

EXHIBIT 4

RFI/EMI TEST REPORT



EMC

TEST REPORT

REPORT NO. : F86123101
MODEL NO. : UH-100
DATE OF TEST : Jan. 6, 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: Jan. 19, 1998

Product : USB BOX
 Trade Name : ADI
 Model No. : UH-100
 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 Jan. 6, 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: 1/19/98
 (Sharon Hsiung)

TESTED BY: Leo Hong, DATE: 1/19/98
 (Leo Hong)

APPROVED BY: Harris W. Lai, DATE: 1/19/98
 (Harris W. Lai)

ADVANCE DATA TECHNOLOGY CORPORATION

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	USB BOX
Model No.	:	UH-100
Power Supply Type	:	Switching
Power Cord	:	Nonshielded (1.8m)
Data Cable to PC	:	Shielded (2m)
Data Cable to monitor	:	Shielded (0.6m)

Note: The EUT is an USB HUB and Monitor control Function device, providing one upstream, four downstream ports and one embedded function for monitor control.

The EUT was tested with an ADI color monitor (model:PD-695) under the following configurations:

- * Mode 1: EUT was connected to USB port of PC.
- * Mode 2: EUT was connected between PC and 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	VECTRA VL 5/133 Series 5MT	N/A	Nonshielded Power (1.8m)
2	KEYBOARD	FORWARD	FDA-102D	F4Z4K3FDA- 102D	Shielded Signal (1.5m)
3	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2m) Nonshielded Power (1.9m)
4	MODEM	DATATRO NICS	1200CK	E2O5OV1200CK	Shielded Signal (1.2m) Nonshielded Power (1.9m)
5	MOUSE	HP	M-S34	DZL211029	Shielded Signal (1.8m)
6	EARPHONE	GAMMA	LH115	N/A	Nonshielded Signal (2.5m)
7	USB CCD CAMERA x 4	COMPAQ	YC72-CPQ	EDUYC72-CPQ	Nonshielded Signal (2m)
8	VGA DISPLAY CARD	DIAMOND	Stealth 3D 3000	FTUPC130208	N/A
9	SOUND CARD	D&B	ASOUNDOPL/L UX	MA5ASOUND- OPL	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 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	March 16, 1998
R&S Receiver	ESVS10	844591/010	Sept. 23, 1998
SCHWARZBECK Tunable Dipole Antenna	VHA 9103 UHA 9105	E101051 E101055	Nov. 28, 1998
CHASE BiLOG Antenna	CBL6111A	1500	Sept. 12, 1998
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 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)	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.



4.2 TEST DATA OF CONDUCTED EMISSION (A)

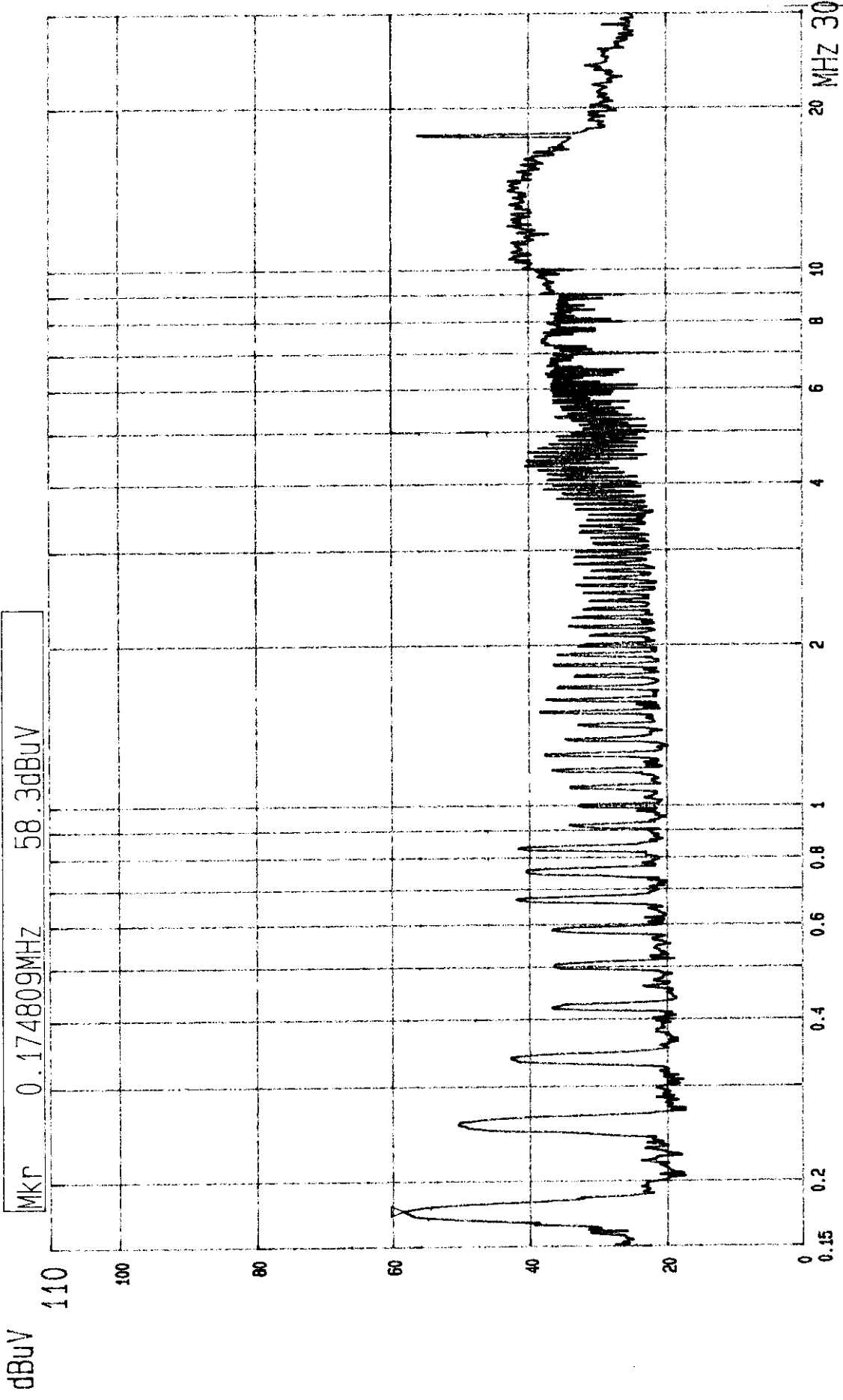
EUT: USB BOXMODEL: UH-100

MODE: 1

6 dB Bandwidth: 10 kHzTEST PERSONNEL: Sea Hong

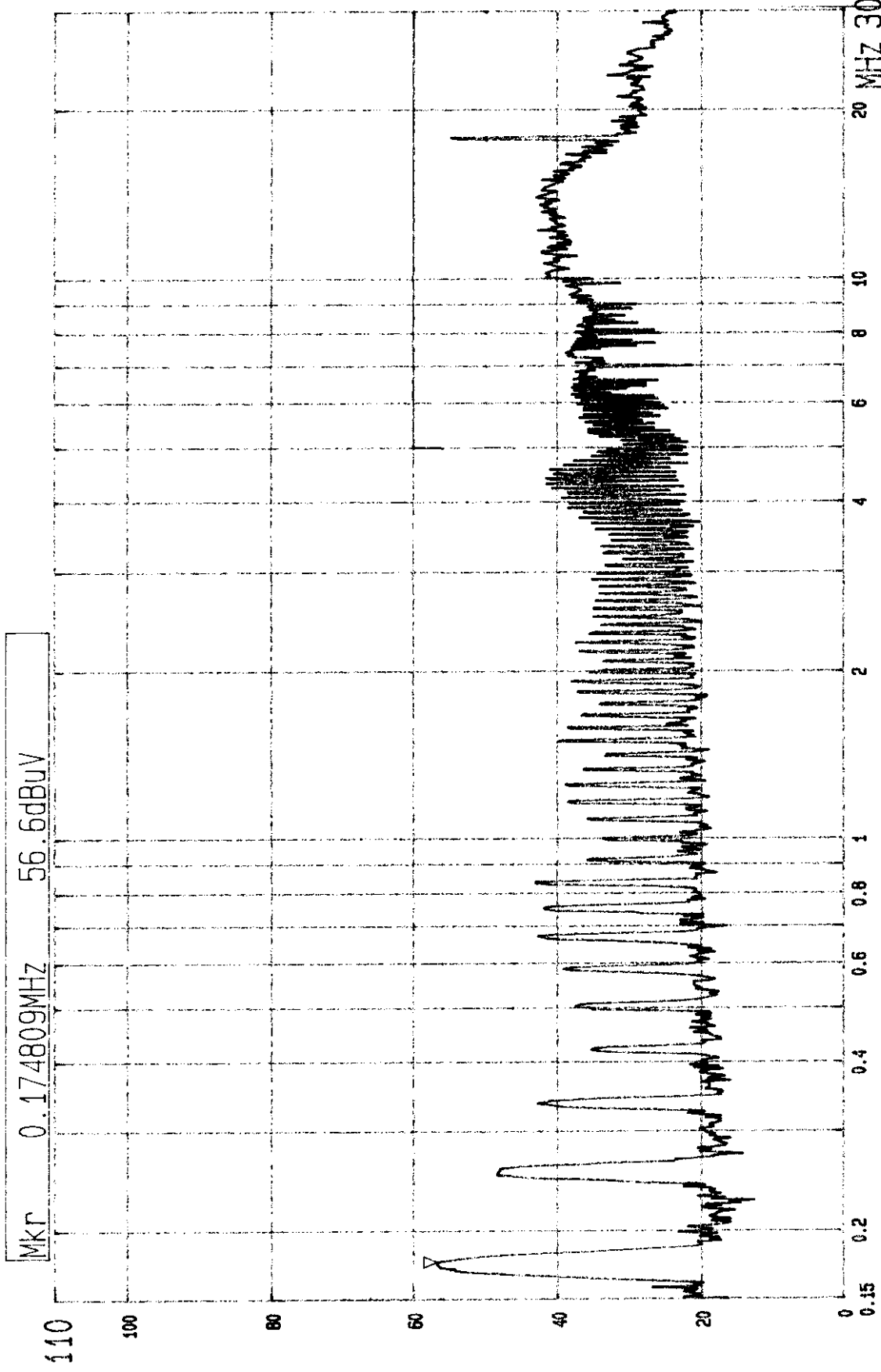
Freq. [MHz]	L Level		N Level		Limit		Margin [dB (μV)]			
	[dB (μV)]		[dB (μV)]		[dB (μV)]		L		N	
	QP	AV	QP	AV	QP	AV	QP	AV	QP	AV
0.163	56.50	46.9	57.40	47.20	65.28	55.28	-8.8	-8.4	-7.9	-8.1
0.246	48.80	-	49.10	-	61.88	51.88	-13.1	-	-12.8	-
0.826	38.50	-	41.00	-	56.00	46.00	-17.5	-	-15.0	-
4.394	36.40	-	38.40	-	56.00	46.00	-19.6	-	-17.6	-
11.194	36.20	-	36.90	-	60.00	50.00	-23.8	-	-23.1	-
13.928	38.40	-	38.60	-	60.00	50.00	-21.6	-	-21.4	-

- 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



---- Date 03.JAN.'98 Time 16:26:03
CISPR 22 CLASS B CONDUCTION TEST (PEAK VALUE)
MODEL: UH-100

ADT CORP.
LISN: L



--- Date 03.JAN.'98 Time 16:33:57
CISPR 22 CLASS B CONDUCTION TEST (PEAK VALUE)
MODEL: UH-100

ADT CORP.
LISN: N

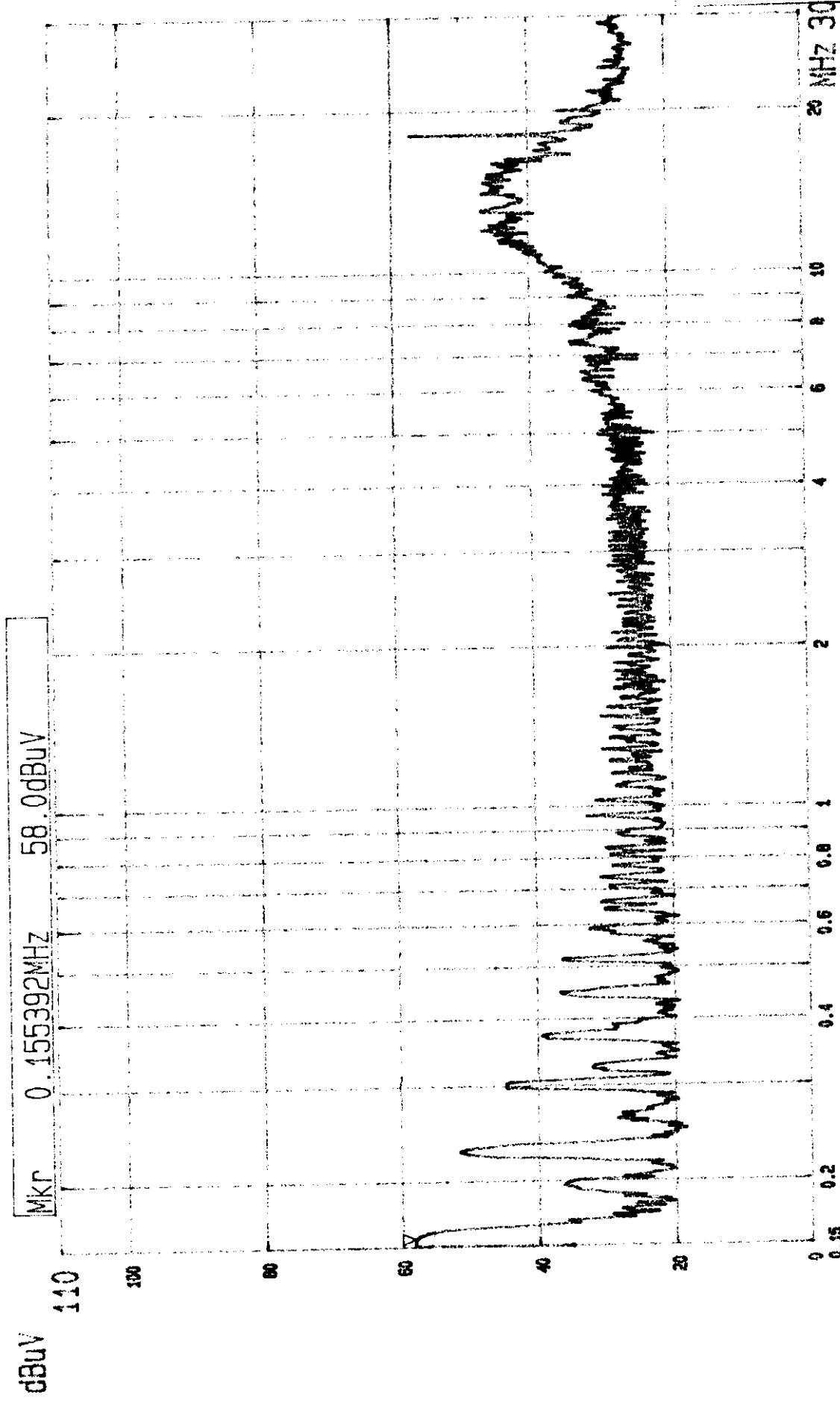


4.3 TEST DATA OF CONDUCTED EMISSION (B)

EUT: **USB BOX**MODEL: **UH-100**MODE: **2**6 dB Bandwidth: 10 kHzTEST PERSONNEL: *Lee Hong*

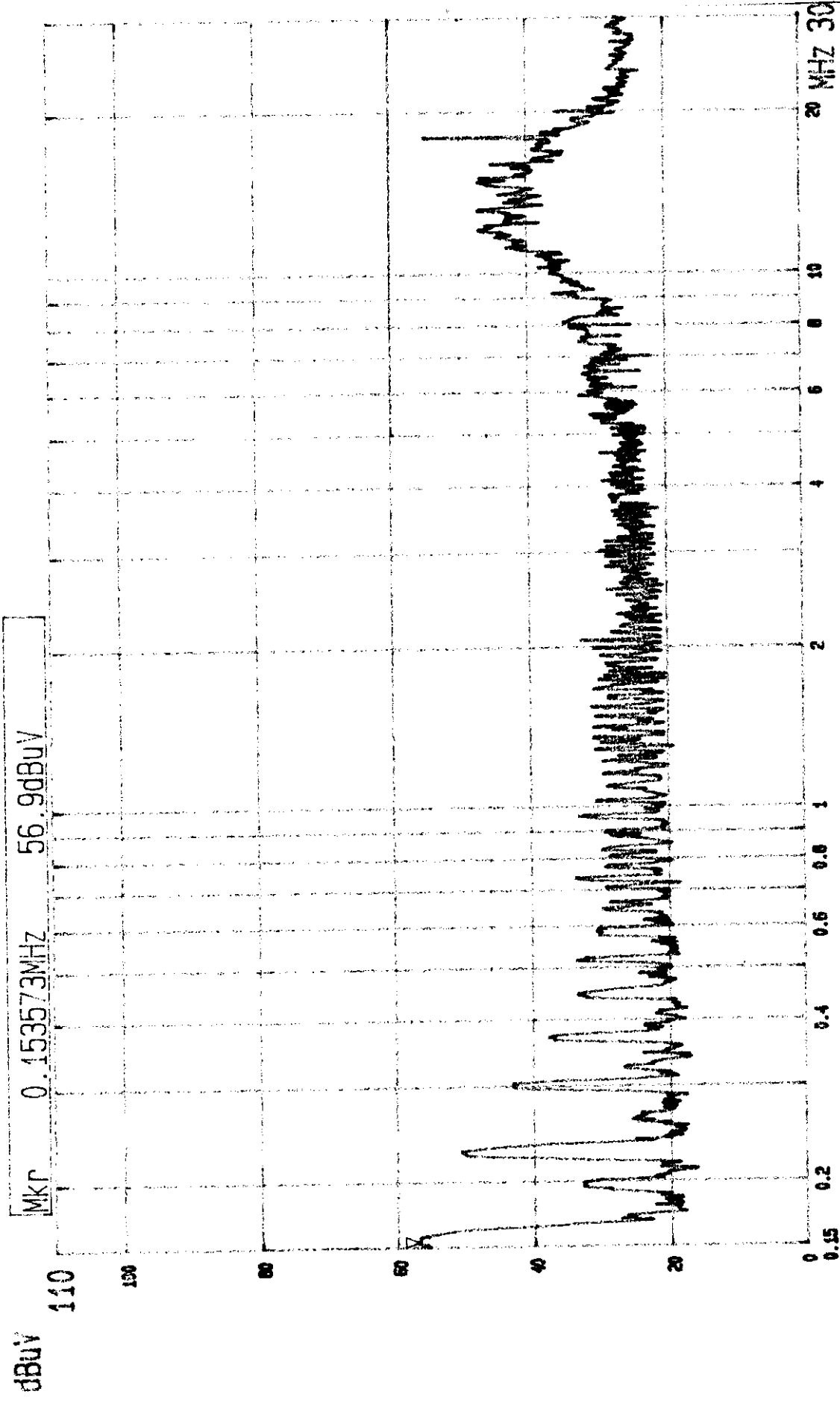
Freq. [MHz]	L Level		N Level		Limit		Margin [dB (μV)]			
	[dB (μV)]		[dB (μV)]		[dB (μV)]		L		N	
	QP	AV	QP	AV	QP	AV	QP	AV	QP	AV
0.151	46.10	-	46.70	-	65.94	55.94	-19.8	-	-19.2	-
0.217	50.50	-	49.90	-	62.93	52.93	-12.4	-	-13.0	-
0.289	44.10	-	43.10	-	60.53	50.53	-16.4	-	-17.4	-
0.507	33.10	-	29.80	-	56.00	46.00	-22.9	-	-26.2	-
12.003	43.50	-	44.30	-	60.00	50.00	-16.5	-	-15.7	-
15.005	40.50	-	42.50	-	60.00	50.00	-19.5	-	-17.5	-

- 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



--- Date 06 JAN '98 Time 18:37:56
CISPR 22 CLASS B CONDUCTION TEST (PEAK VALUE)
MODEL: UH-100 (MODE 2)

ADI CORP.
LISI: L



--- Date 06 JAN '98 Time 18:57:18
CISPR 22 CLASS B CONDUCTION TEST (PEAK VALUE)
MODEL: UH-100 (MODE 2)

ADT CORP.
LISK: N



4.4 TEST DATA OF RADIATED EMISSION (A)

EUT: **USB BOX**MODEL: **UH-100**

MODE: 1

ANTENNA: CHASE BILOG CBL6111APOLARITY: HorizontalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 MTEST PERSONNEL: Leo Hanf

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
75.81	8.7	13.7	22.4	30.0	-7.6
129.98	14.8	9.1	23.9	30.0	-6.1
144.01	14.2	13.6	27.8	30.0	-2.2
162.49	12.3	11.0	23.3	30.0	-6.7
216.01	14.2	11.5	25.7	30.0	-4.3
229.51	15.5	7.2	22.7	30.0	-7.3
242.03	16.7	13.9	30.6	37.0	-6.4

- 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 (A)

EUT: **USB BOX**

MODEL: **UH-100**

MODE: **1**

ANTENNA: **CHASE BILOG CBL6111A**

POLARITY: **Vertical**

DETECTOR FUNCTION: **Quasi-peak**

6 dB BANDWIDTH: **120 kHz**

FREQUENCY RANGE: **30-1000 MHz**

MEASURED DISTANCE: **10 M**

TEST PERSONNEL: *Leo Hong*

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
49.18	10.9	14.7	25.6	30.0	-4.4
129.96	16.3	10.5	26.8	30.0	-3.2
140.81	17.1	8.7	25.8	30.0	-4.2
144.01	16.5	11.1	27.6	30.0	-2.4
162.47	13.4	14.1	27.5	30.0	-2.5
172.08	12.9	14.4	27.3	30.0	-2.7
192.03	13.3	14.6	27.9	30.0	-2.1

- 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



4.5 TEST DATA OF RADIATED EMISSION (B)

EUT: USB BOXMODEL: UH-100MODE: 2ANTENNA: CHASE BILOG CBL6111APOLARITY: HorizontalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 MTEST PERSONNEL: Leo Hong

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
129.98	14.8	9.4	24.2	30.0	-5.8
144.00	14.2	13.4	27.6	30.0	-2.4
162.45	12.3	13.7	26.0	30.0	-4.0
172.06	12.2	10.5	22.7	30.0	-7.3
192.01	12.4	13.4	25.8	30.0	-4.2
216.01	14.2	10.4	24.6	30.0	-5.4
512.02	24.5	5.9	30.4	37.0	-6.6

- 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 (B)

EUT: **USB BOX**MODEL: **UH-100**MODE: **2**

ANTENNA: CHASE BILOG CBL6111A

POLARITY: **Vertical**DETECTOR FUNCTION: **Quasi-peak**6 dB BANDWIDTH: **120 kHz**FREQUENCY RANGE: **30-1000 MHz**MEASURED DISTANCE: **10 M**TEST PERSONNEL: *Leo Hong*

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
73.06	7.7	17.6	25.3	30.0	-4.7
130.00	16.3	10.8	27.1	30.0	-2.9
144.02	16.5	10.0	26.5	30.0	-3.5
162.47	13.4	11.3	24.7	30.0	-5.3
192.03	13.3	14.3	27.6	30.0	-2.4
229.51	15.3	9.9	25.2	30.0	-4.8
512.02	24.6	9.4	34.0	37.0	-3.0

- 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