

EXHIBIT 4

RFI/EMI TEST REPORT



EMC

TEST REPORT

REPORT NO. : F87030501
MODEL NO. : 1230P, 1236P
DATE OF TEST : Apr. 15, 1998

PREPARED FOR: PACIFIC IMAGE ELECTRONICS CO., LTD.

ADDRESS : 10F, NO. 81, HSIN TAI WU 5TH RD., SEC. 1, HSI CHIH,
DISTRICT TAIPEI HSIEN, 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: May 12, 1998

Product : SCANNER
Trade Name : PACIFIC IMAGE
Model No. : 1230P, 1236P
Applicant : PACIFIC IMAGE ELECTRONICS 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 Apr. 15, 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: Johnny Liu, DATE: 5/12/98
(Johnny Liu)

CHECKED BY: Sharon Hsiung, DATE: 5/12/98
(Sharon Hsiung)

APPROVED BY: Mike Su, DATE: 5/12/98
(Mike Su)

ADVANCE DATA TECHNOLOGY CORPORATION**NVLAP[®]**

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2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product	:	SCANNER
Model No.	:	1230P, 1236P
Power Supply Type	:	Switching
Power Cord	:	Nonshielded (1.8 m)
Data Cable	:	Shielded (1.2 m)

Note: The EUT has two model names which are identical to each other in all aspects except for their IC used:

Model: 1230P
Model: 1236P

From the above two models, model: 1230P was selected as representative model for the test and its data is recorded in this report.

The EUT was tested with the following two power adapters:

MODE 1: HITRON power adapter, Model: HES10-12010-0-1
Rating: I/P 100-240 Vac, 0.33-0.09 A, 60/50 Hz
O/P: 12 Vdc, 1 A

MODE 2: POTRANS power adapter, Model: MKD-48121000
Rating: I/P: 120 Vac, 30 W, 60 Hz
O/P: 12Vdc, 1000 mA

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	D4579A	DoC Approved	Nonshielded Power (1.8 m)
2	MONITOR	ADI	PD-959	FCC DoC Approved	Shielded Signal (1.2 m) Nonshielded Power (1.8 m)
3	KEYBOARD	FORWARD	FDA-104GA	F4ZDA-104G	Shielded Signal (2.0 m)
4	PRINTER	HP	2225C+	DSI6XU2225	Shielded Signal (1.2 m) Nonshielded Power (1.8 m)
5	MODEM	DATATRONICS	1200CK	E2O5OV1200CK	Shielded Signal (1.2 m) Nonshielded Power (1.8 m)
6	MOUSE	HP	C1413A	B94C1413X	Shielded Signal (1.8 m)
7	VGA 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 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	Aug. 2, 1998
EMCO Turn Table	1016	1722	N/A
EMCO Tower	1051	1263	N/A
Open Field Test Site	Site 4	ADT-R04	Aug. 1, 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	ESHS30	828765/002	July 31, 1998
ROHDE & SCHWARZ Artificial Mains Network	ESH2-Z5	828075/003	July 28, 1998
EMCO-L.I.S.N.	3825/2	90031627	July 28, 1998
Shielded Room	Site 5	ADT-C05	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 - 1000 MHz (Radiated Emission)

Input Voltage : 120 Vac, 60 Hz

Temperature : 25 °C

Humidity : 64 %

Atmospheric Pressure : 1060 mbar

TEST RESULT	Remarks
PASS	Minimum passing margin of conducted emission: -3.3 dB at 0.181 MHz Minimum passing margin of radiated emission: -2.6 dB at 190.03 MHz

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. Scanner (EUT) scans an image and sends messages to PC.
4. PC then sends these messages to monitor and monitor displays them on its screen.
5. Repeat steps 3-5.



4.2 TEST DATA OF CONDUCTED EMISSION (A)

EUT: SCANNERMODEL: 1230P

MODE: 1

6 dB Bandwidth: 10 kHz

TEST PERSONNEL:

Johnny Liu

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
0.174	50.2	-	50.1	-	64.77	54.77	-14.6	-	-14.7	-
0.262	48.2	-	47.3	-	61.37	51.37	-13.2	-	-14.1	-
1.002	44.1	-	44.5	-	56.00	46.00	-11.9	-	-11.5	-
1.830	49.3	-	48.4	-	56.00	46.00	-6.7	-	-7.6	-
2.829	41.9	-	44.8	-	56.00	46.00	-14.1	-	-11.2	-
6.668	31.6	-	31.8	-	60.00	50.00	-28.4	-	-28.2	-

- 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

Atton *PS*

ADT CO. SITE 5
CISPR 22 CLASS B

22. Apr 98 16:38

EUT: 1230P
Op Cond: HES10-12010-0-3
Test Spec: LISN : L

Report No. F87030501

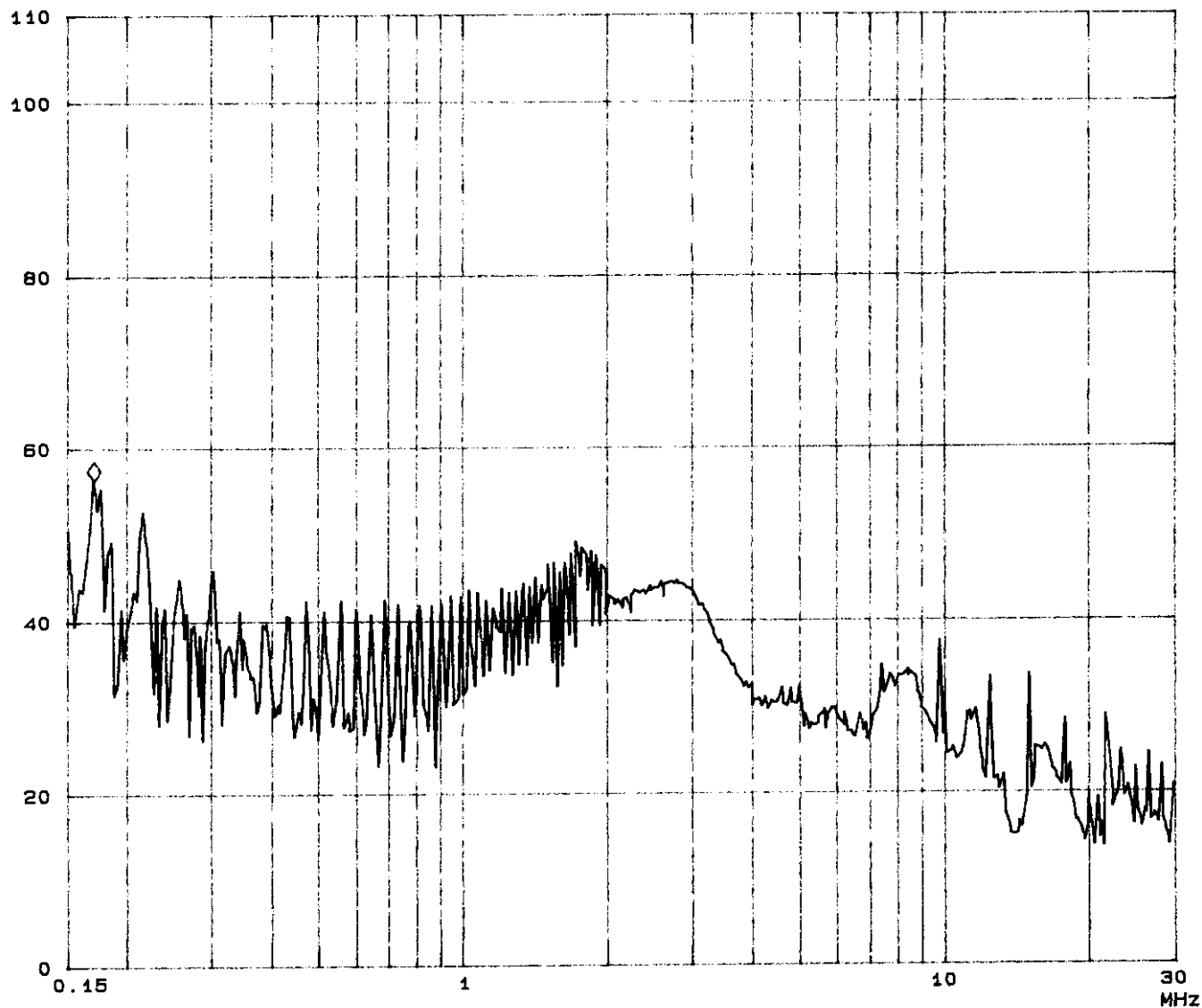
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Tested by Johnny Liu

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	10dBLN	OFF	60dB	
450k	5M	3k	10k	PK	1ms	10dBLN	OFF	60dB	
5M	30M	3k	10k	PK	1ms	10dBLN	OFF	60dB	

dBuV ◇ Mkr : 171.00 kHz 56.4 dBuV



ADT CO. SITE 5
CISPR 22 CLASS B

22. Apr 98 17:07

EUT: 1230P
Op Cond: HES10-12010-0-3
Test Spec: LISN : N

Report No. F87030501

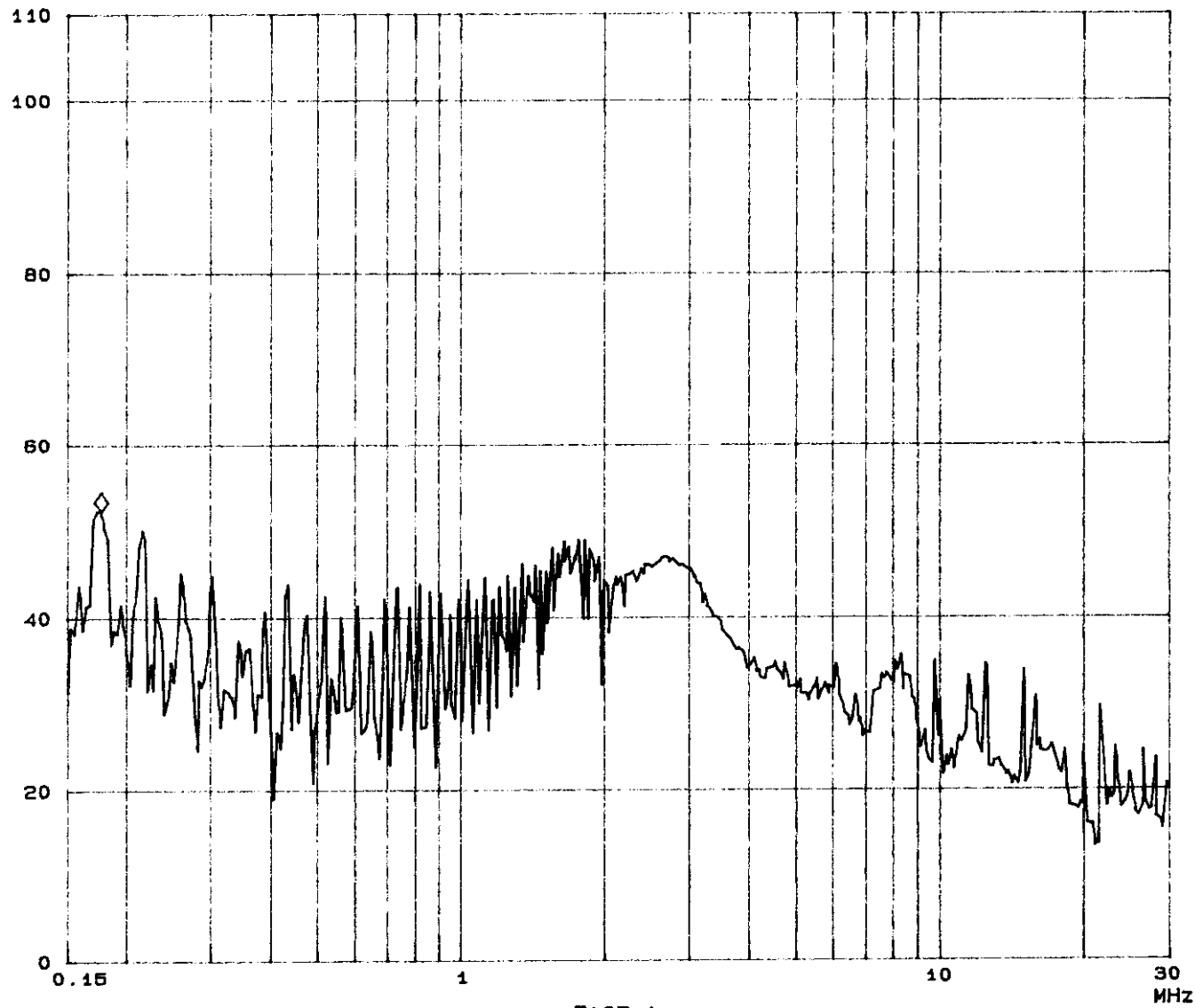
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Tested by Johnny Liu

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	10dBLN	OFF	60dB	
450k	5M	3k	10k	PK	1ms	10dBLN	OFF	60dB	
5M	30M	3k	10k	PK	1ms	10dBLN	OFF	60dB	

dBuV ◇ Mkr : 177.00 kHz 52.3 dBuV





4.3 TEST DATA OF CONDUCTED EMISSION (B)

EUT: SCANNERMODEL: 1230PMODE: 2

6 dB Bandwidth: 10 kHz

TEST PERSONNEL:

Johnny Liu

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
0.162	61.2	33.2	60.4	30.2	65.36	55.36	-4.2	-22.2	-5.0	-25.2
0.181	61.1	31.2	60.2	30.5	64.44	54.44	-3.3	-23.2	-4.2	-23.9
0.504	33.6	-	26.9	-	56.00	46.00	-22.4	-	-29.1	-
1.026	19.1	-	12.3	-	56.00	46.00	-36.9	-	-43.7	-
5.930	29.1	-	29.9	-	60.00	50.00	-30.9	-	-30.1	-
8.333	26.3	-	27.8	-	60.00	50.00	-33.7	-	-32.2	-

- 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

PATRICK PS

ADT CO. SITE 5
CISPR 22 CLASS B

15. Apr 98 23:58

EUT: 1230P
Op Cond: MKD-48121000
Test Spec: LISN : L

Report No. F87030501

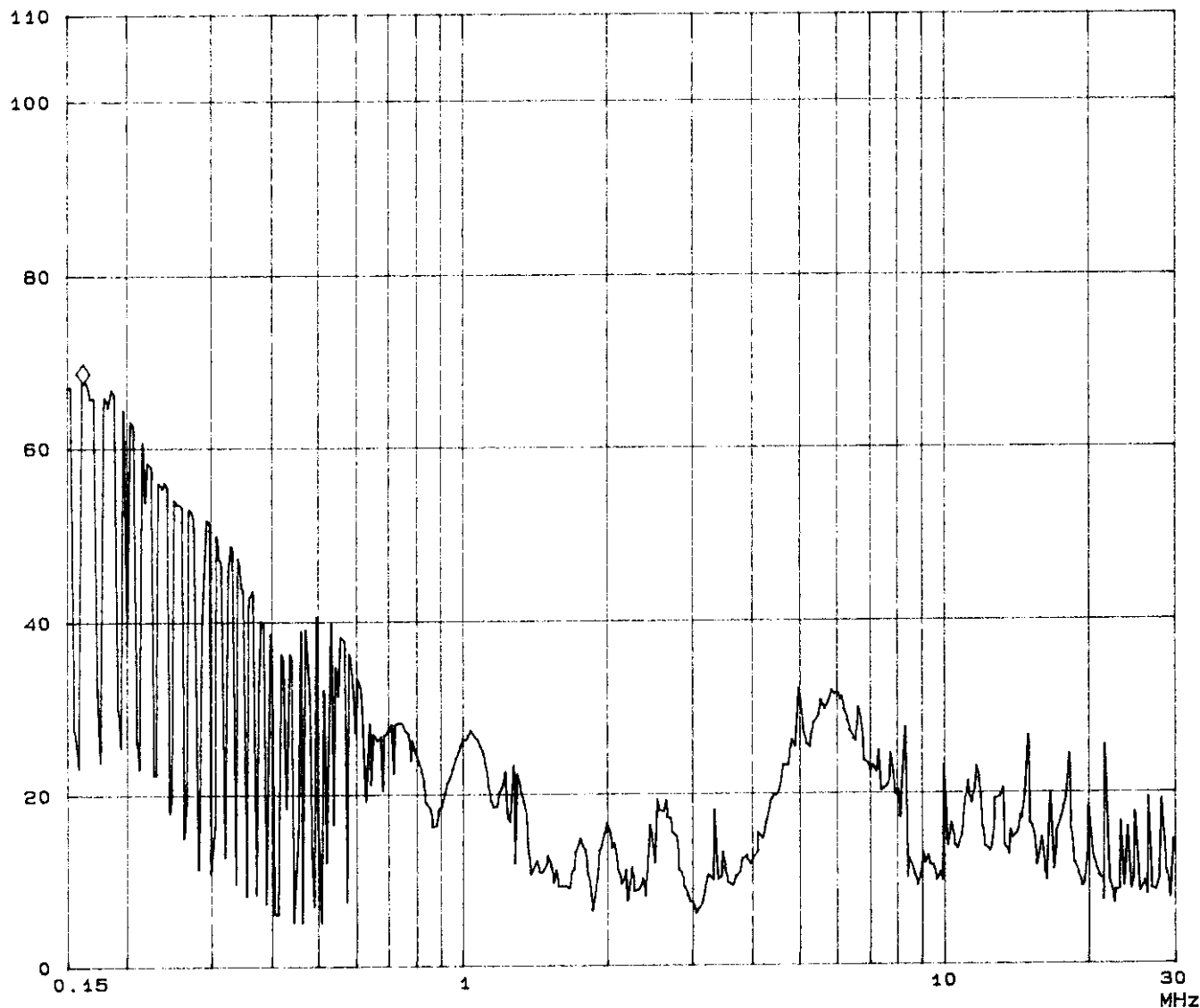
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Tested by Johnny-Lia

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	10dBLN	OFF	60dB
450k	5M	3k	10k	PK	1ms	10dBLN	OFF	60dB
5M	30M	3k	10k	PK	1ms	10dBLN	OFF	60dB

dBuV ◇ Mkr : 162.00 kHz 67.5 dBuV



ADT CO. SITE 5
CISPR 22 CLASS B

16. Apr 98 00:16

EUT: 1230P
Op Cond: MKD-48121000
Test Spec: LISN : N

Report No. F87030501

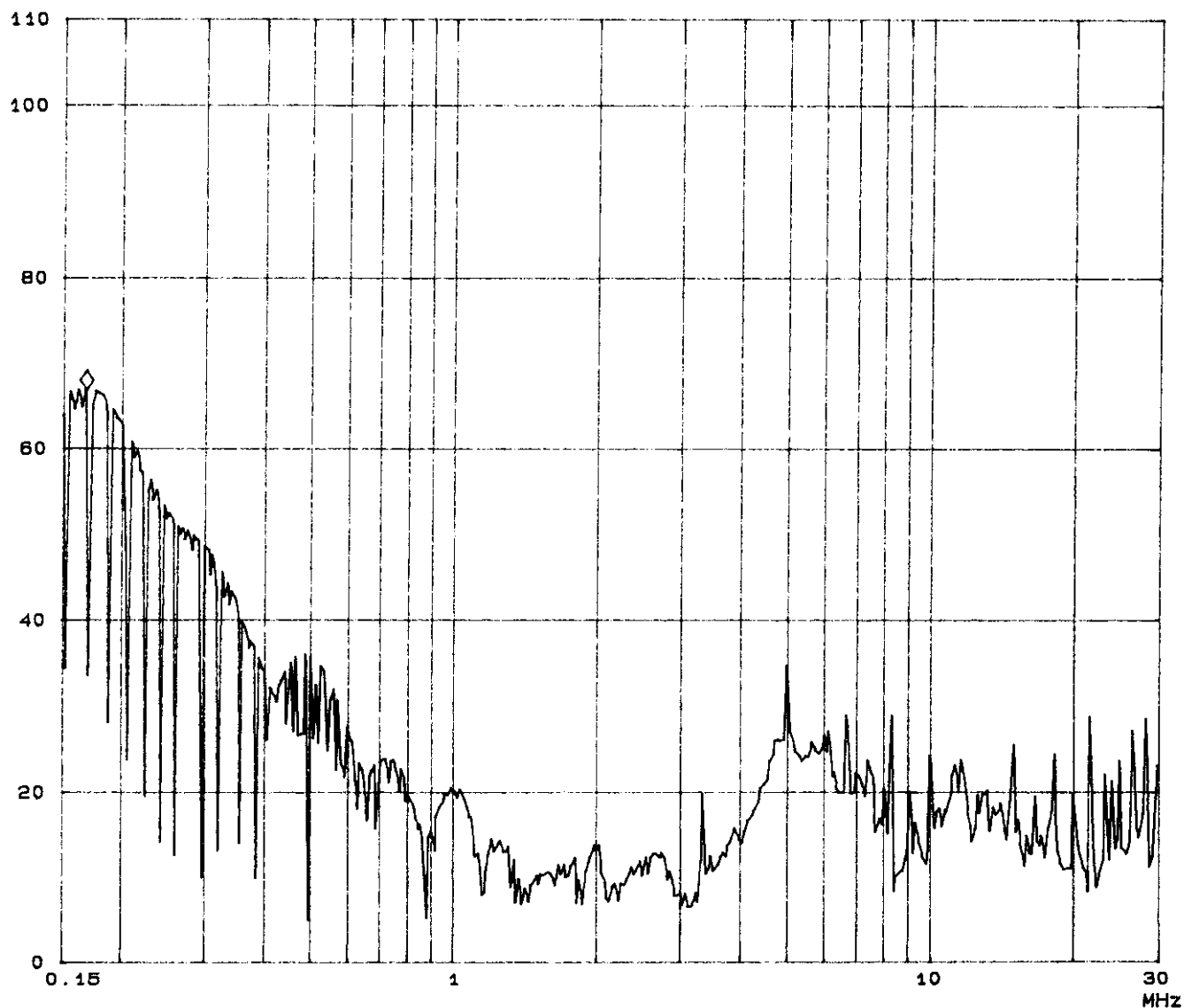
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Tested by Johnny-Liu

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	10dBLN	OFF	60dB
450k	5M	3k	10k	PK	1ms	10dBLN	OFF	60dB
5M	30M	3k	10k	PK	1ms	10dBLN	OFF	60dB

dBuV ◇ Mkr : 168.00 kHz 66.9 dBuV





4.4 TEST DATA OF RADIATED EMISSION (A)

EUT: **SCANNER**MODEL: **1230P**MODE: **1**ANTENNA: **CHASE BILOG CBL6111A**POLARITY: HorizontalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: **30-1000 MHz**MEASURED DISTANCE: 10 M

TEST PERSONNEL:

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
50.03	10.6	5.7	16.3	30.0	-13.7
138.35	14.1	7.8	21.9	30.0	-8.1
141.69	13.8	7.5	21.3	30.0	-8.7
150.02	12.8	11.4	24.2	30.0	-5.8
163.36	11.4	11.4	22.8	30.0	-7.2
170.03	11.3	13.5	24.8	30.0	-5.2
178.37	11.2	15.0	26.2	30.0	-3.8
181.70	11.2	15.1	26.3	30.0	-3.7
228.37	13.1	13.4	26.5	30.0	-3.5

- 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: **SCANNER**MODEL: **1230P**MODE: **1**

ANTENNA: CHASE BILOG CBL6111A

POLARITY: VerticalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 M

TEST PERSONNEL:

Johnny - Liu

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
50.03	9.7	14.0	23.7	30.0	-6.3
76.03	7.9	14.2	22.1	30.0	-7.9
141.69	12.7	10.7	23.4	30.0	-6.6
150.02	12.1	14.5	26.6	30.0	-3.4
155.02	11.8	12.5	24.3	30.0	-5.7
163.36	11.4	15.2	26.6	30.0	-3.4
170.03	11.2	15.3	26.5	30.0	-3.5
171.69	11.1	12.9	24.0	30.0	-6.0
190.02	11.0	16.2	27.2	30.0	-2.8
228.37	13.8	13.3	27.1	30.0	-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



4.5 TEST DATA OF RADIATED EMISSION (B)

EUT: **SCANNER**MODEL: **1230P**MODE: **2**

ANTENNA: CHASE BILOG CBL6111A

POLARITY: HorizontalDETECTOR FUNCTION: Quasi-peak

6 dB BANDWIDTH: 120 kHz

FREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 M

TEST PERSONNEL:

Johnny Liu

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
131.68	14.3	9.3	23.6	30.0	-6.4
150.03	12.8	12.7	25.5	30.0	-4.5
153.36	12.3	12.5	24.8	30.0	-5.2
160.03	11.5	12.8	24.3	30.0	-5.7
170.02	11.3	14.2	25.5	30.0	-4.5
181.69	11.2	13.8	25.0	30.0	-5.0
190.03	11.4	16.0	27.4	30.0	-2.6
195.01	11.5	13.6	25.1	30.0	-4.9
228.37	13.1	13.2	26.3	30.0	-3.7

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 (B)**EUT: SCANNERMODEL: 1230PMODE: 2

ANTENNA: CHASE BILOG CBL6111A

POLARITY: VerticalDETECTOR FUNCTION: Quasi-peak6 dB BANDWIDTH: 120 kHzFREQUENCY RANGE: 30-1000 MHzMEASURED DISTANCE: 10 M

TEST PERSONNEL:

Johnny - Liu

Frequency (MHz)	Correction Factor (dB/m)	Reading Data (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
50.02	9.7	16.0	25.7	30.0	-4.3
138.35	12.6	9.8	22.4	30.0	-7.6
141.69	12.7	12.6	25.3	30.0	-4.7
150.03	12.1	14.6	26.7	30.0	-3.3
163.36	11.4	15.4	26.8	30.0	-3.2
178.36	10.9	15.9	26.8	30.0	-3.2
190.02	11.0	15.7	26.7	30.0	-3.3
228.37	13.8	13.2	27.0	30.0	-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



6. ATTACHMENT I -TECHNICAL DESCRIPTION OF EUT

SPECIFICATIONS:

Scanner type	Desktop flatbed
Resolution	Optical: 600x1200 dpi Interpolated: 9600x9600 dpi
Maximum document size	21.59x29.7 cm
Scan method	Single pass
Color mode	30 bits / 36 bits
Grey mode	10 bits / 12 bits
Black and white mode	1 bit
Interface	PC parallel port EPP/ECP
Connectors	To host: DB-25 male To printer: DB-25 female
Power	12V dc 1A
Size	45.1 x 30.8 x 9.6 cm
Weight	3.5 kg
Operation temperature	10 °C to 40 °C
Storage temperature	-25 °C to 55 °C