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ELECTROMAGNETIC COMPATIBILITY 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 ：A320S

Date Received ：AUG. 23, 2001

Date Tested ：AUG. 23/30, 2001

MEASUREMENT REQUIREMENT 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	Sept. 14, 2001
Approving Manager	J. S. Song/NVLAP	J. S. Song	Sept. 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 date 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 GENERAL STATEMENT

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 ：A320S

SERIAL NUMBER ：Not applicable

POWER SOURCE ：19VDC (From Power Adapter)

I/O Port：USB Port ×1；1394 Port ×1；PS/2 Port ×1；Mic In Port ×1；
Speaker Out Port ×1；VGA Port ×1；COM Port ×1；Parallel Port ×1；
Replicator Port ×1

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

1.3 DESCRIPTION OF PERIPHERALS

(1) Modem

Manufacturer : Hayes Microcomputer Products, Inc.

Model number : 4007AM

Serial number : A10740073303

FCC ID : BFJ4000AM

(2) Mouse

Manufacturer : Logitech CORP.

Model number : M-BE55

Serial number : LZE12352615

FCC ID : 3892A218

(3) Ear phone

Manufacturer : JS CORP.

Model number : CBX 747

Serial number : ----------

(4) Mic

Manufacturer : JS CORP.

Model number : EM-080

Serial number : ----------

(5) Printer

Manufacturer : IBM CORP.

Model number : 5152-002

Serial number : 0754365

FCC ID : BKM9A85152002

(6) Monitor

Manufacturer : HP CORP.

Model number : D8894A

Serial number : CN00905269

FCC ID : ARSC556Q

(7) Keyboard

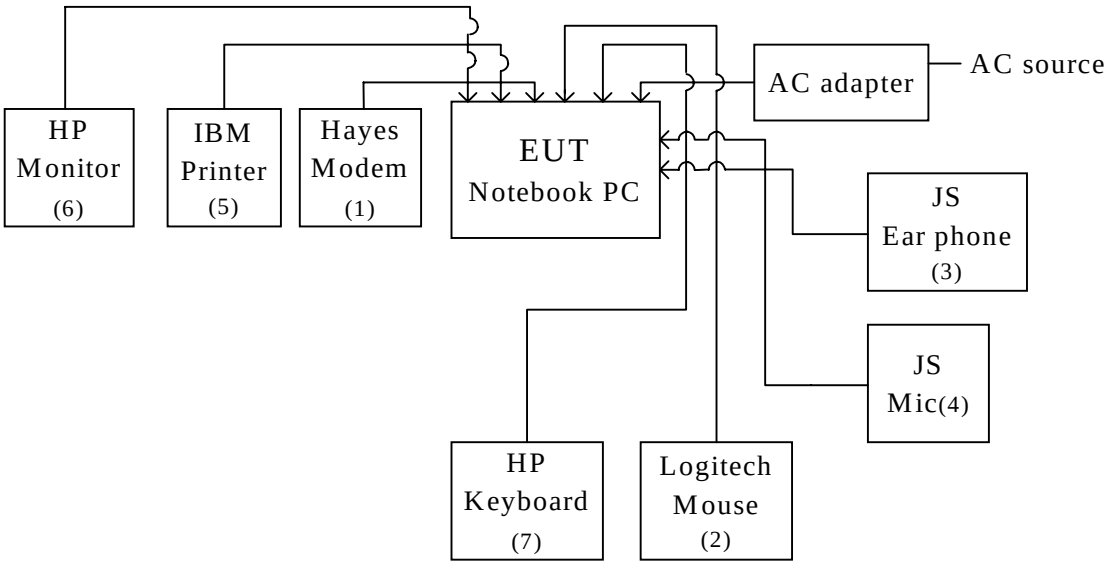
Manufacturer : HP CORP.

Model number : SK-2502C

Serial number : M000303429

FCC ID : ----------

1.4 EUT & PERIPHERALS SETUP DIAGRAM



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

1.5 EUT OPERATING CONDITION

1. Power on.
2. Run " H " pattern in windows 98 mode.

1.6 DESCRIPTION OF TEST SITE

SITE DESCRIPTION ：FCC certificate NO. :31040/PRV
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-1229, 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.

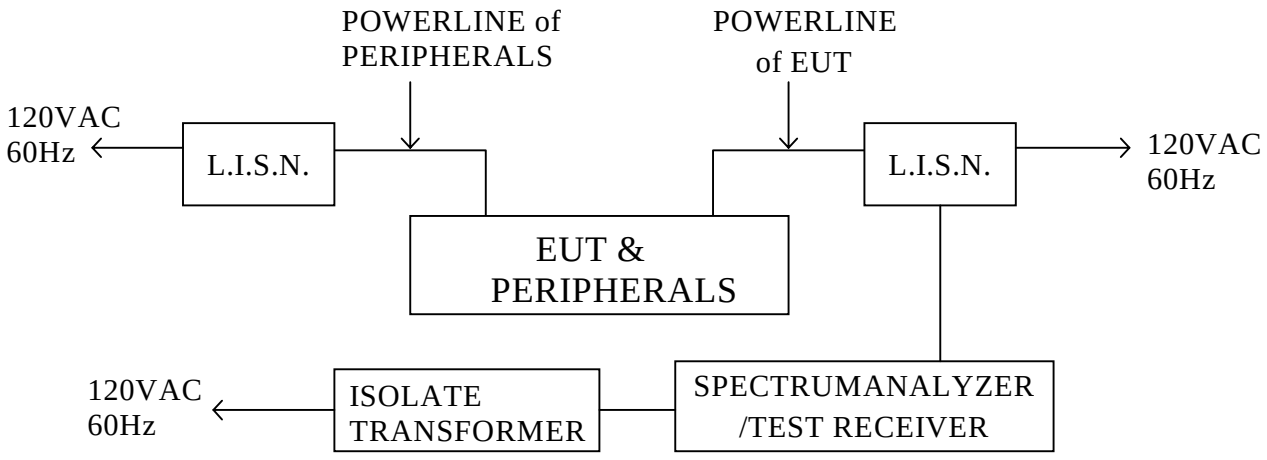
2. CONDUCTED EMISSION TEST

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 ESHS30	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 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：23℃ Humidity：61 % RH

FREQUENCY	READING(dB μ V)				LIMITS (dB μ V)	
	ONE END & GRD'D		THE OTHER END & GRD'D			
(MHz)	Q.P.	Ave.	Q.P.	Ave.	Q.P.	Ave.
0.150	*	*	*	*	66.00	56.00
0.174	47.70	*	48.00	*	64.77	54.77
0.297	38.50	*	36.10	*	60.32	50.32
0.591	33.10	*	*	*	56.00	46.00
0.645	*	*	29.30	*	56.00	46.00
1.125	28.90	*	*	*	56.00	46.00
1.944	*	*	22.60	*	56.00	46.00
2.181	22.10	*	*	*	56.00	46.00
2.520	*	*	21.70	*	56.00	46.00
4.947	*	*	18.90	*	56.00	46.00
5.133	19.70	*	*	*	60.00	50.00
15.360	29.70	*	27.50	*	60.00	50.00
21.504	22.40	*	17.30	*	60.00	50.00
30.000	*	*	*	*	60.00	50.00

REMARKS： 1. * Undetectable or the Q.P. value is lower than the limits of Ave.
2. For A320S-7 (12.1 " LCD panel：HYUNDAI HT12X12-100)

2.6 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：23℃ Humidity：61 % RH

FREQUENCY	READING(dB μV)				LIMITS (dB μV)	
	ONE END & GRD'D		THE OTHER END & GRD'D			
(MHz)	Q.P.	Ave.	Q.P.	Ave.	Q.P.	Ave.
0.150	*	*	*	*	66.00	56.00
0.174	43.80	*	45.40	*	64.77	54.77
0.348	37.80	*	*	*	59.00	49.00
0.405	*	*	44.70	42.00	57.73	47.73
0.576	35.10	*	*	*	56.00	46.00
0.633	*	*	39.10	*	56.00	46.00
1.101	29.20	*	*	*	56.00	46.00
1.155	*	*	31.10	*	56.00	46.00
3.816	19.40	*	*	*	56.00	46.00
4.107	*	*	25.80	*	56.00	46.00
4.947	23.20	*	*	*	56.00	46.00
7.638	*	*	15.60	*	60.00	50.00
12.642	*	*	13.40	*	60.00	50.00
21.474	25.20	*	*	*	60.00	50.00
27.720	*	*	11.60	*	60.00	50.00
30.000	*	*	*	*	60.00	50.00

REMARKS： 1. * Undetectable or the Q.P. value is lower than the limits of Ave.
2. For A320S-8 (13.3 " LCD panel：ACER D291207)

2.7 PHOTOS OF CONDUCTION TEST

3. RADIATED EMISSION TEST

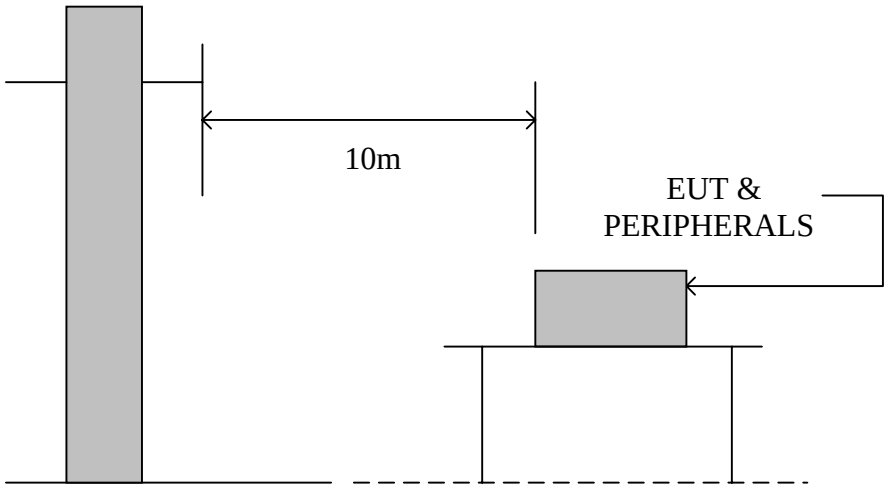
3.1 TEST EQUIPMENTS

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	826547/004	MAY 28, 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 ratable 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：28℃ Humidity：67％ RH

FREQ-UENCY	ANTENNA FACTOR	CABLE LOSS	METER READING AT10m(dBμV)		LIMITS	EMISSION LEVEL AT10m(dBμV/m)		ATNTENNA HEIGHT(cm)		TURNTA-BLE
			HORIZON-TAL	VERTICAL		HORIZON-TAL	VERTICAL	HORIZON-TAL	VERTICAL	VERTICAL
(MHz)	(dB/m)	(dB)			(dBμV/m)					
30.00	17.06	0.90	*	*	30.00	*	*	*	*	*
166.00	10.07	2.54	13.60	12.30	30.00	26.21	24.91	400	100	217
232.49	12.43	3.06	13.30	16.80	37.00	28.79	32.29	400	100	314
265.57	13.96	3.32	9.70	9.90	37.00	26.98	27.18	296	100	300
373.36	16.79	4.04	9.60	6.50	37.00	30.43	27.33	246	286	300
399.60	17.70	4.20	11.60	9.60	37.00	33.50	31.50	225	100	118
456.02	18.93	4.59	9.00	10.70	37.00	32.52	34.22	199	341	128
622.27	20.19	5.51	7.60	7.40	37.00	33.30	33.10	163	346	296
719.22	20.03	6.00	8.00	6.90	37.00	34.03	32.93	156	128	264
912.05	20.75	6.65	4.80	6.60	37.00	32.20	34.00	127	188	124
977.20	21.11	6.91	4.30	6.20	37.00	32.32	34.22	100	152	129
1000.00	21.24	7.00	*	*	37.00	*	*	*	*	*

REMARKS：1. ＊Undetectable

2. Emission level (dBμV/m) =Antenna Factor (dB/m) + Cable loss (dB)
+ Meter Reading (dBμV).

3. For A320S-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：28℃ Humidity：67％ RH

FREQ-UENCY	ANTENNA FACTOR	CABLE LOSS	METER READING AT10m(dBμV)		LIMITS	EMISSION LEVEL AT10m(dBμV/m)		ATNTENNA HEIGHT(cm)		TURNTA-BLE
			HORIZON-	VERTICAL		HORIZON-	VERTICAL	HORIZON-	VERTICAL	VERTICAL
(MHz)	(dB/m)	(dB)	TAL		(dBμV/m)	TAL		TAL		
30.00	17.06	0.90	*	*	30.00	*	*	*	*	*
147.45	10.77	2.27	12.30	8.00	30.00	25.34	21.04	400	100	106
166.00	10.07	2.54	13.30	8.10	30.00	25.91	20.71	400	100	217
195.44	9.78	2.75	10.60	10.40	30.00	23.13	22.93	400	100	107
232.49	12.43	3.06	13.60	14.60	37.00	29.09	30.09	400	100	35
260.58	13.91	3.28	7.20	9.60	37.00	24.39	26.79	322	100	163
265.57	13.96	3.32	6.80	8.50	37.00	24.08	25.78	296	100	300
336.07	15.50	3.82	6.00	5.70	37.00	25.32	25.02	239	100	77
344.13	15.78	3.86	7.20	5.80	37.00	26.84	25.44	259	100	349
364.49	16.48	3.99	7.20	6.10	37.00	27.67	26.57	254	100	311
373.36	16.79	4.04	11.20	9.30	37.00	32.03	30.13	246	286	328
399.60	17.70	4.20	11.50	8.80	37.00	33.40	30.70	212	100	118
432.09	18.41	4.42	7.80	5.80	37.00	30.63	28.63	233	100	100
442.45	18.63	4.50	6.40	5.50	37.00	29.53	28.63	233	100	280
456.02	18.93	4.59	6.70	6.80	37.00	30.22	30.32	199	100	153
622.27	20.19	5.51	6.90	6.00	37.00	32.60	31.70	163	346	296
719.22	20.03	6.00	7.10	6.20	37.00	33.13	32.23	156.00	128	264
1000.00	21.24	7.00	*	*	37.00	*	*	*	*	*

REMARKS： 1. ＊Undetectable

2. Emission level (dBμV/m) =Antenna Factor (dB/m) + Cable loss (dB)
+ Meter Reading (dBμV).

3. For A320S-8 (13.3 “ LCD panel：ACER D291207)

3.7 PHOTOS OF OPEN SITE

3.7 PHOTOS OF OPEN SITE