

Exhibit C - Measurement Report



Industrial Technology Research Institute

Electronics Research & Service Organization

Bldg. 17, 195-4 Sec. 4, Chung Hsing Rd., Chutung, Hsinchu, 310

Taiwan, Republic Of China

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FCC ID : JBALAN715B

Report No. : NQU-8706-007

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ELECTROMAGNETIC INTERFERENCE TEST REPORT

Company : MACRONIX INTERNATIONAL CO., LTD.

Address : No. 3, Creation Road III, Science-Based Industrial Park, Hsinchu, Taiwan, R.O.C.

Sample Name : MX98715 100/10 Base PCI adapter

Model : M 715

Date Received : JUN. 30, 1998

Date Tested : JUL. 01, 1998

MEASUREMENT PROCEDURE USED :

CISPR 22, CLASS B, 1996

FCC RULE PART 15, 1996

WE HEREBY CERTIFY THAT: The measurements shown in the attachment were made in accordance with the procedures indicated, and the energy emitted by the equipment was found to be within the limits applicable. We assume full responsibility for the accuracy and completeness of these measurements and vouch for the qualifications of all persons taking them.

	Name	Signature	Date
Testing Engineer	C.F.Wu/NVLAP	<i>C.F. Wu</i>	<i>Jul. 14, 1998</i>
Approving Manager	Paul Y. Liau/NVLAP	<i>Paul Y. Liau</i>	<i>Jul. 15, 1998</i>

Notes :

1. This report will be invalid if duplicated or photocopied in part.
2. This report refers only to the specimen(s) submitted to test, and is invalid as separately used.
3. This report is invalid without examination stamp and signature of this institute.
4. The tested specimen(s) will be preserved for thirty days from the date issued.
5. This is a NIST/NVLAP accredited report but not constituted and endorsed by US government.



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1. GENERAL INFORMATION

1.1 DESCRIPTION OF EUT & POWER

MANUFACTURER : MACRONIX INTERNATIONAL CO., LTD.

SAMPLE NAME : MX98715 100/10 Base PCI adapter

MODEL NUMBER : M 715

SERIAL NUMBER : -----

POWER SOURCE : 5VDC(From PC)



1.2 DESCRIPTION OF PERIPHERALS

(1) PC

PRODUCT NUMBER : Vectra VL 5/100 SERIES 4
SERIAL NUMBER : SG61802353
MANUFACTURER : HP CORP.
F.C.C. ID : HCJVECTRAVL5
POWER CORD : Shielded, detachable, 1.8m.

(2) KEYBOARD

MODEL NUMBER : E03633MLTW-C
SERIAL NUMBER : -----
MANUFACTURER : HP CORP.
F.C.C. ID : CIGE03633

(3) MONITOR

MODEL NUMBER : D2813
SERIAL NUMBER : TW63803602
MANUFACTURER : HP CORP.
F.C.C. ID : A3KM043
POWER CORD : Shielded, detachable, 1.8m.

(4) PRINTER

MODEL NUMBER : 5152-002
SERIAL NUMBER : 0754365
MANUFACTURER : IBM CORP.
F.C.C. ID : BKM9A85152002
POWER CORD : Shielded, undetachable, 1.8m.

(5) MODEM

MODEL NUMBER : 4007AM
SERIAL NUMBER : A10740073303
MANUFACTURER : Hayes CORP.
F.C.C. ID : BFJ4000AM



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(6) MOUSE

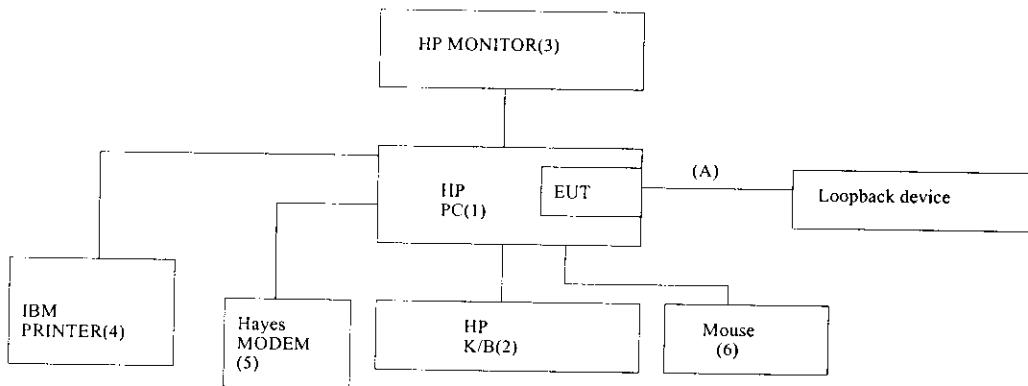
MODEL NUMBER : M-S34
SERIAL NUMBER : -----
MANUFACTURER : HP CORP.
F.C.C. ID : DZL210582

(7) CABLE

NO.	TYPE	Connector	Shielded	Length
(A)	Cross-over Twisted-pair	RJ-45 Metal	NO	20m



1.3 EUT & PERIPHERALS SETUP DIAGRAM



The indicated numbers (1)(2)-----please refer to item 1.2.



1.4 EUT OPERATING CONDITION

1. Plug the EUT in PCI slot and power on the PC.
2. Run " MX713.EXE " test program.
3. Select port speed to 100 or 10Mbps full-duplex.
Select Network Diagnose test to External Loopback test.

1.5 DESCRIPTION OF TEST SITE

SITE DESCRIPTION	: FCC certificate NO. :31040/SIT DNV certificate NO. : 510-96-1016 TUV certificate NO. :I9664582-9610 Lloyd's certificate NO. :LA003 BCIQ certificate NO. :SL2-IN-E-02 NVLAP Lab code : 200118-0 CNLA certificate NO. :CNLA-ZL97018 VCCI certificate NO. :R-629, C-650
NAME OF SITE	: Electronics Research & Service Organization Industrial Technology Research Institute
SITE LOCATION	: K500, 195-4 , sec. 4, Chung Hsing Rd., Chu-Tung Chen. Hsin-Chu, Taiwan 31015 R.O.C.



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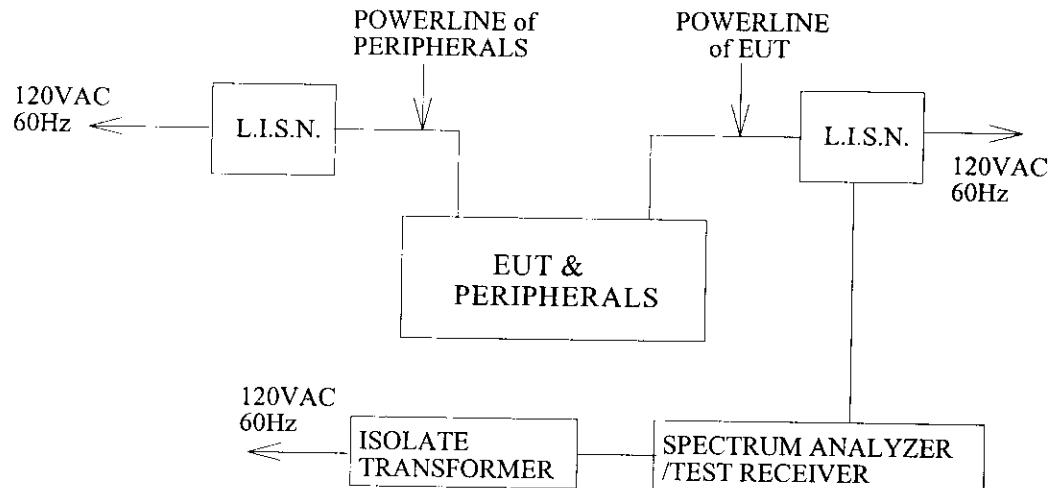
2. CONDUCTED POWERLINE TEST

2.1 TEST EQUIPMENTS

The following test equipments are used during the conducted powerline tests :

MANUFACTURER OR TYPE	MODEL No	SERIAL NO.	DATE OF CALIBRATION
SPECTRUM ANALYZER & DISPLAY	HP 8568A	2235A02320	MAR. 05, 1998
QUASI-PEAK ADAPTER	HP 85650 A	2341A00672	MAR. 05, 1998
ISOLATION TRANSFORMER	SOLAR 7032-1	N/A	N/A
L.I.S.N.	EMCO 3850/2	9311-1025 9401-1028	MAR. 24. 1998
TEST RECEIVER	R/S ESH3	8720791118	MAR. 13, 1998
SHIELDED ROOM	KEENE 5983	N/A	N/A

2.2 TEST SETUP





2.3 CONDUCTED POWER LINE EMISSION LIMIT

FREQUENCY (MHz)	MAXIMUM RF LINE VOLTAGE (dB μ V)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56	56-46
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

2.4 TEST PROCEDURE

The test procedure is performed in a 12ft \times 12ft \times 8ft(L \times W \times H) shielded room.

the EUT along with its peripherals were placed on a 1.0m(W) \times 1.5m(L) and 0.8m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

2.5 UNCERTAINTY OF CONDUCTED EMISSION

The uncertainty of conducted emission is ± 1.36 dB.



2.6 LINE CONDUCTED RF VOLTAGE MEASUREMENT

The frequency spectrum from 0.15 MHz to 30 MHz was investigated. All emissions not reported below are more than 20 dB below the prescribed limits.

All readings are Quasi-peak values.

Temperature : 21.5%

Humidity : 61 % RH

FREQUENCY (MHz)	READING(dB μ V)				LIMITS (dB μ V)	
	ONE END & GRD'D		THE OTHER END & GRD'D			
	Q.P.	Ave.	Q.P.	Ave.	Q.P.	Ave.
0.150	*	*	*	*	66.00	56.00
0.154	41.64	*	*	*	65.78	55.78
0.538	*	*	32.50	*	56.00	46.00
0.809	29.72	*	34.52	*	56.00	46.00
1.374	*	*	36.25	*	56.00	46.00
1.449	30.85	*	*	*	56.00	46.00
1.585	29.46	*	36.96	*	56.00	46.00
4.772	31.61	*	*	*	56.00	46.00
4.952	*	*	33.51	*	56.00	46.00
16.140	42.07	*	42.27	*	60.00	50.00
20.056	41.58	*	42.18	*	60.00	50.00
28.302	37.30	*	37.20	*	60.00	50.00
30.000	*	*	*	*	60.00	50.00

REMARKS : 1. * Undetectable or the Q.P. values is lower than the limits of Ave
2. For 10Mbps mode



2.6 LINE CONDUCTED RF VOLTAGE MEASUREMENT

The frequency spectrum from 0.15 MHz to 30 MHz was investigated. All emissions not reported below are more than 20 dB below the prescribed limits.

All readings are Quasi-peak values.

Temperature : 21.5%

Humidity : 61 % RH

FREQUENCY (MHz)	READING(dB μ V)				LIMITS (dB μ V)	
	ONE END & GRD'D		THE OTHER END & GRD'D			
	Q.P.	Ave.	Q.P.	Ave.	Q.P.	Ave.
0.150	*	*	41.44	*	66.00	56.00
0.151	42.54	*	*	*	65.96	55.96
0.538	*	*	32.50	*	56.00	46.00
1.111	*	*	36.24	*	56.00	46.00
1.449	31.85	*	*	*	56.00	46.00
1.456	*	*	37.15	*	56.00	46.00
1.586	*	*	37.06	*	56.00	46.00
4.622	31.11	*	*	*	56.00	46.00
4.978	*	*	33.31	*	56.00	46.00
7.728	*	*	38.03	*	60.00	50.00
7.769	32.33	*	*	*	60.00	50.00
10.679	37.35	*	*	*	60.00	50.00
16.059	45.50	*	*	*	60.00	50.00
16.140	*	*	49.87	*	60.00	50.00
20.162	39.88	*	39.48	*	60.00	50.00
24.142	41.19	*	*	*	60.00	50.00
24.271	*	*	40.99	*	60.00	50.00
28.302	44.70	*	44.10	*	60.00	50.00
30.000	*	*	*	*	60.00	50.00

REMARKS : 1. * Undetectable or the Q.P. values is lower than the limits of Ave
 2. For 100Mbps mode



3. RADIATED EMISSION TEST

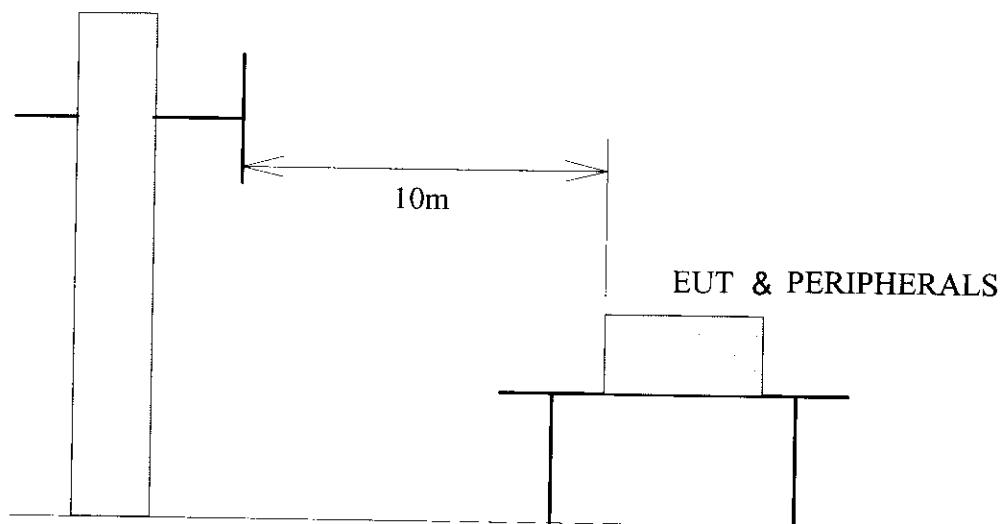
3.1 TEST EQUIPMENTS

The following test equipments are utilized in making the measurements contained in this report.

MANUFACTURER OR TYPE	MODEL NO	SERIAL NO.	DATE OF CALIBRATION
CHASE BI-LOG ANTENNA	CBL6111A	1546	MAY.29, 1998
R/S TEST RECEIVER	ESMI	842088/005 841978/008	MAY.23, 1998
OPEN SITE	-----	No.2	AUG. 23, 1997

3.2 TEST SETUP

The diagram below shows the test setup which is utilized to make these measurements.



Antenna Elevation Variable



3.3 RADIATION LIMIT

All emanation from a class B computing device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below :

FREQUENCY (MHz)	DISTANCE (METERS)	FIELD STRENGTHS(dB μ V/M)	
		CLASS A	CLASS B
30—230	10	40	30
230—1000	10	47	37

Note : (1)The tighter limit shall apply at the edge between two frequency bands.
(2)Distance refers to the distance in meters between the measuring instrument antenna and the closest point of any part of the device or system.

3.4 TEST PROCEDURE

The devices under test were placed on a rotatable table top 0.8 meter above ground. The table was rotated 360 degrees to determine the position of the highest radiation. EUT is set 10 meters from the interference receiving antenna which is mounted on the top of a variable height mast. The antenna height is varied between one meter and four meters above ground to find the maximum value of the field strength. Both horizontal polarization and vertical polarization of the antenna are set to make the measurement.

The bandwidth setting on the E.M.I. meter (R/S TEST RECEIVER ESMI) is 120 KHz. The levels are quasi peak value readings. The frequency spectrum from 30MHz to 1000MHz was investigated.

3.5 UNCERTAINTY OF RADIATED EMISSION

The uncertainty of radiated emission is ± 2.72 dB.



3.6 RADIATED RF NOISE MEASUREMENT

The frequency spectrum from 30 MHz to 1000 MHz was investigated. All emissions not reported below are more than 20 dB below the prescribed limits.

All readings are quasi-peak values.

Temperature : 27°C

Humidity : 72% RH

FREQ- UENCY (MHz)	ANTENNA FACTOR (dB)	CABLE LOSS (dB)	METER READING AT10m(dB μ V/M)		LIMITS (dB μ V/M)	EMISSION LEVEL AT10m(dB μ V/M)	
			HORIZON- TAL	VERTICAL		HORIZON- TAL	VERTICAL
30.00	*	*	*	*	30.00	*	*
49.89	8.23	1.70	1.80	*	30.00	11.73	*
50.00	8.23	1.70	*	9.92	30.00	*	19.85
75.00	7.68	2.05	2.92	8.80	30.00	12.65	18.53
80.00	8.72	2.10	*	6.28	30.00	*	17.10
120.00	11.38	2.60	3.68	3.40	30.00	17.66	17.38
125.00	11.51	2.70	6.48	7.16	30.00	20.69	21.37
160.00	10.63	3.00	3.84	3.84	30.00	17.47	17.47
175.00	9.42	3.20	0.20	11.40	30.00	12.82	24.02
199.97	9.20	3.40	8.72	*	30.00	21.32	*
200.00	9.20	3.40	6.48	8.44	30.00	19.08	21.04
225.00	10.59	3.60	2.84	3.52	30.00	17.03	17.71
250.00	11.97	3.80	3.36	*	37.00	19.13	*
275.00	12.64	4.00	3.48	4.60	37.00	20.12	21.24
300.00	13.31	4.20	3.76	2.64	37.00	21.27	20.15
1000.00	*	*	*	*	37.00	*	*

REMARKS : 1. * Undetectable

2. Emission level (dB μ V/M) = Antenna Factor (dB) + Cable loss (dB)
 + Meter Reading (dB μ V/M).

3. For 10Mbps mode



3.6 RADIATED RF NOISE MEASUREMENT

The frequency spectrum from 30 MHz to 1000 MHz was investigated. All emissions not reported below are more than 20 dB below the prescribed limits.
All readings are quasi-peak values.

Temperature : 27°C

Humidity : 72% RH

FREQ- UENCY (MHz)	ANTENNA FACTOR (dB)	CABLE LOSS (dB)	METER READING AT10m(dB μ V/M)		LIMITS (dB μ V/M)	EMISSION LEVEL AT10m(dB μ V/M)	
			HORIZON- TAL	VERTICAL		HORIZON- TAL	VERTICAL
30.00	*	*	*	*	30.00	*	*
50.00	8.23	1.70	*	11.04	30.00	*	20.97
125.00	11.51	2.70	10.80	9.56	30.00	25.01	23.77
150.00	11.15	2.90	5.48	1.16	30.00	19.53	15.21
200.00	9.20	3.40	6.60	8.40	30.00	19.20	21.00
225.00	10.59	3.60	2.68	1.72	30.00	16.87	15.91
250.00	11.97	3.80	6.88	7.72	37.00	22.65	23.49
275.00	12.64	4.00	*	1.24	37.00	*	17.88
375.00	15.11	4.65	4.12	2.08	37.00	23.88	21.84
1000.00	*	*	*	*	37.00	*	*

REMARKS : 1. * Undetectable

2. Emission level (dB μ V/M) = Antenna Factor (dB) + Cable loss (dB)

+ Meter Reading (dB μ V/M).

3. For 100Mbps mode