



# EMC

## TEST REPORT

REPORT NO. : F88090601  
MODEL NO. : S5T012, 570FD  
DATE OF TEST : Sept. 10, 1999

PREPARED FOR : MAG TECHNOLOGY CO., LTD.

ADDRESS : 15F, NO. 287, SEC. 3, NANKING E. RD.,  
TAIPEI, TAIWAN, R.O.C.

PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION



Accredited Laboratory

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1.

**CERTIFICATION**

Issue Date: Sept. 14, 1999

Product : COLOR MONITOR  
Trade Name : MAG  
Model No. : S5T012, 570FD  
Applicant : MAG TECHNOLOGY CO., LTD.  
Standard : FCC Part 15, Subpart B, Class B  
CISPR 22: 1993+A1: 1995+A2: 1996, Class B  
ANSI C63.4-1992

We hereby certify that one sample of the designation has been tested in our facility on Sept. 10, 1999. 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 : Alan Chang , DATE: 9/14/99  
( Alan Chang )

CHECKED BY : Yemmy Soong , DATE: 9/14/99  
( Yemmy Soong )

APPROVED BY : Mike Su , DATE: 9/14/99  
( Mike Su )

**ADVANCE DATA TECHNOLOGY CORPORATION****NVLAP<sup>®</sup>**

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## **2. GENERAL INFORMATION**

### **2.1 GENERAL DESCRIPTION OF EUT**

Product	:	COLOR MONITOR
Model No.	:	S5T012, 570FD
Power Supply Type	:	Switching
Power Cord	:	Nonshielded 3-pin (1.8 m)
Data Cable	:	Shielded (1.8 m)

Note: The EUT is a 15" Color Monitor with resolution up to 1280x1024.

The EUT has two model names, which are identical to each other in all aspects except for their model names.

- ◆ Model: S5T012, Brand name: MAG
- ◆ Model: 570FD, Brand name: MAG

From the above models, model: S5T012 was selected as the representative during the test and therefore only its data is recorded in this report.

There is a ferrite core on the video cable outside the monitor.

For more detailed features description, please refer to manufacturer's specification or 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	GATEWAY	TBR2 400	FCC DoC Approved	Nonshielded Power (1.8 m)
2.	KEYBOARD	FORWARD	FDA-104GA	F4ZDA-104G	Shielded signal (1.4 m)
3.	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2 m) Nonshielded Power (1.2 m)
4.	MODEM	ACEEX	1414	IFAXDM1414	Shielded signal (1.2 m) Nonshielded Power (1.2 m)
5.	MOUSE	DEXIN	A2P800A	NIYA2P800A	Shielded signal (1.5 m)

## 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 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)

##### CONDUCTED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE & SCHWARZ Test Receiver	ESH3	893495/006	July 7, 2000
ROHDE & SCHWARZ Spectrum Monitor	EZM	893787/013	July 8, 2000
ROHDE & SCHWARZ Artificial Mains Network	ESH3-Z5	839135/006	July 7, 2000
EMCO-L.I.S.N.	3825/2	9204-1964	July 7, 2000
Shielded Room	Site 2	ADT-C02	NA

Note: 1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per NAMAS 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.

##### RADIATED EMISSION MEASUREMENT

Description & Manufacturer	Model No.	Serial No.	Calibrated until
HP Spectrum Analyzer	8590L	3544A00941	Dec. 06, 1999
HP Pre-Amplifier	8447D	2944A08312	Feb. 28, 2000
HP Preamplifier	8347A	3307A01088	Aug. 30, 2000
R&S Receiver	ESVS10	844594/010	Sept. 24, 1999
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 25, 1999
CHASE BILOG Antenna	CBL6111A	1500	Aug. 30, 2000
EMCO Double Ridged Guide Antenna	3115	9312-4192	April 5, 2000
EMCO Turn Table	1060-04	1196	NA
EMCO Tower	1051	1264	NA
Open Field Test Site	Site 1	ADT-R01	Aug. 27, 2000

Note: 1. The measurement uncertainty is less than +/- 3.0dB, which is calculated as per NAMAS 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

\* Detector Function: Quasi-Peak

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

FREQUENCY (MHz)	Class A (dBuV/m) (at 3m)		Class B (dBuV/m) (at 3m)	
	Peak	Average	Peak	Average
Above 1000	80.0	60.0	74.0	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 - 1000 MHz (Radiated Emission)  
Input Voltage : 120 Vac, 60 Hz  
Temperature : 30 °C  
Humidity : 57 %  
Atmospheric Pressure : 980 mbar

TEST RESULT	Remarks
<b>PASS</b>	Minimum passing margin of conducted emission: -10.5 dB at 4.779 MHz Minimum passing margin of radiated emission: -3.0 dB at 59.83 MHz

Note: The EUT was pre-tested under the following resolution & horizontal synchronization speed mode:

- \* 1280x1024 mode (64 kHz)
- \* 1024x768 mode (69 kHz),
- \* 640x480 mode (31.5 kHz)

The worst emission levels were found under 1280x1024 (64 kHz) and therefore the test data of only this mode is recorded.

### 4.2 EUT OPERATION CONDITION

1. Turn on the power of all equipment.
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 Color Monitor (EUT) and Color Monitor displays "H" patterns on screen.
5. PC sends "H" messages to modem.
6. PC sends "H" messages to printer, and the printer prints them on paper.
7. Repeat steps 3-7.





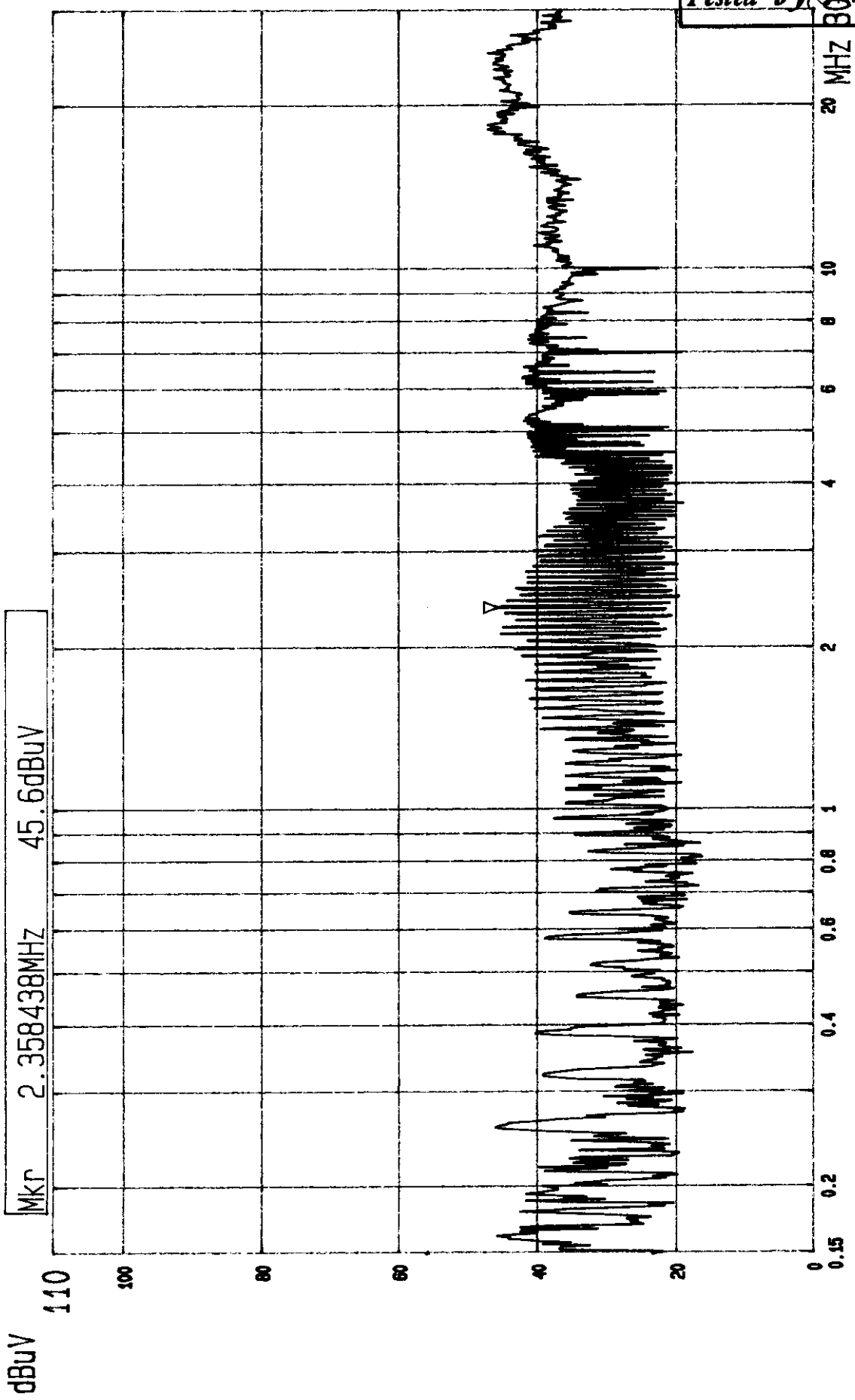
### 4.3 TEST DATA OF CONDUCTED EMISSION

EUT: COLOR MONITORMODEL: S5T012MODE: 1280x1024 (64 kHz)6 dB Bandwidth: 10 kHzPHASE: LINE (L)

Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.249	0.2	44.1	-	44.3	-	61.8	51.8	-17.5	-
0.415	0.2	37.9	-	38.1	-	57.5	47.5	-19.4	-
2.198	0.2	43.7	-	43.9	-	56.0	46.0	-12.1	-
4.779	0.4	45.1	-	45.5	-	56.0	46.0	-10.5	-
7.581	0.6	43.2	-	43.8	-	60.0	50.0	-16.2	-
23.305	1.2	41.1	-	42.3	-	60.0	50.0	-17.7	-

- 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 level of other frequencies were very low against the limit.
  5. Margin value = Emission level - Limit value
  6. Emission Level = Correction Factor + Reading Value.

Tested by Alan Chang



ADT CROP  
LISN: L

(PEAK VALUE)

---- Date 10.SEP.'99 Time 18:15:07  
CISPR 22 CLASS B CONDUCTION TEST  
MODEL: S5T012 1280X1024 64KHz/60Hz

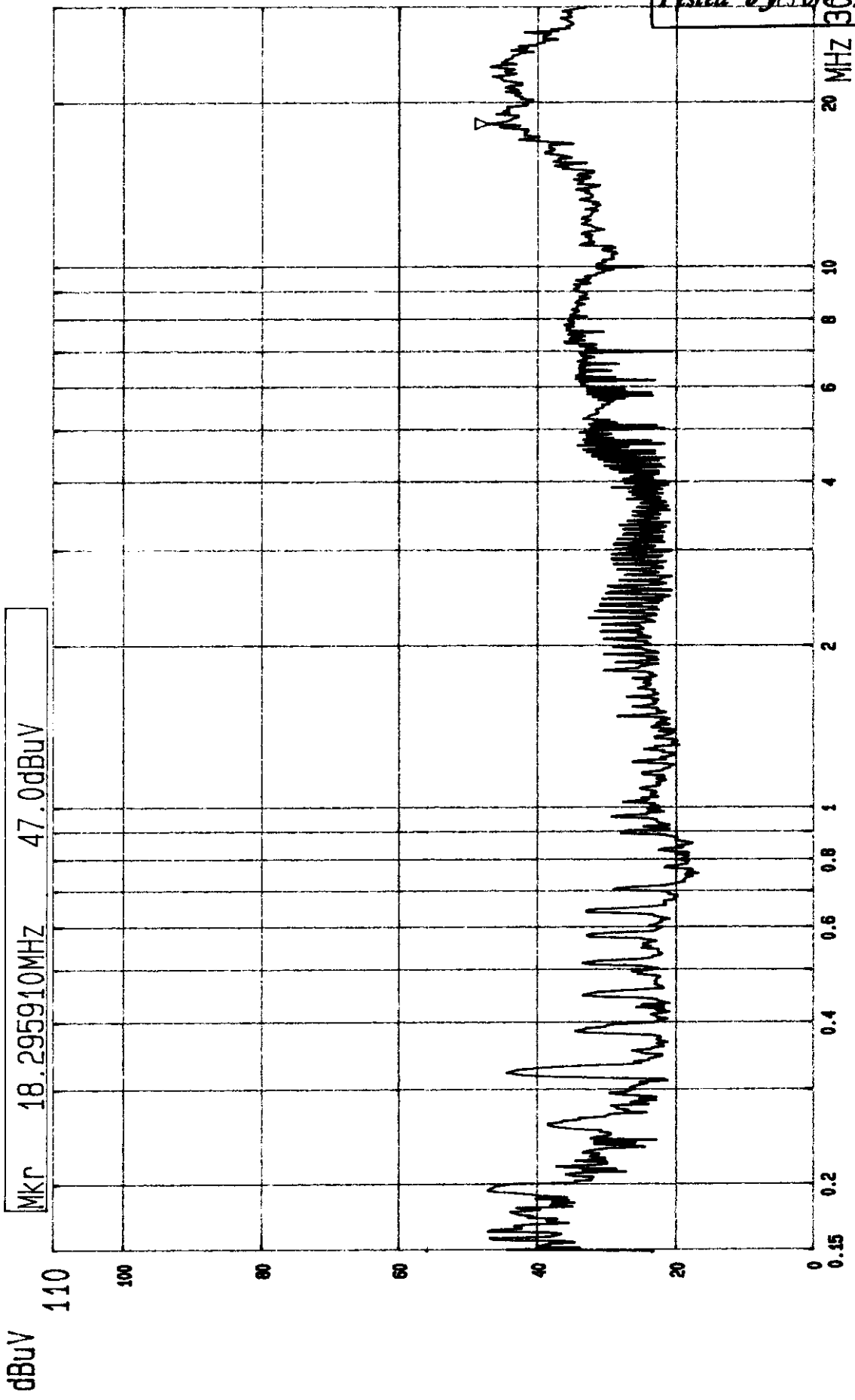


## TEST DATA OF CONDUCTED EMISSION

EUT: COLOR MONITORMODEL: S5T012MODE: 1280x1024 (64 kHz)6 dB Bandwidth: 10 kHzPHASE: NEUTRAL (N)

Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
0.249	0.2	36.1	-	36.3	-	61.8	51.8	-25.5	-
0.415	0.2	31.7	-	31.9	-	57.5	47.5	-25.6	-
2.198	0.2	27.9	-	28.1	-	56.0	46.0	-27.9	-
4.779	0.4	32.5	-	32.9	-	56.0	46.0	-23.1	-
7.581	0.5	33.4	-	33.9	-	60.0	50.0	-26.1	-
23.305	1.1	40.3	-	41.4	-	60.0	50.0	-18.6	-

- 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 level of other frequencies were very low against the limit.
  5. Margin value = Emission level - Limit value
  6. Emission Level = Correction Factor + Reading Value.



ADT CROP  
LISN: N

(PEAK VALUE)

---- Date 10.SEP.'99 Time 18:20:55  
CISPR 22 CLASS B CONDUCTION TEST  
MODEL: S5T012 1280X1024 64KHz/60Hz



#### 4.4 TEST DATA OF RADIATED EMISSION

EUT: **COLOR MONITOR**MODEL: **S5T012**MODE: **1280x1024 (64 kHz)**ANT. POLARITY: **Horizontal**DETECTOR FUNCTION: **Quasi-peak**6 dB BANDWIDTH: **120 kHz**FREQUENCY RANGE: **30-1000 MHz**MEASURED DISTANCE: **10 M**

Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
57.08	7.5	13.9	21.4	30.0	-8.6	400	231
112.16	12.6	9.5	22.1	30.0	-7.9	400	316
126.68	12.8	10.6	23.4	30.0	-6.6	400	119
137.73	13.1	9.2	22.3	30.0	-7.7	400	115
168.03	11.3	12.9	24.2	30.0	-5.8	400	289
177.76	10.7	13.7	24.4	30.0	-5.6	400	355
189.06	10.3	12.0	22.3	30.0	-7.7	400	269
195.76	10.0	14.8	24.8	30.0	-5.2	400	242
217.07	11.2	14.3	25.5	30.0	-4.5	400	261
226.09	11.8	9.9	21.7	30.0	-8.3	400	240
237.70	12.7	17.2	29.9	37.0	-7.1	400	161

- REMARKS:
1. Emission level (dBuV/m) = Correction Factor (dB) + Reading value (dBuV).
  2. Correction Factor (dB) = Ant. Factor (dB)+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 MONITORMODEL: S5T012MODE: 1280x1024 (64 kHz)ANT. POLARITY: VerticalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 M

Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)
33.15	17.9	8.0	25.9	30.0	-4.1	100	240
43.55	12.1	14.4	26.5	30.0	-3.5	100	84
55.20	7.9	18.4	26.3	30.0	-3.7	100	250
59.83	7.0	20.0	27.0	30.0	-3.0	229	42
121.53	12.7	13.6	26.3	30.0	-3.7	100	182
126.62	12.8	13.4	26.2	30.0	-3.8	100	226
132.92	13.0	13.0	26.0	30.0	-4.0	100	107
168.02	11.3	12.9	24.2	30.0	-5.8	100	115
186.17	10.4	13.4	23.8	30.0	-6.2	100	13
207.62	10.5	10.3	20.8	30.0	-9.2	100	5
237.70	12.7	17.9	30.6	37.0	-6.4	130	220

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



## 6. APPENDIX - INFORMATION OF THE TESTING LABORATORY

### Information of the testing laboratory

We, ADT Corp., are founded in 1988, to provide our best service in EMC and Safety consultation. Our laboratory is accredited by the following approval agencies according to ISO/IEC Guide 25 or EN 45001:

- |               |                     |
|---------------|---------------------|
| ● USA         | FCC, UL, NVLAP      |
| ● Germany     | TUV Rheinland       |
|               | TUV Product Service |
| ● Japan       | VCCI                |
| ● New Zealand | RFS                 |
| ● Norway      | NEMKO, DNV          |
| ● U.K.        | INCHCAPE            |
| ● R.O.C.      | BSMI                |

Enclosed please find some certificates of our laboratory obtained from approval agencies. If you have any comments, please feel free to contact us with the following:

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