



EMC

TEST REPORT

REPORT NO. : F87080305
MODEL NO. : X-554
DATE OF TEST : Aug. 3, 1998

PREPARED FOR: ROYAL INFORMATION ELECTRONICS CO., LTD.

ADDRESS : NO. 3, LANE 11, TZU-CHANG ST., TU-CHENG IND.
DISTRICT TAIPEI HSIEN, TAIWAN, R.O.C.

PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION



Accredited Laboratory

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TAIPEI, TAIWAN, R.O.C.

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1.

CERTIFICATION

Issue Date: Aug. 3, 1998

Product : COLOR MONITOR
Trade Name : TRL/RIC
Model No. : X-554
Applicant : ROYAL INFORMATION 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 of the designation has been tested in our facility on Aug. 3, 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.

PREPARED BY: Sharon Hsiung, DATE: 8/3/98
(Sharon Hsiung)

TESTED BY: Ken Liu, DATE: 98.8.3
(Ken Liu)

APPROVED BY: Mike Su, DATE: 8/3/98
(Mike Su)

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	COLOR MONITOR
Model No.	:	X-554
Power Supply Type	:	Switching
Power Cord	:	Nonshielded (1.8m)
Data Cable	:	Shielded (1.85m)

Note: The EUT is a 15" color monitor with resolution up to 1024x768.

There is a ferrite core 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	VL Series 4 5/100	B94VECTRA500T	Nonshielded Power (1.8m)
2	KEYBOARD	FORWARD	FDA-104GA	F4ZDA-104G	Shielded signal (1.2m)
3	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.8m) Nonshielded Power (1.2m)
4	MODEM	ACEEX	1414	IFAXDM1414	Shielded signal (1.2m)
5	MOUSE	DEXIN	A2P800A	NIYA2P800A	Shielded signal (1.5m)
6	VGA DISPLAY CARD	GORDIA	DSV3365	LUT-DSV3365	N/A

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 and 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	3544A01042	April 29, 1999
HP Preamplifier	8447D	2944A08313	Sept. 18, 1998
ROHDE & SCHWARZ TEST RECEIVER	ESVS 30	841977/008	Oct. 5, 1998
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 28, 1998
CHASE BiLOG Antenna	CBL6111A	1647	July 3, 1999
EMCO Turn Table	1016	1722	N/A
EMCO Tower	1051	1825	N/A
Open Field Test Site	Site 4	ADT-R04	June 19, 1999

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	ESHS30	828109/007	July 22, 1999
ROHDE & SCHWARZ Artificial Mains Network	ESH2-Z5	892107/003	July 20, 1999
EMCO L.I.S.N.	3825/2	9504-2359	July 20, 1999
Shielded Room	Site 3	ADT-C03	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.



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 : 35 °C
Humidity : 40 %
Atmospheric Pressure : 998 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -11.3 dB at 19.538 MHz
	Minimum passing margin of radiated emission: -3.5 dB at 52.16 MHz

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

- * 1024x768 mode (48 kHz),
- * 800x600 mode (54 kHz)
- * 640x480 mode (31.5 kHz)

The worst emission levels were found under 1024x768 (48 kHz) and therefore the test data of only this mode is recorded.

4.1.1 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. 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.



4.2 TEST DATA OF CONDUCTED EMISSION

EUT: COLOR MONITORMODEL: X-554MODE: 1024x768 (48 kHz)6 dB Bandwidth: 10 kHzTEST PERSONNEL: KEN

Freq. [MHz]	L Level		N Level		Limit		Margin [dB (μV)]			
	[dB (μV)]		[dB (μV)]		[dB (μV)]		L		N	
	QP	AV	QP	AV	QP	AV	QP	AV	QP	AV
0.194	43.50	-	43.20	-	63.95	53.95	-20.5	-	-20.8	-
0.241	38.00	-	38.50	-	62.06	52.06	-24.1	-	-23.6	-
1.212	35.30	-	32.00	-	56.00	46.00	-20.7	-	-24.0	-
3.444	35.00	-	35.60	-	56.00	46.00	-21.0	-	-20.4	-
13.040	46.10	-	45.90	-	60.00	50.00	-13.9	-	-14.1	-
19.538	48.70	-	46.30	-	60.00	50.00	-11.3	-	-13.7	-

- 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.

ADT CO. Shielded Room 3
CISPR 22 CLASS B

03. Aug 98 15:48

EUT: X-554
Test Spec: LISN : L

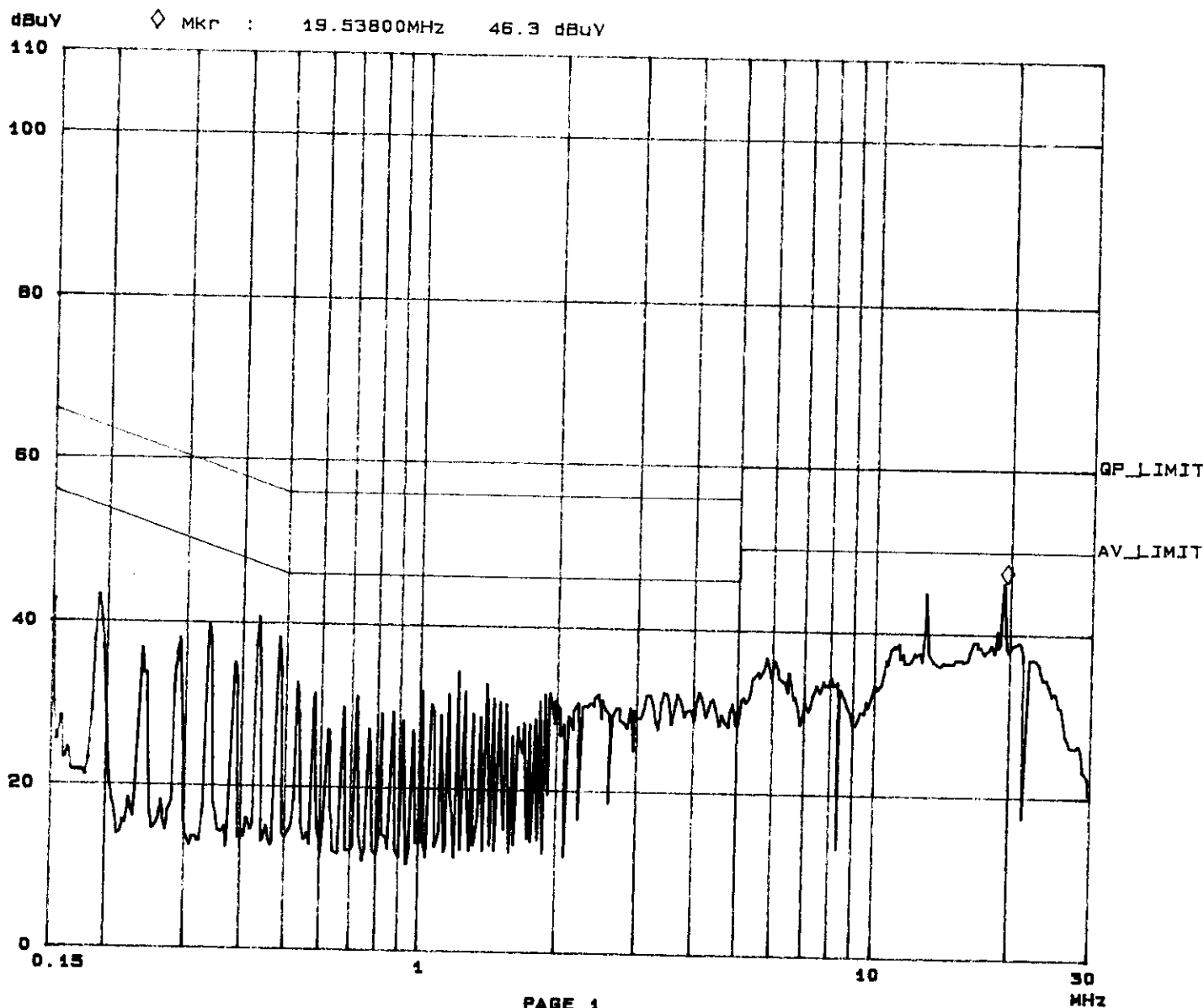
Report No. F87080305

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Tested by KEN

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
150k	450k	3k	10k	PK	1ms	10dB	LN OFF	60dB
450k	5M	3k	10k	PK	1ms	10dB	LN OFF	60dB
5M	30M	3k	10k	PK	1ms	10dB	LN OFF	60dB



ADT CO. Shielded Room 3
CISPR 22 CLASS B

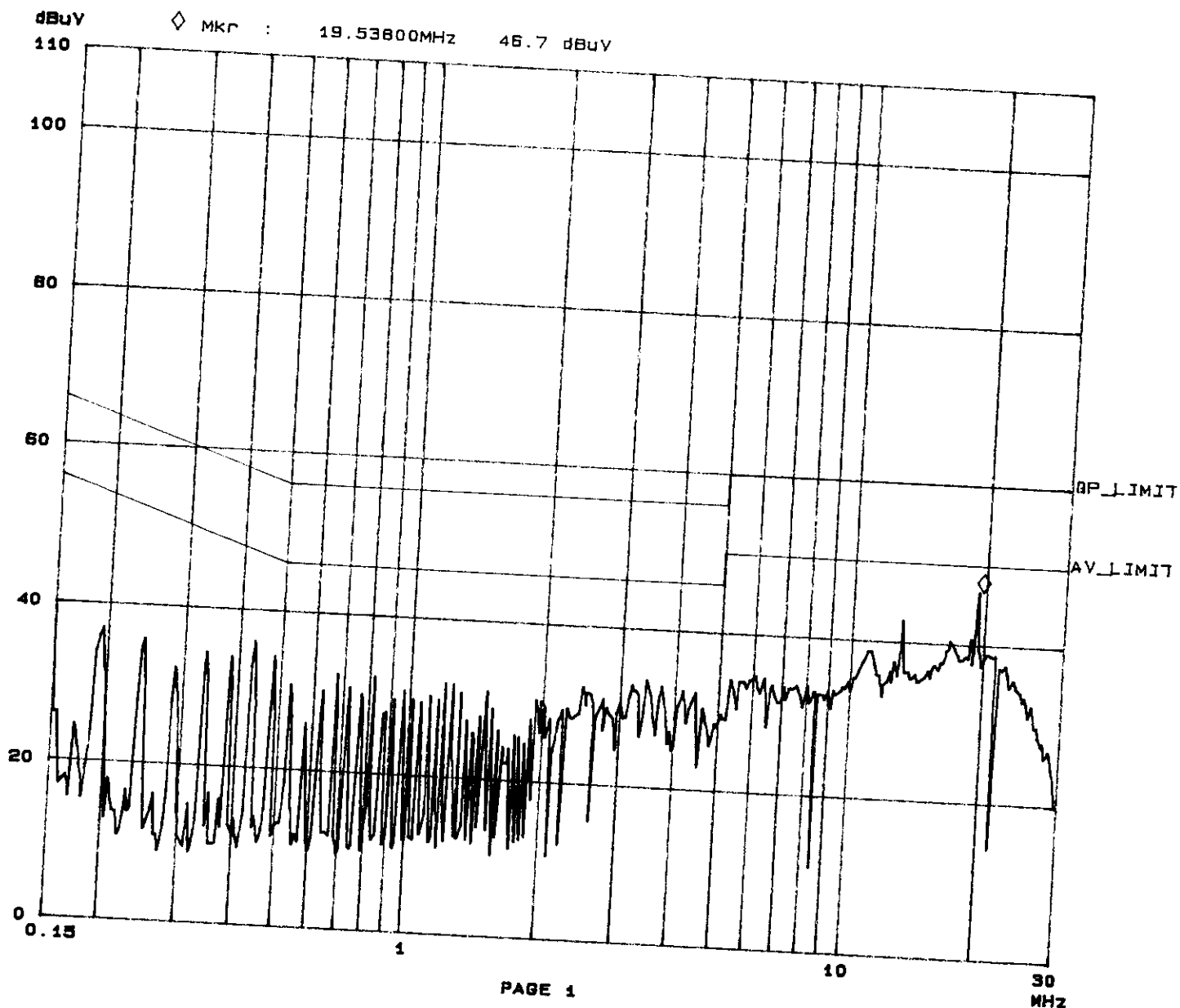
03. Aug 98 16:08

EUT: X-554
Test Spec: LISN : N

NO. F87080305
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checked by KEN

Fast Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	450k	3k	10k	PK	1ms	10dB	OFF
450k	5M	3k	10k	PK	1ms	10dB	OFF
5M	30M	3k	10k	PK	1ms	10dB	OFF





4.3 TEST DATA OF RADIATED EMISSION

EUT: COLOR MONITORMODEL: X-554MODE: 1024x768 (48 kHz)ANTENNA: CHASE BILOG CBL6111APOLARITY: HorizontalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 MTEST PERSONNEL: KEN

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
52.16	10.3	10.0	20.3	30.0	-9.7
84.72	9.9	7.5	17.4	30.0	-12.6
130.33	14.3	2.0	16.3	30.0	-13.7
143.37	14.0	5.8	19.8	30.0	-10.2
149.89	13.2	3.3	16.5	30.0	-13.5
162.92	12.0	2.1	14.1	30.0	-15.9
262.47	16.0	2.3	18.3	37.0	-18.7

- 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 MONITORMODEL: X-554MODE: 1024x768 (48 kHz)ANTENNA: CHASE BILOG CBL6111APOLARITY: VerticalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 MTEST PERSONNEL: KEN

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
52.16	8.9	17.6	26.5	30.0	-3.5
58.67	7.8	11.3	19.1	30.0	-10.9
84.72	8.4	5.7	14.1	30.0	-15.9
130.33	14.4	4.6	19.0	30.0	-11.0
143.37	15.0	7.1	22.1	30.0	-7.9
149.89	14.1	8.1	22.2	30.0	-7.8
262.47	15.3	4.5	19.8	37.0	-17.2

- 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:

CRT

* Visible Size	35 cm (15") max. Screen Diagonal
* Deflection	90-degree deflection
* Dot pitch	0.28 mm
* Phosphor	P22
* Surface	Nonglare
* Transmission	57%

Video and Synchronization Signals

* Signal cable	15-pin D-type connector
* Video	Analog levels
* Horizontal Sync	TTL Positive/Negative
* Vertical Sync	TTL Positive/Negative
* Bandwidth	65 Mhz(-3dB)
* Display Area	260x195mm $\pm$ 5mm(STANDARD MODE)
* Display Colors	limited by VGA card
* Video signal input	0.7 Vpp

Display Data Channel

* Compatibility	VESA DDC 1/2B
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Scanning Frequency

* Horizontal	30 kHz to 54 kHz
* Vertical	47 Hz to 120 Hz

**Power supply**

- * Input voltage 100-240 Vac, 60/50 Hz
- * Consumption 100 Watts maximum

Environment

- * Operating Temperature 0°C to 40°C
- * Operating Humidity 20% to 80%
- * Nonoperating Temperature -20°C to 65°C
- * Nonoperating Humidity 10% to 85%

Dimension

370 mm(W)x 367 mm(H)x 390 mm(D)
(with base)

Weight

Approx. 12 Kgs(NET)