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Electronics Research & Service Organization
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ELECTROMAGNETIC INTERFERENCE TEST REPORT

Company ：MITAC TECHNOLOGY CORP.

Address ：No. 19-1, Innovation Rd. Ⅰ, Hsinchu Science-Based Industrial Park, Hsinchu, Taiwan, R.O.C.

Sample Name ：Notebook PC

Model ：A760S

Sample Quantity ：2 Sets (A760S-7；A760S-8)

Date Received ：NOV. 23 2001

Date Tested ：NOV. 23 & DEC. 01, 2001

MEASUREMENT PORCEDURE USED：

FCC RULES AND REGULATION PART 15 SUBPART B CLASS B OCTOBER 1998 AND ANSI C63.4 MAY 1992
CISPR 22, CLASS B, 1997

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	C. F. Wu	DEC. 21, 2001
Approving Manager	J. S. Song/NVLAP	J. S. Song	DEC, 21, 2001

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 seperately 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 data issued.
5. The report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

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1. GENERAL INFORMATION

1.1 DESCRIPTION OF EUT

MEASUREMENT DEVIATION：Comply with standard in full

TRACEABILITY：This test result is traceable to national or international std.

1.2 DESCRIPTION OF EUT & POWER

Manufacturer : MITAC TECHNOLOGY CORP.

Sample name : Notebook PC

Model number : A760S

Sample quantity : 2 Sets (A760S-7； A760S-8)

Power supply : 19VDC(From Power Adapter)

Power cable : Unshielded cable, 1.8m.

I/O Port : COM Port✕1, Parallel Port✕1, PS/2 Port✕1,
USB Port✕1, VGA Port✕1, Speaker Out Port✕1,
Mic In Port✕1, 1394 Port✕1, replicator Port✕1

Power Adaptor

Manufacturer : ILAN ELEC. LTD.

Model number : F19603H

Input power : 100~240VAC/50~60Hz/1.8A

Output power : 19VDC, 3.16A

☑ Engineering Sample , ☐ Product Sample, ☐ Mass Product Sample

1.3 DESCRIPTION OF PERIPHERALS

（1）MONITOR

MANUFACTURER ：HP CORP.
MODEL NUMBER ：D8894A
SERIAL NUMBER ：CN00905269
F.C.C. ID ：ARSCM356N
POWER CORD ：UnShielded , Detachable , 1.8m
SIGNAL CABLE ：Shielded , Undetachable , 1.8m

（2）KEYBOARD

MANUFACTURER ：IBM CORP.
MODEL NUMBER ：SK-2502C
SERIAL NUMBER ：M000303539
F.C.C. ID ：----------
POWER SOURCE ：5VDC (from PC)
SIGNAL CABLE ：Shielded , Undetachable , 1.8m

（3）MOUSE

MANUFACTURER ：Logitech CORP.
MODEL NUMBER ：M-BE55
SERIAL NUMBER ：LZE12352615
F.C.C. ID ：----------
POWER SOURCE ：5VDC (from PC)
SIGNAL CABLE ：Shielded , Undetachable , 1.8m

（4）PRINTER

MANUFACTURER ：IBM CORP.
MODEL NUMBER ：5152-002
SERIAL NUMBER ：0754365
F.C.C. ID ：BKM9A85152002
POWER CORD ：Shielded , Detachable , 1.5m
DATA CABLE ：Shielded , Undetachable , 1.2m

（5）MODEM

MANUFACTURER	：Hayes CORP.
MODEL NUMBER	：5240AM
SERIAL NUMBER	：A0095240K270
F.C.C. ID	：BFJ5201AM
POWER CORD	：UnShielded , Detachable , 1.8m (9VAC from adapter)
SIGNAL CABLE	：Shielded , Detachable , 2m

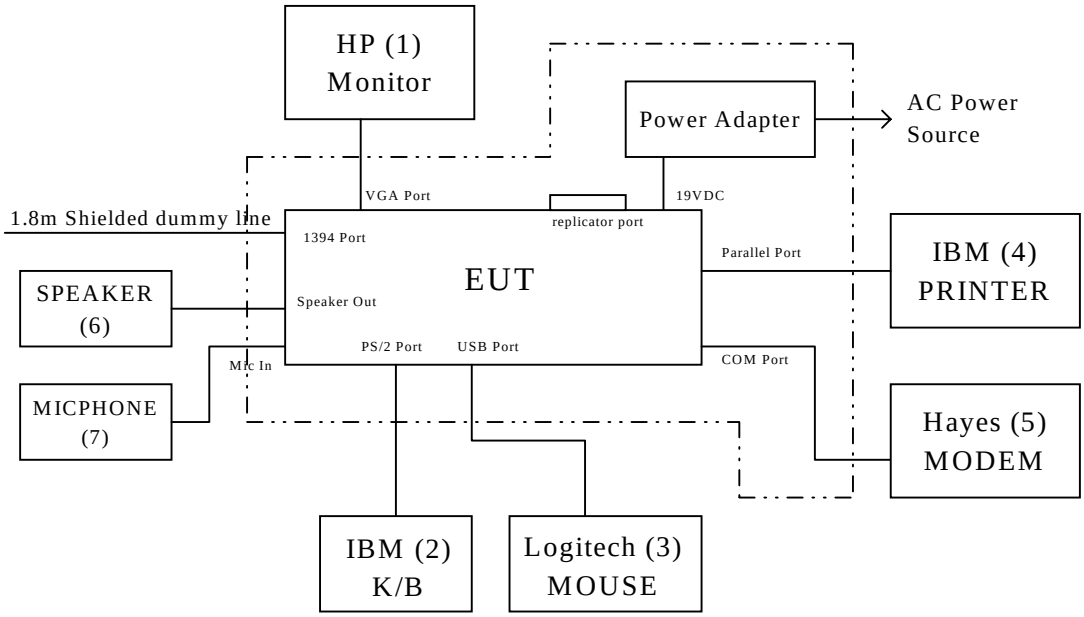
（6）SPEAKER

MANUFACTURER	：JS CORP.
MODEL NUMBER	：H-1232
SERIAL NUMBER	：----------
F.C.C. ID	：----------

（7）MICPHONE

MANUFACTURER	：JS CORP.
MODEL NUMBER	：EM-080
SERIAL NUMBER	：----------
F.C.C. ID	：----------

1.4 EUT & PERIPHERALS SETUP DIAGRAM



The indicated numbers(1)(2)------,please refer to 1.3

1.5 EUT OPERATING CONDITION

1. Setup whole system for test.
2. Powered on all equipments.
3. Notebook PC run “EMITEST.EXE” program.
4. Scrolling “H” pattern will be displayed on monitor.
5. EUT will execute K/B, MODEM, HDD, FDD functional test.
6. Printer wil print out “H” character and MODEM will execute transmitting and receiving function through EUT.

1.6 DESCRIPTION OF OPEN SITE

SITE DESCRIPTION ：FCC certificate NO. : 31040/SIT
TUV certificate NO. : I9664582-9911
Lloyd's certificate NO. : LA003
BSMI certificate NO. : SL2-IN-E-0002
NVLAP Lab code : 200118-0
CNLA certificate NO. : CNLA-ZL97018
VCCI certificate NO. : R-1189, C-1250

NAME OF SITE ：Electronics Research & Service Organization
Industrial Technology Research Institute

SITE LOCATION ：R1500, 195-4 , sec. 4, Chung Hsing Rd.,
Chu-Tung Chen. Hsin-Chu, Taiwan 31015 R.O.C.

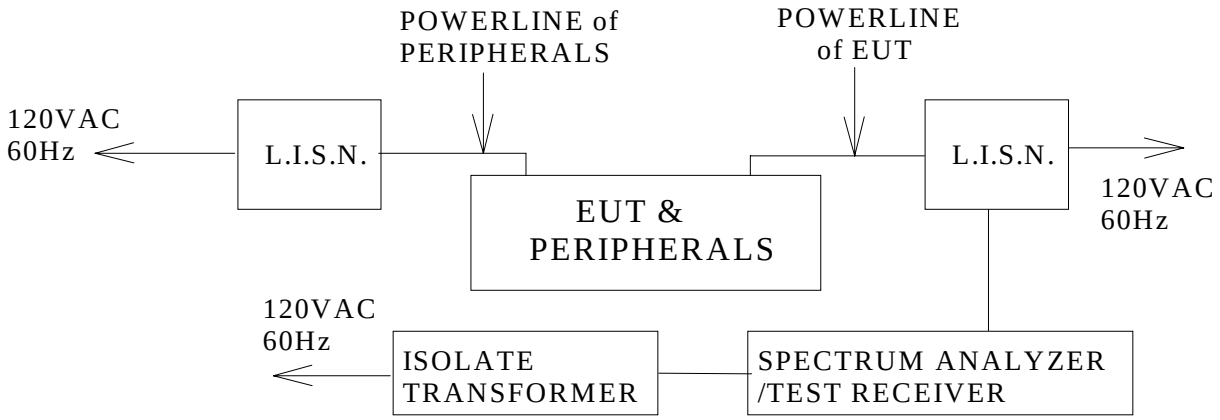
2. CONDUCTED POWERLINE TEST

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	CALIBRA-TION PERIOD	REMARK
SPECTRUM ANALYZER & DISPLAY	HP 8568A	2235A02320	MAR. 29, 2001	1 Year	PRETEST
QUASI-PEAK ADAPTER	HP 85650 A	2341A00672	MAR. 29, 2001	1 Year	PRETEST
ISOLATION TRANSFORMER	SOLAR 7032-1	N/A	N/A	N/A	FINAL
L.I.S.N.	EMCO 3850/2	9311-1025 9401-1028	JAN. 08, 2001 For Characteristic impedance MAY 18, 2001 For Insertion loss	1 Year	FINAL
TEST RECEIVER	R/S ESH3	838550/003	JAN. 03, 2001	1 Year	FINAL
SHIELDED ROOM	KEENE 5983	NO.1	N/A	N/A	FINAL
PULSE LIMIT	R/S EHS3Z2	357.8810.52	JUL. 10, 2001	1 Year	FINAL
N TYPE COAXIAL CABLE	----------	----------	JUL. 10, 2001	1 Year	FINAL
50Ω TERMINATOR	----------	----------	JUL. 10, 2001	1 Year	FINAL

2.2 TEST SETUP



2.3 CONDUCTED POWER LINE EMISSION LIMIT

FREQUENCY	MAXIMUM RF LINE VOLTAGE (dBμV)			
	CLASS A		CLASS B	
(MHz)	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× 12ft× 8ft(L× W× H) shielded room.
the EUT along with its peripherals were placed on a 1.0m(W)× 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 chasis ground was bounded to the horizontal ground plane of shielded room. All peripherals were connected to the second LISN and the chasis 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 ± 1.36dB.

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.

Temperature：24 ℃ Humidity：58 % RH

FREQUENCY	READING(dB μ V)				LIMITS	
	ONE END & GRD'D		THE OTHER END & GRD'D		(dB μ V)	
(MHz)	Q.P.	Ave.	Q.P.	Ave.	Q.P.	Ave.
0.150	*	*	*	*	66.00	56.00
0.162	42.40	*	*	*	65.38	55.38
0.186	*	*	48.40	*	64.20	54.20
0.375	*	*	31.90	*	58.39	48.39
0.495	35.30	*	*	*	56.10	46.10
0.867	*	*	28.70	*	56.00	46.00
1.047	32.60	*	*	*	56.00	46.00
1.923	33.20	*	28.40	*	56.00	46.00
2.733	*	*	29.90	*	56.00	46.00
4.077	34.60	*	*	*	56.00	46.00
4.632	37.20	*	*	*	56.00	46.00
4.713	*	*	33.80	*	56.00	46.00
11.118	22.00	*	17.70	*	60.00	50.00
21.672	21.60	*	*	*	60.00	50.00
22.449	*	*	19.60	*	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 A760S-7. (12.1” LCD Panel : HYUNDAI HT12X12-100)

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.

Temperature：24 ℃ Humidity：58 % RH

FREQUENCY	READING(dB μ V)				LIMITS	
	ONE END & GRD'D		THE OTHER END & GRD'D		(dB μ V)	
(MHz)	Q.P.	Ave.	Q.P.	Ave.	Q.P.	Ave.
0.150	*	*	*	*	66.00	56.00
0.177	*	*	41.60	*	64.64	54.64
0.183	46.00	*	*	*	64.33	54.33
0.297	*	*	29.70	*	60.32	50.32
0.486	37.00	*	*	*	56.23	46.23
0.609	36.30	*	*	*	56.00	46.00
1.032	*	*	32.70	*	56.00	46.00
1.278	34.20	*	*	*	56.00	46.00
1.944	*	*	27.90	*	56.00	46.00
4.068	*	*	31.00	*	56.00	46.00
4.437	*	*	33.50	*	56.00	46.00
4.566	39.30	*	*	*	56.00	46.00
8.382	*	*	20.70	*	60.00	50.00
10.221	22.70	*	*	*	60.00	50.00
20.898	*	*	23.30	*	60.00	50.00
22.449	24.90	*	*	*	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 A760S-8. (13.3” LCD Panel : ACER D291207)

2.7 PHOTOS OF CONDUCTION TEST

A760S-7

2.7 PHOTOS OF CONDUCTION TEST

A760S-8

3. RADIATED EMISSION TEST

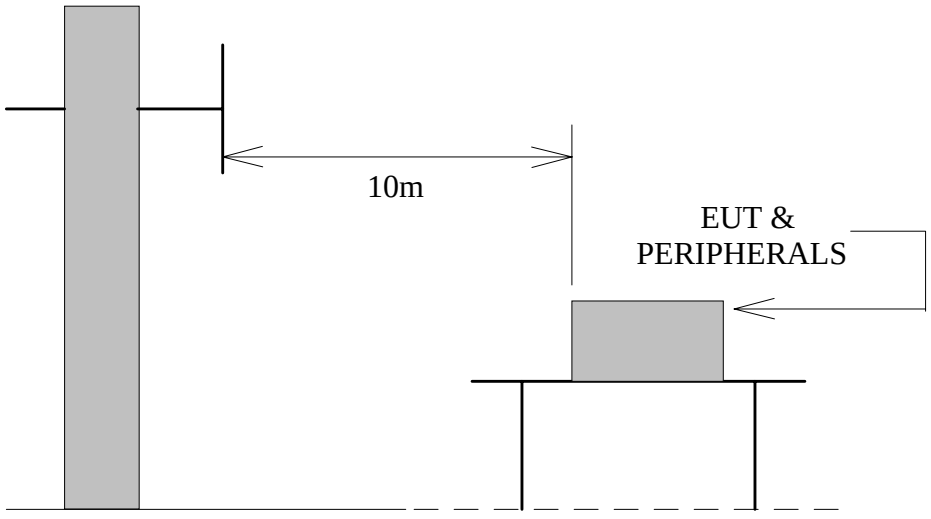
3.1 TEST EQUIPMENTS

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

MANUFACTURER OR TYPE	MODEL NO	SERIAL NO	DATE OF CALIBRATION	CALIBRA-TION PERIOD	REMARK
CHASE BI-LOG ANTENNA	CBL6112B	2421	MAY 09, 2001	1 Year	FINAL
R/S TEST RECEIVER	ESCS 30	838550/003	JAN. 03, 2001	1 Year	FINAL
OPEN SITE	----------	No.2	JUL. 05~06, 2001	1 Year	FINAL
N TYPE COAXIAL CABLE	CHA9525	012	JUL. 10, 2001	1 Year	FINAL

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) 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 ± 2.72dB.

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：24 ℃ Humidity：67 % 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	17.06	0.90	*	*	30.00	*	*
150.42	10.54	2.31	8.60	5.90	30.00	21.45	18.75
166.00	10.07	2.54	10.80	11.30	30.00	23.41	23.91
180.16	9.54	2.60	5.30	8.40	30.00	17.44	20.54
192.00	9.73	2.72	6.40	6.80	30.00	18.85	19.25
195.43	9.78	2.75	14.00	14.00	30.00	26.53	26.53
228.00	12.07	3.02	11.90	10.90	30.00	26.99	25.99
288.06	14.15	3.50	10.60	9.10	37.00	28.25	26.75
344.13	15.78	3.86	11.30	6.40	37.00	30.94	26.04
393.30	17.48	4.16	9.60	6.30	37.00	31.24	27.94
398.00	17.64	4.19	8.30	5.80	37.00	30.13	27.63
456.01	18.93	4.59	10.00	9.40	37.00	33.52	32.92
1000.00	21.24	7.00	*	*	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 A760S-7. (12.1” LCD Panel : HYUNDAI HT12X12-100)

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：24 ℃ Humidity：67 % 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	17.06	0.90	*	*	30.00	*	*
150.46	10.54	2.31	7.00	6.80	30.00	19.85	19.65
166.00	10.07	2.54	14.00	12.20	30.00	26.61	24.81
192.04	9.73	2.72	9.60	7.30	30.00	22.05	19.75
195.43	9.78	2.75	12.00	10.80	30.00	24.53	23.33
228.00	12.07	3.02	12.00	9.40	30.00	27.09	24.49
288.06	14.15	3.50	9.00	8.60	37.00	26.65	26.25
344.13	15.78	3.86	11.90	7.10	37.00	31.54	26.74
393.30	17.48	4.16	8.10	6.20	37.00	29.74	27.84
398.00	17.64	4.19	6.20	5.20	37.00	28.03	27.03
432.09	18.41	4.42	8.90	7.30	37.00	31.73	30.13
456.01	18.93	4.59	10.00	9.80	37.00	33.52	33.32
730.20	20.11	6.05	5.20	5.00	37.00	32.96	31.16
1000.00	21.24	7.00	*	*	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 A760S-8. (13.3” LCD Panel : ACER D291207)

3.7 PHOTOS OF OPEN SITE

A760S-7

3.7 PHOTOS OF OPEN SITE

A760S-7

3.7 PHOTOS OF OPEN SITE

A760S-8

3.7 PHOTOS OF OPEN SITE

A760S-8