

EXHIBIT 4
RFI/EMI TEST REPORT



EMC

TEST REPORT

REPORT NO. : F87100106

MODEL NO. : GD-166G

DATE OF TEST : Oct. 09, 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



Accredited Laboratory

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

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**1. CERTIFICATION**

Issue Date: Oct. 13, 1998

Product : COLOR MONITOR
Trade Name : ADI
Model No. : GD-166G
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 on Oct. 08, 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: Bruce Lu , DATE: 10/13/98
(Bruce Lu)

CHECKED BY: Yemmy Soong , DATE: 10/13/98
(Yemmy Soong)

APPROVED BY: Mike Su , DATE: 10/13/98
(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.	:	GD-166G
Power Supply Type	:	Switching
Power Cord of monitor	:	Nonshielded (1.8m)
Data Cable of monitor	:	Shielded (1.8m)
Power Cord of speaker from power adapter	:	Nonshielded (1.9m)
Audio cable of speaker	:	Nonshielded (1.8m)

Note: The EUT is a 19" color monitor with resolution up to 1600x1200.

The EUT also provides hooks for a set of external speaker, Model: SP-3000 which was connected 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.

It has input rating : 120V 60Hz 25W and output rating : 12Vdc 800mA.

The EUT was tested with a USB box, model: UH-200, which acted as a base for the EUT.

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 (1.8m)
3	USB BOX	ADI	UH-200	BR8UH-200	DC Power to monitor (0.2m)
4	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (2.1m) Nonshielded Power (1.8)
5	MODEM	ACEEX	1414	IFAXDM1414	Shielded Signal (1.5m) Nonshielded Power (1.8m)
6	MOUSE	HP	M-S34	DZL211029	Shielded Signal (1.8m)
7	CCD CAMERA 2X	COMPAQ	YC72-CPQ	EDUYC72-CPQ	Shielded Signal (1.8m) Shielded Signal (1.4m)
8	SOUND CARD	YA HSIN	AUDIO 1869	FCC Doc Approved	N/A
9	VGA DISPLAY	DIAMOND	ST3D 3000 PCI	FTUPC130208	N/A

Note: 1. Support unit 7 was connected to the USB port of EUT.

2. Two USB cables (1.1m and 1.8m) were connected to the two USB port of EUT to form two open loop cables.

3. A Mic cable (1.6m) was connected from the EUT to PC.

4. A Audio cable (1.5m) was connected from the EUT to PC.

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. 3, 1999
HP Preamplifier	8447D	2944A08119	Jan. 20, 1999
HP Preamplifier	8347A	3307A01088	Sept. 9, 1999
ROHDE & SCHWARZ TEST RECEIVER	ESVP	893496/030	July 15, 1999
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 28, 1998
CHASE Bilog Antenna	CBL6112A	2329	Sept. 19, 1999
EMCO Turn Table	1060	1195	N/A
EMCO Tower	1051	1163	N/A
Open Field Test Site	Site 2	ADT-R02	Sept. 18, 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	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.I.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 (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	:	24 °C
Humidity	:	72 %
Atmospheric Pressure	:	998 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -12.9 dB at 2.340 MHz Minimum passing margin of radiated emission: -2.0 dB at 465.06 MHz

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

- * 1600x1200mode (93.7 kHz),
- * 1280x1024 mode (91kHz),
- * 640x480 mode (31.5 kHz)

The worst emission levels were found under 1600x1200mode (93.7 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. CCD cameras capture 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 external speakers of EUT.
9. Repeat steps 3-9.



4.1.2 TEST DATA OF CONDUCTED EMISSION (A)

EUT: COLOR MONITORMODEL: GD-166GMODE: 1600x1200 (93.7 kHz)6 dB Band Width: 10 kHzTEST PERSONNEL: Bruce L

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
0.187	40.70	-	44.10	-	64.18	54.18	-23.5	-	-20.1	-
0.608	34.10	-	38.40	-	56.00	46.00	-21.9	-	-17.6	-
1.216	36.20	-	35.80	-	56.00	46.00	-19.8	-	-20.2	-
2.340	43.10	-	42.10	-	56.00	46.00	-12.9	-	-13.9	-
4.119	41.20	-	42.10	-	56.00	46.00	-14.8	-	-13.9	-
15.544	39.30	-	35.70	-	60.00	50.00	-20.7	-	-24.3	-

- 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.



4.1.3 TEST DATA OF CONDUCTED EMISSION (B)

EUT: COLOR MONITOR

MODEL: GD-166G

MODE: SP-3000 (Speaker)

6 dB Band Width: 10 kHz

TEST PERSONNEL: Bruce Lu

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
0.150	42.60	-	42.00	-	66.00	56.00	-23.4	-	-24.0	-
0.302	36.30	-	34.50	-	60.19	50.19	-23.9	-	-25.7	-
0.464	32.80	-	30.00	-	56.62	46.62	-23.8	-	-26.6	-
0.585	31.40	-	31.20	-	56.00	46.00	-24.6	-	-24.8	-
0.817	32.10	-	28.10	-	56.00	46.00	-23.9	-	-27.9	-
24.703	18.70	-	28.90	-	60.00	50.00	-41.3	-	-31.1	-

- 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 levels of other frequencies were very low against the limit.

Note : The above test data is the separate conduction test of Speaker and Adapter.



4.1.4 TEST DATA OF RADIATED EMISSION

EUT: **COLOR MONITOR**MODEL: **GD-166G**MODE: **1600x1200 (93.7 kHz)**ANTENNA: **CHASE BILOG CBL6112A**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)
134.68	13.8	3.8	17.6	30.0	-12.4
152.00	12.2	7.3	19.5	30.0	-10.5
216.03	13.0	7.3	20.3	30.0	-9.7
232.63	14.2	13.2	27.4	37.0	-9.6
384.07	19.4	11.4	30.8	37.0	-6.2
465.06	20.8	14.2	35.0	37.0	-2.0
597.92	23.9	11.0	34.9	37.0	-2.1
730.79	25.4	5.3	30.7	37.0	-6.3
797.23	26.3	7.8	34.1	37.0	-2.9

- 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: **GD-166G**MODE: **1600x1200 (93.7 kHz)**ANTENNA: **CHASE BILOG CBL6112A**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)
80.25	7.6	12.8	20.4	30.0	-9.6
117.80	14.0	10.7	24.7	30.0	-5.3
147.70	13.1	9.4	22.5	30.0	-7.5
184.27	11.6	7.8	19.4	30.0	-10.6
193.50	12.2	10.7	22.9	30.0	-7.1
197.23	12.5	7.8	20.3	30.0	-9.7
228.30	14.0	7.6	21.6	30.0	-8.4
465.05	20.2	11.7	31.9	37.0	-5.1
531.49	22.8	9.3	32.1	37.0	-4.9
597.92	24.2	6.1	30.3	37.0	-6.7
631.14	24.0	5.0	29.0	37.0	-8.0
664.36	24.3	4.9	29.2	37.0	-7.8
730.79	25.8	7.2	33.0	37.0	-4.0
797.22	25.9	7.3	33.2	37.0	-3.8

- 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

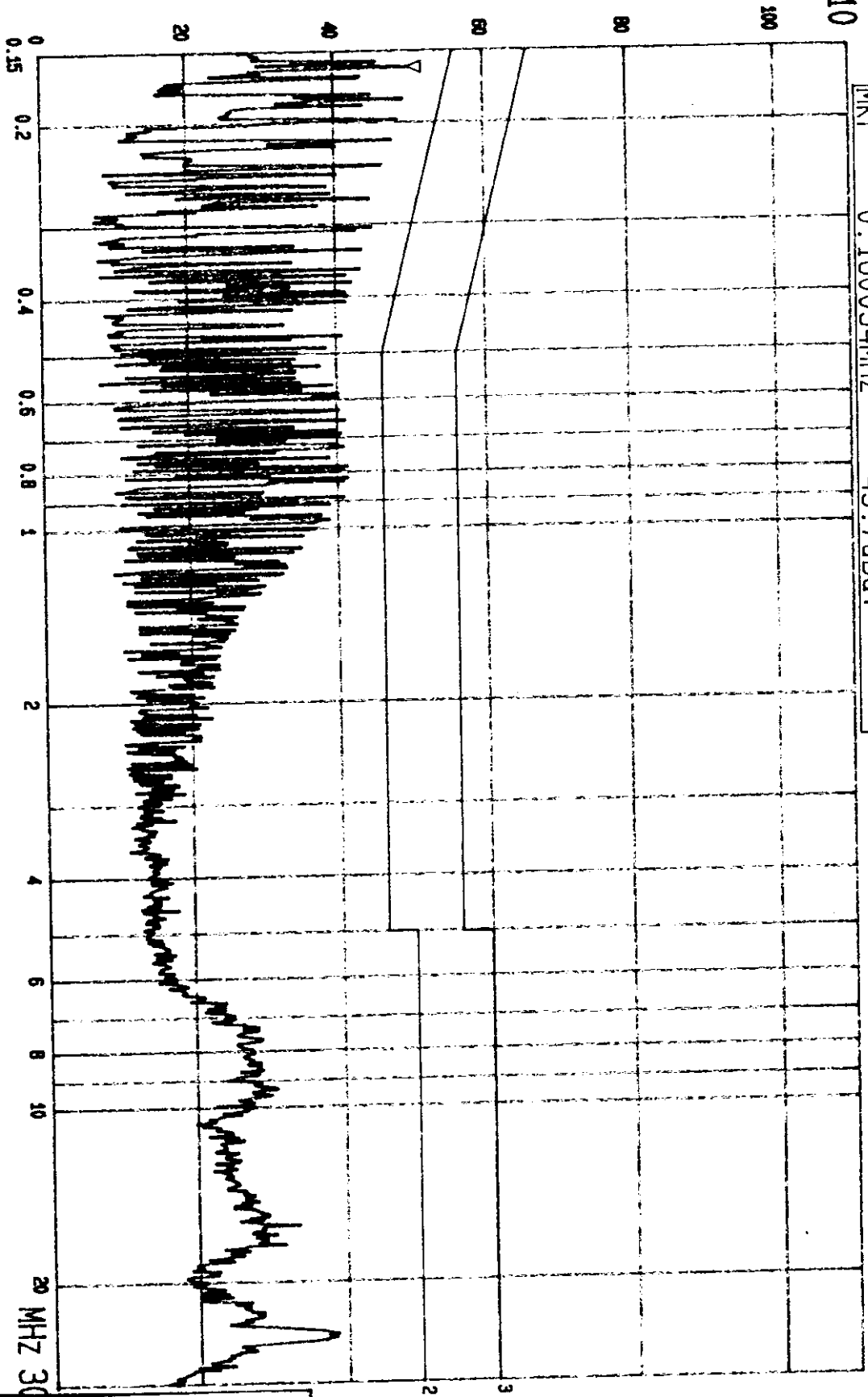
SPECIFICATIONS:

* Picture Tube	19" (18" diagonal viewable image) flat square tube (FST) with enhanced contrast, dark-tinted CRT, 0.26mm dot pitch invar shadow mask, advanced anti-reflection, anti-glare, and anti-static coating with low electromagnetic field.
* Rec. Resolution	1600 x 1200@ 75 Hz, 1280 x 1024@ 85Hz
* Deflection Frequency	
Horizontal:	30 to 95 KHz
Vertical:	50 to 160 Hz
* Max. Video Input Bandwidth	202.5 MHz
* Display Area	
Factory Setting:	approx. 365 mm x 274 mm
Active Area:	approx. 413 mm x 328 mm
* Input Signals	
Video:	Analog. 0.7 V
Sync:	Digital 3.3 V
* Input Connector	15-pin D-sub Type
* Display Colors	Analog input, unlimited colors
* Power Source	90 - 132 Vac 180 - 264 (Auto range)
* Power Consumption	140 watts (max.)
* Power Management	EPA/ Energy Star VESA DPMS signaling method
* PnP Compatibility	VESA DDC 1 & 2B standards compliant
* USB hub (Option)	Locally powered hub with 4 downstream ports and 1 upstream port. (+5V, 2Amps. max.; 0.5 Amps. each port) Monitor control class
* Audio	Speakers 3W x 2 (option) Built-in microphone
* Front Panel Controls	-(Decrease), Function key, +(Increase), Contrast, Brightness, POWER
* EasyScreen™	H-Size, H-Position, V-Size, V-Position, Overscan, Pincushion, Pincushion Balance, Trapezoid, Parallelogram, Tilt, Moire, Color Adjustment, Degauss, Language, Management (Power Saver, Display Mode) and Factory Reset
* Monitor Dimension	470 mm (W) x 483 mm (H) x 425 mm (D)
* Net Weight	22.5 kg
* Ambient Temperature	
Operating:	0°C ~ 40°C
Storage:	-20°C ~ -65°C
* Humidity	
Operating	20% ~ 95%
Storage	10% ~ 95%

dBuV

110

MKR 0.160034MHZ 49.7dBuV



Date 12.OCT '98 Time 17:01:37
 CISPR 22 CLASS B CONDUCTION TEST (PEAK VALUE)
 MODEL: SP-3000 1600X1200 93.7K/75HZ

ADT CORP.
 LISN : N

Tested by Bruce Lu

DBUV

110

100

80

60

40

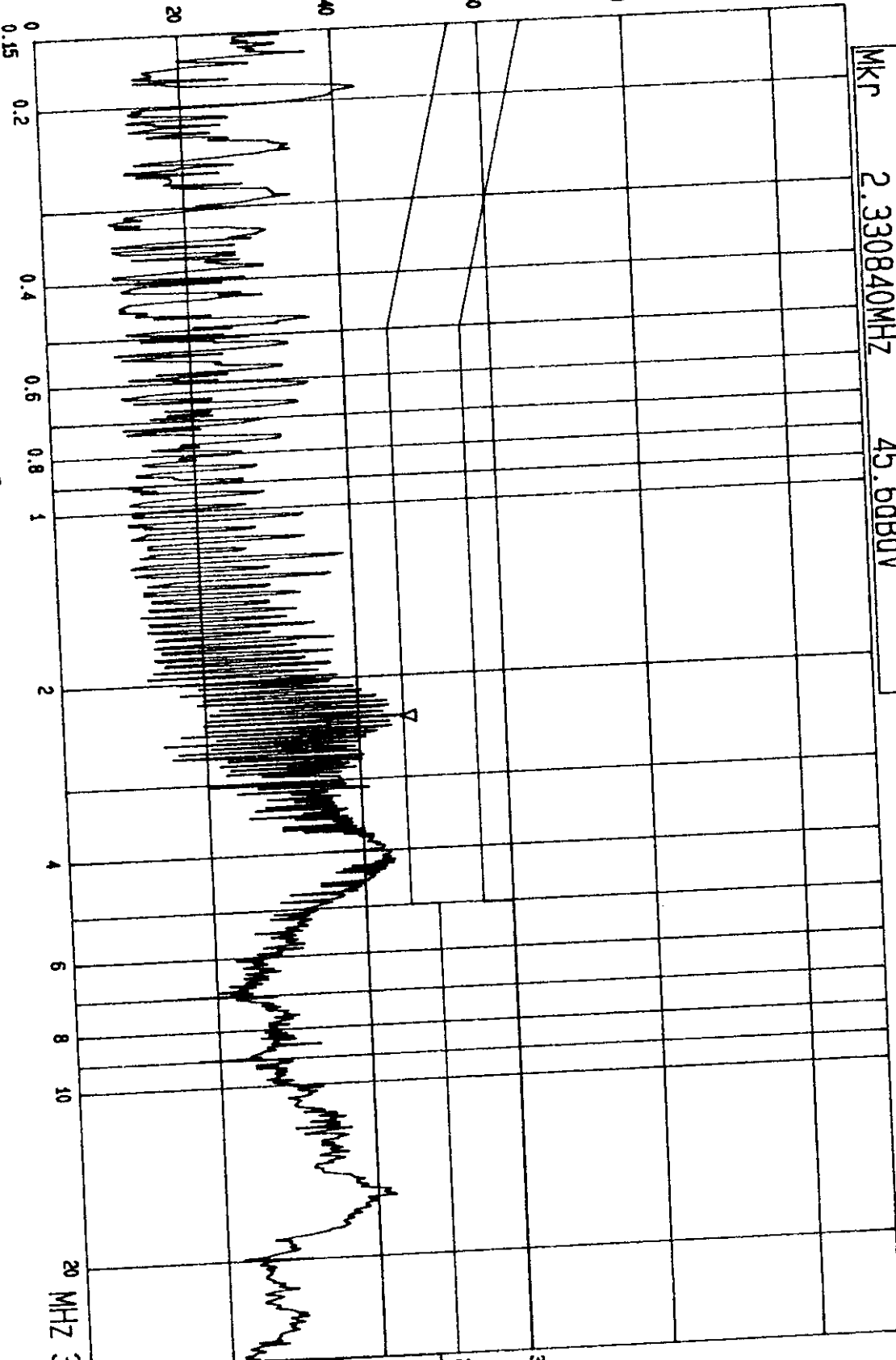
20

0

MKR

2.330840MHZ

45.6dBuV



Date 09.OCT '98 Time 10:37:08
 CISPR 22 CLASS B CONDUCTION TEST (PEAK VALUE)
 MODEL: GD-1666 1600X1200 75Hz/93.7K

ADT CORP.
 LISN : L

Page 2
 Tested by Bruce Lu
 20 MHz 30

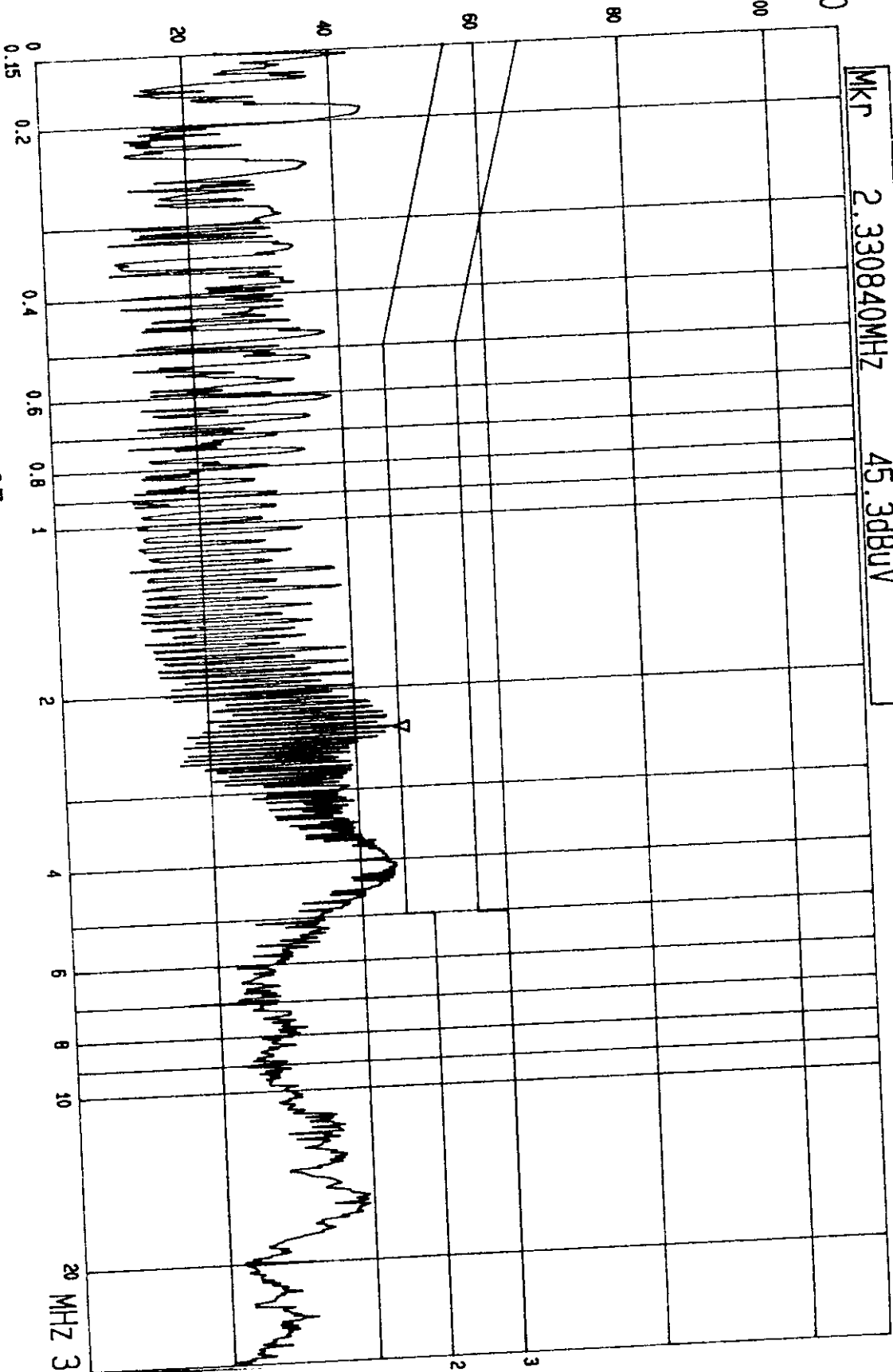
DBUV

110

MKR

2.330840MHZ

45.3dBV



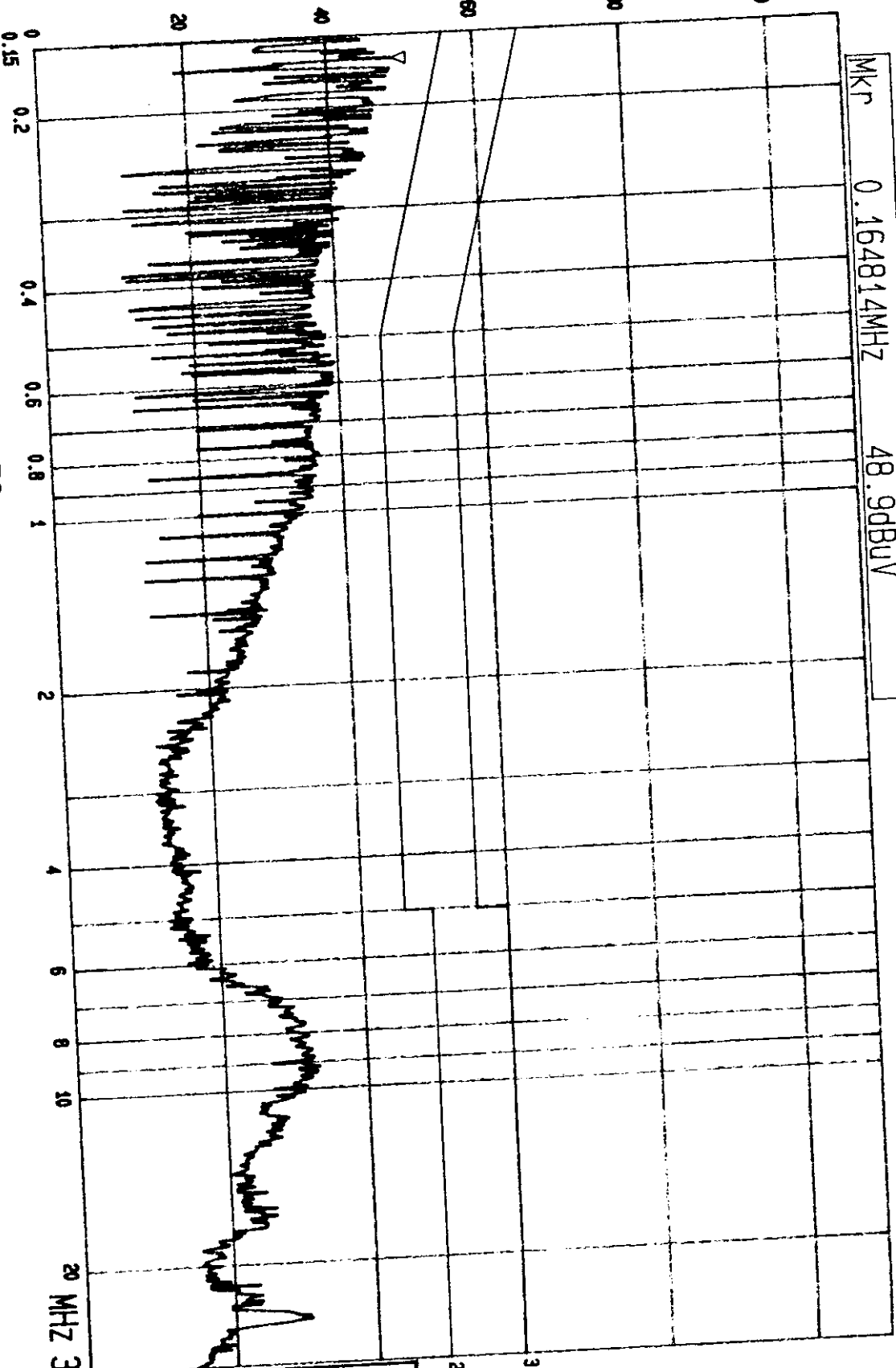
Date 09.OCT '98 Time 10:24:07
 CISPR 22 CLASS B CONDUCTION TEST (PEAK VALUE) ADT CORP.
 MODEL: GD-1666 1600X1200 75HZ/93.7K LISN : N

Checked by Bruce Lu
 Date

DBU V

110

MKJ 0.164814MHZ 48.9DBU V



Date 12.OCT '98 Time 16:53:59
 CISPR 22 CLASS B CONDUCTION TEST (PEAK VALUE) ADT CORP.
 MODEL: SP-3000 1600X1200 93.7K/75HZ LISN : L

Tested by Bruce L