FCC ID: BR8VD-697

EMC

TEST REPORT

REPORT NO. : F87052210
MODEL NO. : VD-697, VD-697E
DATE OF TEST : May 27 ~ June 12, 1998

PREPARED FOR : ADI CORP.

ADDRESS : 14TH FL. NO. 1, SEC. 4, NAN-KING E. RD.,
TAIPEI, TAIWAN, R.O.C.

PREPARED BY: ADVANCE DATA TECHNOLOGY CORPORATION

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12F, NO.1, SEC.4, NAN-KING EAST RD.,
TAIPEI, TAIWAN, R.O.C.

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FCC ID: BR8VD-697

1. CERTIFICATION

Issue date: June 16, 1998

Product	:	COLOR MONITOR
Trade Name	:	ADI
Model No.	:	VD-697, VD-697E
Applicant	:	ADI CORP.
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 from May 27 to June 12, 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: Sharon Hsiung , DATE: 6/16/98
(Sharon Hsiung)

CHECKED BY: Bruce Lu , DATE: 6/16/98
(Bruce Lu)

APPROVED BY: Mike Su , DATE: 6/16/98
(Mike Su)

ADVANCE DATA TECHNOLOGY CORPORATION

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	COLOR MONITOR
Model No.	:	VD-697, VD-697E
Power Supply Type	:	Switching
Power Cord of monitor	:	Nonshielded (1.8 m)
Data Cable of monitor	:	Shielded (1.5 m)
Power Cord of speaker from power adapter	:	Nonshielded (1.8m)
Audio cable of speaker	:	Nonshielded (1.8m)

Note: The EUT is a 17" color monitor with resolution upto 1280x 1024.

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

Model: VD-697 (With Speaker)
Model: VD-697E (Without Speaker)

From the above model names, model: VD-697 was selected as representative model for the test, and its data is recorded in this report.

The EUT was tested with a USB box, model: UH-200 which acted as a base for the EUT. The FCC ID application of this USB box will be sent with the application documents of the EUT.

The EUT also provides hooks for a set of external speaker connecetd to the sound card of PC. There is a separate conducted test data in this report. This speaker uses a HON- KWANG power adapter, model: D12-10. Its rating: Input: 120V 60Hz 25W, Output: 12Vdc 800mA.

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	D4572A	FCC DoC Approved	Nonshielded Power (1.8m)
2.	KEYBOARD	HP	C3758A	CIGE03633	Shielded Signal (1.5m)
3.	USB HUB	ADI	UH-200	BR8UH-200	DC Power to monitor (0.45m) Shielded signal to PC (2m)
4.	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2m) Nonshielded Power (1.9m)
5.	MODEM	ACEEX	1414	IFAXDM144	Shielded Signal (1.2m) Nonshielded Power (1.9m)
6.	MOUSE	HP	M-S34	DZL211029	Shielded Signal (1.2m)
7.	VGA DISPLAY CARD	DAIMOND	ST3D 3000PCI	FTUPC13028	N/A
8.	SOUND CARD	B&B	A80UND	MA5ASOUND	N/A
9.	CCD CAMERA	COMPAQ	YC72-CPQ	EDUYC72-CPQ	Shielded Signal (1.8m)
10.	EARPHONE	GAMMA	LH115	N/A	Nonshielded Signal (1.8m)

Note: 1. Support unit 9 was connected to the USB port of EUT.
2. Three USB cables (1.8m) were connected to the three USB port 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 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	8594A	3144A00308	Sept. 1, 1998
HP Preamplifier	8447D	2944A08119	Aug. 2, 1998
HP Preamplifier	8347A	3307A01088	Sept. 4, 1998
ROHDE & SCHWARZ TEST RECEIVER	ESVP	893496/030	July 17, 1998
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 28, 1998
CHASE Bilog Antenna	CBL6112	2086	Dec. 26, 1998
EMCO Turn Table	1060	1195	N/A
EMCO Tower	1051	1163	N/A
Open Field Test Site	Site 2	ADT-R02	Sept. 26, 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 23, 1998
ROHDE & SCHWARZ Spectrum Monitor	EZM	893787/013	July 24, 1998
ROHDE & SCHWARZ Artificial Mains Network	ESH3-Z5	839135/006	Aug. 1, 1998
EMCO-L.I.S.N.	3825/2	9204-1964	July 22, 1998
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 (MHz)	Class A (at 10m) dBuV/m	Class B (at 10m) 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	:	23 ℃
Humidity	:	62 %
Atmospheric Pressure	:	1000 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -6.5 dB at 21.322 MHz Minimum passing margin of radiated emission: -2.3 dB at 47.99 MHz

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

* 1280x1024mode (64 kHz),
* 1024x768 mode (69 kHz),
* 640x480 mode (31.5 kHz)

The worst emission levels were found under 1280x1024mode (64 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 run 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 an image and sends image messages to EUT and EUT displays them on its screen.
6. PC sends "H" messages to modem.
7. PC sends "H" messages to printer, and the printer prints them on paper.
8. PC sends audio messages to earphone and speaker.
9. Repeat steps 3-9.

4.1.2 TEST DATA OF CONDUCTED EMISSION (A)

EUT: **COLOR MONITOR** MODEL: **VD-697**

MODE: **1280x1024 (64 kHz)**

6 dB Band Width: 10 kHz

TEST PERSONNEL: Bruce Lu

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
0.191	33.70	-	35.20	-	63.99	53.99	-30.3	-	-28.8	-
0.892	31.70	-	33.10	-	56.00	46.00	-24.3	-	-22.9	-
2.081	31.50	-	33.90	-	56.00	46.00	-24.5	-	-22.1	-
7.855	43.30	-	47.90	-	60.00	50.00	-16.7	-	-12.1	-
10.920	37.50	-	40.50	-	60.00	50.00	-22.5	-	-19.5	-
17.795	30.60	-	30.50	-	60.00	50.00	-29.4	-	-29.5	-

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 level of other frequencies were very low against the limit.
5. Margin value = Emission level - Limit value

ADT CORP. SITE 2

27. May 98 21:28

CISPR 22 CLASS B

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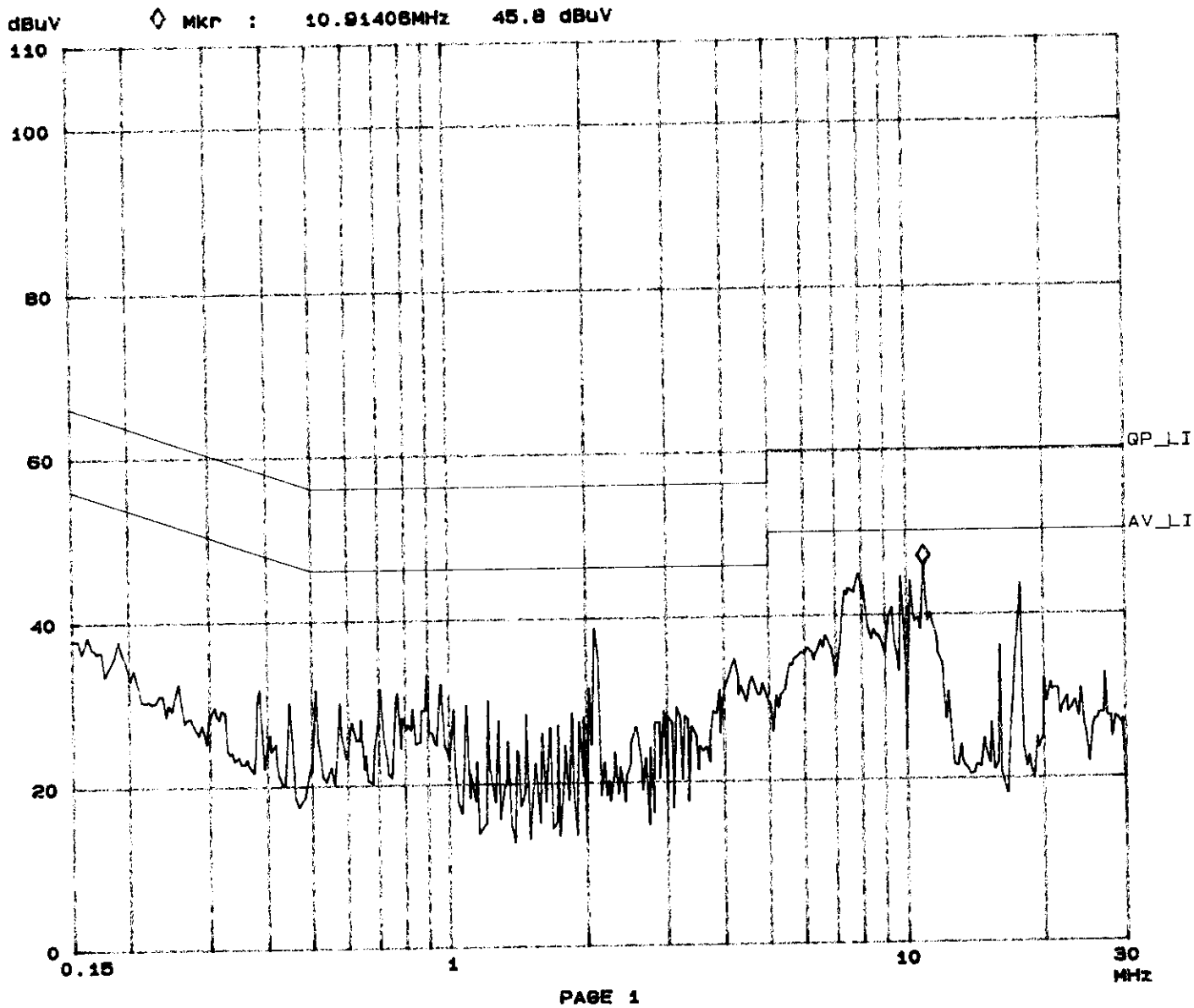
Tested by Bruce Lu

EUT:	VD-697
Op Cond:	1280X1024 64kHz
Operator:	Bruce Lu
Test Spec:	LISN : L
Comment:	FULL SYSTEM

Overview Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150k	1M	3.90625k	9k	PK	10ms	15dBLN	OFF
1M	10M	3.90625k	9k	PK	0.10ms	10dBLN	OFF
10M	30M	3.90625k	9k	PK	0.10ms	10dBLN	OFF



ADT CORP. SITE 2

27. May 98 22:32

CISPR 22 CLASS B

EUT:	VD-697
Op Cond:	1280X1024 64k
Operator:	Bruce Lu
Test Spec:	LISN : N
Comment:	FULL SYSTEM
File name:	CNS_4388.SPC

Report No. F8705221O

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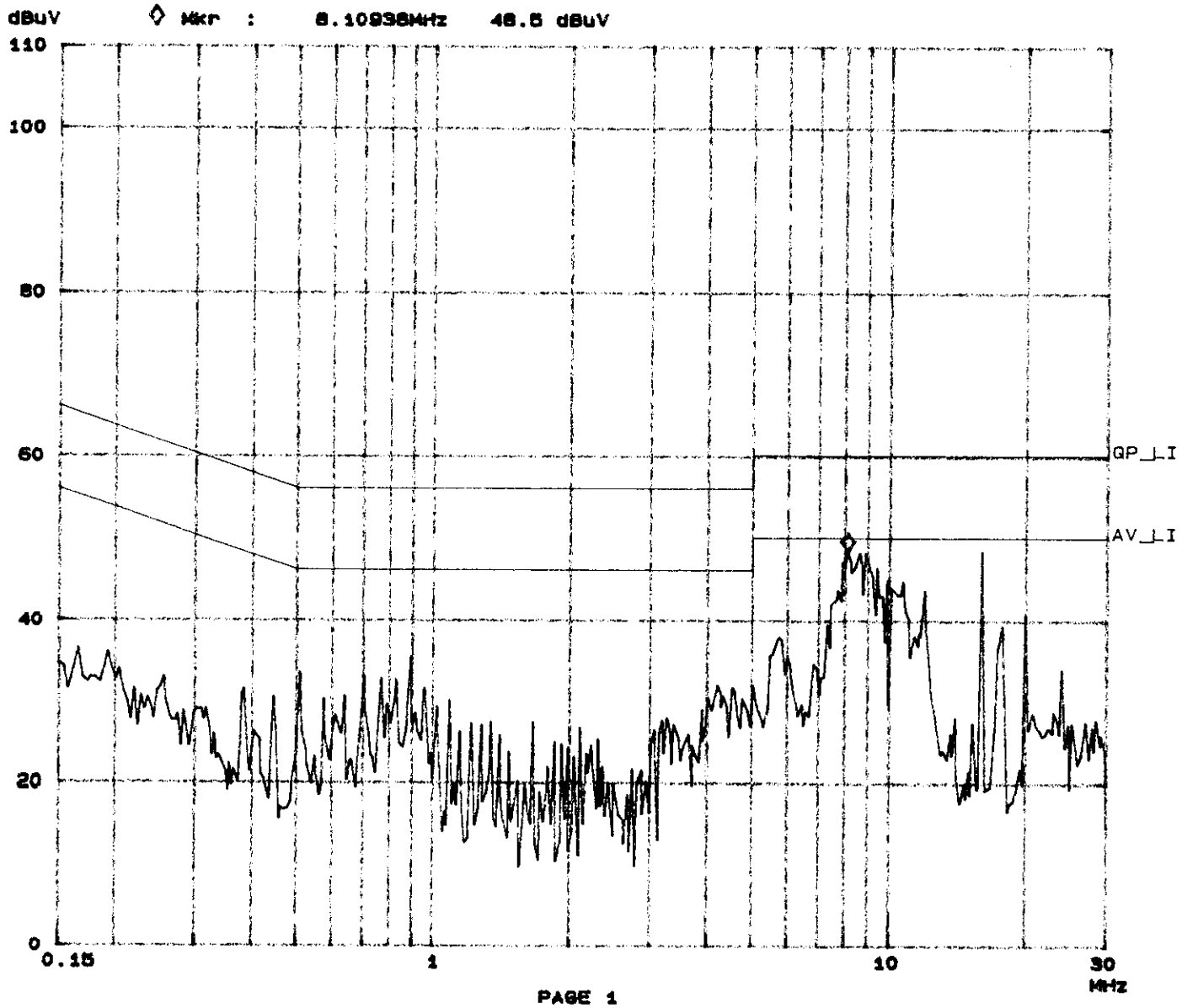
Tested by Bruce Lu

Overview Scan Settings (3 Ranges)

Frequencies			Receiver Settings				
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp
150K	1M	3.90625k	9k	PK	10ms	10dBLN	OFF
1M	10M	3.90625k	9k	PK	0.05ms	10dBLN	OFF
10M	30M	3.90625k	9k	PK	0.05ms	10dBLN	OFF



4.1.3 TEST DATA OF CONDUCTED EMISSION (B)

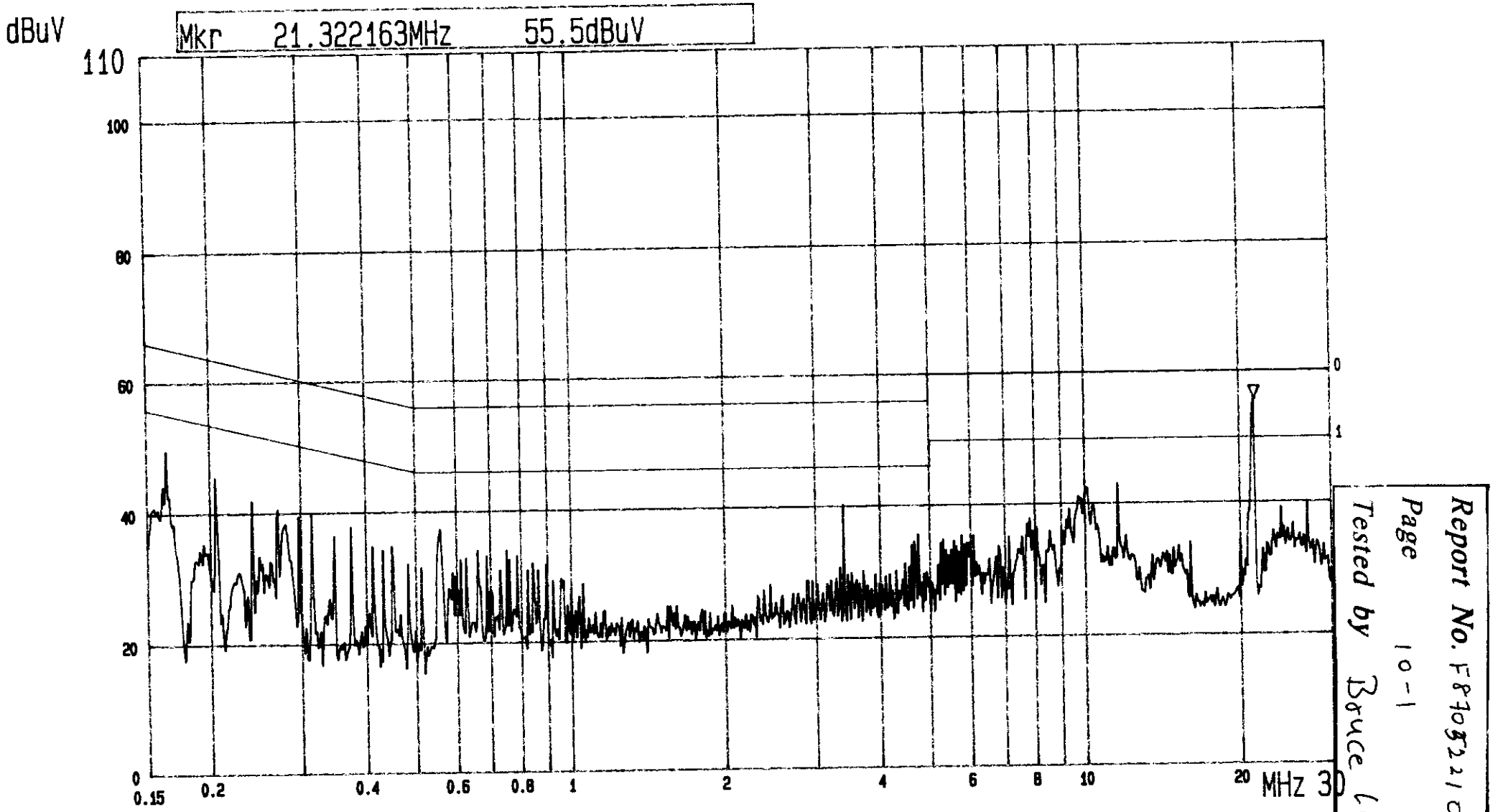
EUT: **COLOR MONITOR** MODEL: **VD-697**

6 dB Band Width: 10 kHz

TEST PERSONNEL: Bruce Lu

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
0.163	45.50	-	45.00	-	65.28	55.28	-19.8	-	-20.3	-
0.359	41.00	-	32.80	-	56.00	46.00	-15.0	-	-23.2	-
3.382	29.40	-	28.40	-	56.00	46.00	-26.6	-	-27.6	-
10.025	40.00	-	41.00	-	60.00	50.00	-20.0	-	-19.0	-
14.811	38.20	-	30.60	-	60.00	50.00	-21.8	-	-29.4	-
21.322	53.50	34.70	49.90	-	60.00	50.00	-6.5	-15.3	-10.1	-

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. The above measured reading data are of speaker fixed on EUT.



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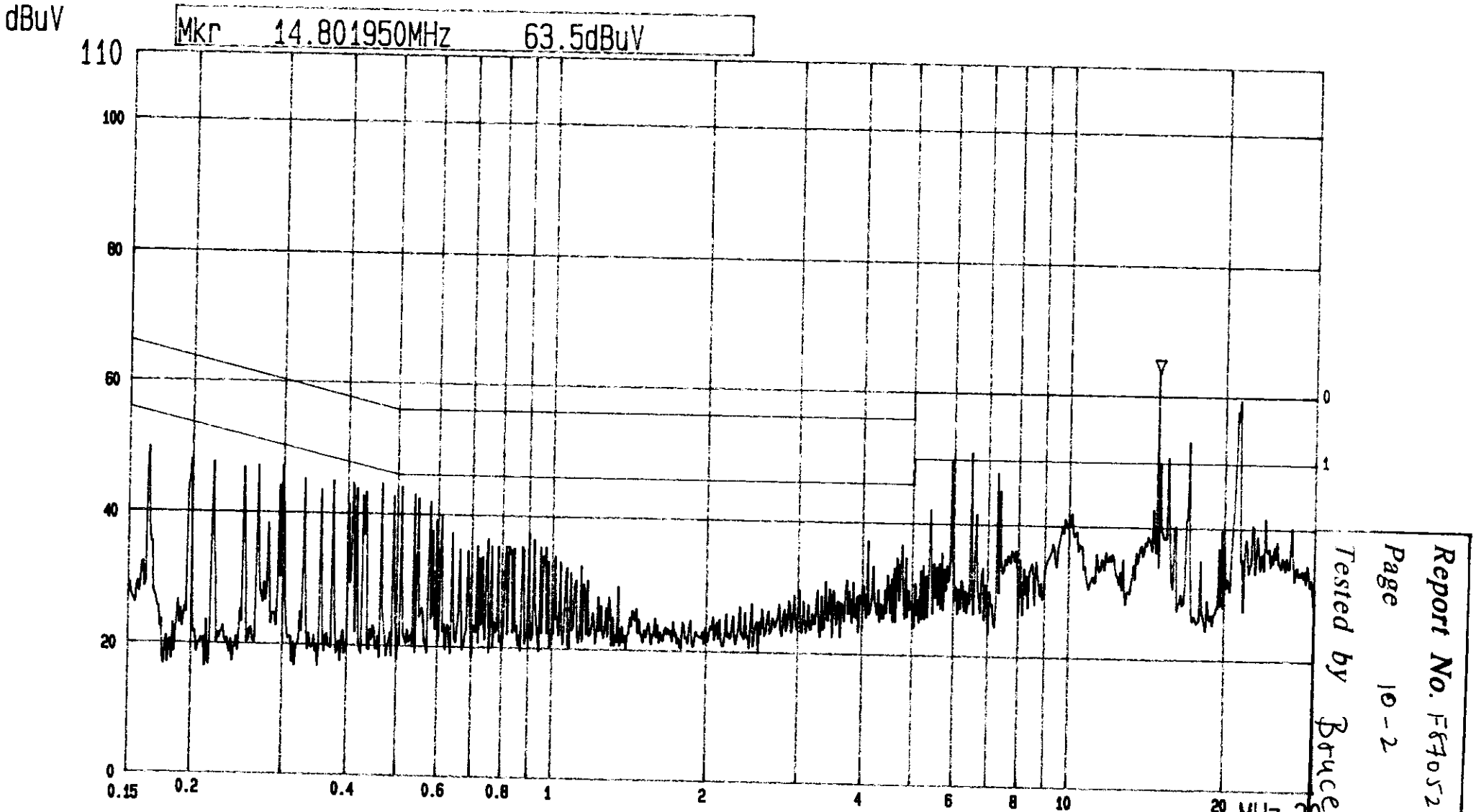
Tested by Bruce Lu

|--- Date 12.JUN.'98 Time 11:47:05
CISPR 22 CLASS B CONDUCTION TEST (PEAK VALUE)
MODEL : SP-2000 (SPEAKER)

ADT CORP.
LISN : L



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Tested by Bruce Lu

| --- Date 12.JUN.'98 Time 11:52:09
CISPR 22 CLASS B CONDUCTION TEST (PEAK VALUE)
MODEL : SP-2000 (SPEAKER)

ADT CORP.
LISN : N

4.1.4 TEST DATA OF RADIATED EMISSION

EUT: **COLOR MONITOR** MODEL: **VD-697**

MODE: **1280x1024 (64 kHz)**

ANTENNA: CHASE BILOG CBL6112 POLARITY: Horizontal

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: Bruce Lu

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
47.99	11.4	12.7	24.1	30.0	-5.9
95.97	12.0	10.8	22.8	30.0	-7.2
120.00	15.1	9.0	24.1	30.0	-5.9
132.00	14.5	9.7	24.2	30.0	-5.8
192.00	12.8	12.5	25.3	30.0	-4.7
216.00	14.1	10.1	24.2	30.0	-5.8
216.64	14.1	7.3	21.4	30.0	-8.6
228.00	14.6	8.3	22.9	30.0	-7.1

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

FCC ID: BR8VD-697

TEST DATA OF RADIATED EMISSION

EUT: **COLOR MONITOR** MODEL: **VD-697**

MODE: **1280x1024 (64kHz)**

ANTENNA: CHASE BILOG CBL6112 POLARITY: Vertical

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: Bruce Lu

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
47.99	10.7	17.0	27.7	30.0	-2.3
72.00	7.3	16.0	23.3	30.0	-6.7
81.23	8.4	19.2	27.6	30.0	-2.4
96.00	11.1	14.0	25.1	30.0	-4.9
108.02	12.7	12.6	25.3	30.0	-4.7
132.00	15.3	12.0	27.3	30.0	-2.7
192.00	13.2	13.3	26.5	30.0	-3.5
228.02	14.7	10.0	24.7	30.0	-5.3

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:

* Picture Tube	17" (16" diagonal viewable area) flat square, tube (FST) with enhanced contrast, dark-tinted CRT, invar shadow mask, advanced anti-reflection, Anti-glare and anti-static coating with low Electromagnetic field
* Maximum Resolution	1280 x 1024
* Deflection Frequency	Horizontal: 30 to 69KHz Vertical: 50 to 160Hz
* Video Bandwidth	110 MHz
* Input Connector	15-pin D-SUB Type
* Power Source	90-264 VAC (Universal)
* Power Consumption	110 Watts (max.)
* Weight	17.8 kg.
* Dimensions	415mm(W) x 415mm(H) x 452mm(D)
* Ambient Temperature	Operating: 0℃ to 40℃ Storage: -20℃ to 65℃
* Humidity	Operating: 20% to 95% Storage: 10% to 95%