -3.0        |
| 124.61          | 15.8                     | 9.6                 | 25.4                    | 30.0           | -4.6        |
| 144.02          | 16.5                     | 8.0                 | 24.5                    | 30.0           | -5.5        |
| 182.83          | 12.8                     | 7.5                 | 20.3                    | 30.0           | -9.7        |
| 202.52          | 13.9                     | 12.3                | 26.2                    | 30.0           | -3.8        |
| 218.22          | 14.8                     | 9.2                 | 24.0                    | 30.0           | -6.0        |
| 228.03          | 15.3                     | 8.0                 | 23.3                    | 30.0           | -6.7        |

- 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



## 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                         |
|                        | Positive/ Negative                |
| : Composite Sync.      | on green vidoe (PR710/710T/710TU) |
| 0.3 Vp-p Negative      |                                   |
- \* 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%   |