

EXHIBIT 4

Test Report

Test Report

TTEMC-F98092

APPLICATION FOR CERTIFICATION
Class II Permissive Change
On Behalf of
Mustek Systems Inc.
Scanner

Model : A3 SP
Project Name : A3II SCSI (L3S12)

FCC ID : HWFA3II

Prepared for : Mustek Systems Inc.
No. 25, R&D Road II, Science-
Based Industrial Park, Hsinchu,
Taiwan, R.O.C.

Prepared By : Taiwan Tokin EMC Eng. Corp.
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TABLE OF CONTENTS

Description	Page
Test Report Verification	
1. GENERAL INFORMATION	1.-1
1.1. Description of Equipment Under Test (EUT).....	1.-1
1.2. Details of Support Simulator	1.-2
1.3. Description of Test Facility	1.-4
2. POWERLINE CONDUCTED TEST.....	2.-1
2.1. Test Equipment	2.-1
2.2. Block Diagram of Test Setup.....	2.-1
2.3. Conducted Powerline Emission Limit (CISPR 22 Class B).....	2.-1
2.4. EUT Configuration on Measurement.....	2.-2
2.5. Operating Condition of EUT.....	2.-2
2.6. Test Procedure.....	2.-3
2.7. Line Conducted RF Voltage Measurement Results.....	2.-4
3. RADIATED EMISSION TEST	3.-1
3.1. Test Equipment	3.-1
3.2. Block Diagram of Test Setup.....	3.-1
3.3. Radiation Limit (CISPR 22 CLASS B)	3.-2
3.4. EUT Configuration on Measurement.....	3.-2
3.5. Operating Condition of EUT.....	3.-2
3.6. Test Procedure.....	3.-2
3.7. Radiated Emission Noise Measurement Results.....	3.-3
4. DEVIATIONS TO TEST SPECIFICATIONS	4.-1
5. PHOTOGRAPHS.....	5.-1
5.1. Photos of Powerline Conducted Measurement.....	5.-1
5.2. Photos of Radiated Measurement at Open Field Test Site	5.-2

TOK 98-F039

TEST REPORT VERIFICATION

(Class II Permissive Change)

Applicant : Mustek Systems Inc.
 Manufacturer : Mustek Systems Inc.
 FCC ID : HWFA3II
 EUT Description : Scanner

(A) MODEL NO. : A3 SP
 (B) PROJECT NAME : A3II SCSI (L3S12)
 (C) SERIAL NO. : N/A
 (D) POWER SUPPLY : AC 120V/60Hz

Measurement Procedure Used :

FCC RULES AND CISPR 22 (DOCKET NO. 92-152, SEP. 1993) AND
 FCC / ANSI C63.4-1992

The device described above was tested by TAIWAN TOKIN EMC ENG. CORP. to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the CISPR 22 Class B limits both radiated and conducted emissions. The measurement results are contained in this test report and TAIWAN TOKIN EMC ENG. CORP. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits. TAIWAN TOKIN EMC ENG. CORP. recommends that this data can be submitted for FCC certification purposes if a 3dB margin below CISPR limits is obtained. This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Taiwan Tokin EMC Eng. corp.

Date of Test : May 06/25, 1998

Prepared by : Julie Hsu
 (JULIE HSU)

Test Engineer : Allen Wang
 (ALLEN WANG)

Approve & Authorized Signer : Jackie Deng 6/5/98
 (JACKIE DENG)

1. GENERAL INFORMATION

1.1. Description of Equipment Under Test (EUT)

Description : Scanner

Model Number : A3 SP

Project Name : A3II SCSI (L3S12)

FCC ID : HWFA3II

Applicant : Mustek Systems Inc.
No. 25, R&D Road II, Science-Based
Industrial Park, Hsinchu, Taiwan, R.O.C.

Manufacturer : Mustek Systems Inc.
No. 25, R&D Road II, Science-Based
Industrial Park, Hsinchu, Taiwan, R.O.C.

SCSI Card : Domex Technology Corp.
FCC ID KQ53181LE-1

Power Adapter : YHI, M/N YC-1015-15
Input : 100-120V ~ , 60Hz, 0.4A
Output : +15VDC/1A
Cable : Nonshielded, Undetachable, 1.5m
Bonded a ferrite core

Data Cable : Shielded, Detachable, 1.5m
Bonded two ferrite cores

Date of Test : May 06/25, 1998

Remark : This EUT is a modified version of original FCC ID HWFA3II.
The difference is to re-layout Main Board, from EPP Interface change to
SCSI Interface. CHANGE ASIC type MA1505P @ 12 MHz TO
TYPE MA1505SA @ 12 MHz.

1.2. Details of Support Simulator

1.2.1. PERSONAL COMPUTER

Model Number	:	D3136A
Serial Number	:	3414S00120
FCC ID	:	HCJVECTRA486-XX
Manufacturer	:	SCI System Inc.
Brand	:	Hewlett Packard
Switching Power Supply	:	Delta Electronics,Inc. M/N DPS-100TB-1, S/N 3572-066321
Floppy Driver 3.5"	:	Hewlett Packard, M/N D2035-600011 S/N B460217330
Hard Disk Driver	:	Quantum, M/N MV54A011 S/N 9731101B
SCSI Card	:	Domex Technology Corp. FCC ID KQ53181LE-1
Disk Ctrl Card	:	Within Mother Board
Serial/Parallel Card	:	Within Mother Board
Video Card	:	Within Mother Board
Power Cord	:	Nonshielded, Detachable, 2.3m

1.2.2. MONITOR

Model Number	:	PM36A
Serial Number	:	W70205200A
FCC ID	:	LLW9ZB1564
Manufacturer	:	Funai Electric Company of Taiwan
Data Cable	:	Shielded, Undetachable, 1.2m
Power Cord	:	Nonshielded, Detachable, 1.5m

1.2.3. KEYBOARD

Model Number	:	RT101
Serial Number	:	A2541630
FCC ID	:	AQ6-MTN4XZ15
Manufacturer	:	DIGITAL
Data Cable	:	Shielded, Undetachable, 1.9m

1.2.4. PRINTER

Model Number	:	2225C+
Serial Number	:	3007S68643
FCC ID	:	DSI6XU2225
Manufacturer	:	Hewlett Packard
Power Adapter	:	Hewlett Packard, M/N 82241A
Power Cord	:	Nonshielded, Undetachable, 2.0m
Data Cable	:	Shielded, Detachable, 1.2m

1.2.5. MODEM # 1

Model Number : 1414
 Serial Number : 950098201
 FCC ID : IFAXDM1414
 Manufacturer : Aceex
 Data Cable : Shielded, Detachable, 1.2m
 Power Adapter : Amigo, Model AM-91000A
 Nonshielded, Undetachable, 1.8m

1.2.6. MODEM # 2

Model Number : 1414
 Serial Number : 950098203
 FCC ID : IFAXDM1414
 Manufacturer : Aceex
 Data Cable : Shielded, Detachable, 1.2m
 Power Adapter : Amigo, Model AM-91000A
 Nonshielded, Undetachable, 1.8m

1.2.7. MOUSE

Model Number : M-S34
 Serial Number : LZA65201997
 FCC ID : DZL210472
 Manufacturer : Logitech
 Data Cable : Nonshielded, Undetachable, 1.9m

1.2.8. SCANNER

Model Number : 6000 SP
 Serial Number : N/A
 FCC ID : HWFA3II
 Manufacturer : Mustek Systems Inc.
 Data Cable : Shielded, Detachable, 1.5m
 Bonded two ferrite cores
 Power Adapter : YHI, M/N YC-1015-15
 Cable : Nonshielded, Undetachable, 1.5m
 Bonded a ferrite core

1.3. Description of Test Facility

Site Description (No. 2 Open Site)	:	Jul. 15, 1996 Re-file on Federal Communication Commission FCC Engineering Laboratory 7435 Oakland Mills Road Columbia, MD 21046, U.S.A.
Name of Firm	:	Taiwan Tokin EMC Eng. Corp.
Site Location	:	No. 53-11, Tin-Fu Tsun, Lin-Kou, Taipei Hsien, Taiwan, R.O.C.
NVLAP Code	:	200077-0

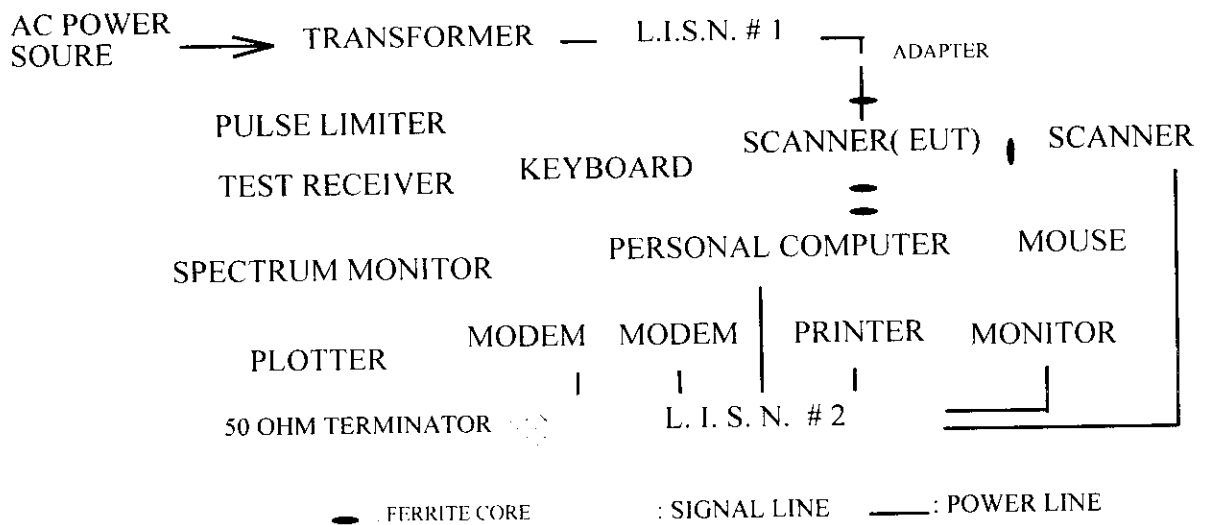
2. POWERLINE CONDUCTED TEST

2.1. Test Equipment

The following test equipments are used during the power line conducted tests :

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESH3	893044/015	Aug.01, 97'	1 Year
2.	L.I.S.N. # 1	Kyoritsu	KNW-407	8-855-9	Apr.14, 98'	1 Year
3.	L.I.S.N. # 2	Kyoritsu	KNW-407	8-881-13	Apr.14, 98'	1 Year

2.2. Block Diagram of Test Setup



2.3. Conducted Powerline Emission Limit (CISPR 22 Class B)

FREQUENCY	MAXIMUM RF LINE VOLTAGE	
	QUASI-PEAK LEVEL	AVERAGE LEVEL
150KHz ~ 500KHz	66 ~ 56 dB	56 ~ 46 dB
500KHz ~ 5MHz	56 dB	46 dB
5MHz ~ 30MHz	60 dB	50dB

2.4. EUT Configuration on Measurement

The following equipments were installed on RF LINE VOLTAGE measurement to meet the Commission requirement and operating in a manner which tended to maximize its emission characteristics in a normal application.

2.4.1. Scanner (EUT)

Model Number	:	A3 SP
Project Name	:	A3II SCSI (L3S12)
FCC ID	:	HWFA3II
Manufacturer	:	Mustek Systems Inc.
SCSI Card	:	Domex Technology Corp. FCC ID KQ53181LE-1
Power Adapter	:	YHI, M/N YC-1015-15 Input : 100-120V ~ , 60Hz, 0.4A Output : +15VDC/1A Cable : Nonshielded, Undetachable, 1.5m Bonded a ferrite core
Data Cable	:	Shielded, Detachable, 1.5m Bonded two ferrite cores
2.4.2. Support Simulators	:	As in Section 1.2

2.5. Operating Condition of EUT

- 2.5.1. Setup the EUT and simulator as shown on 2.2.
- 2.5.2. Turn on the power of all equipments.
- 2.5.3. Setup the personal computer to drive the EUT through the Mustek's scanner software driver and SCSI Card.
- 2.5.4. Personal computer displayed the test software and scanning image by windows to monitor.
- 2.5.5. Data was communicated between host personal computer and Scanner (EUT) through SCSI Card.
- 2.5.6. The other peripheral devices were drove and operated in turn during all testing.

2.6. Test Procedure

The EUT was connected to the power mains through a line impedance stabilization network (L.I.S.N. #1) and the other peripheral devices power cord were connected to the power mains through a line impedance stabilization network (L.I.S.N #2). This provided a 50 ohm coupling impedance for the measuring equipment. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions simulators of the interface cables should be manipulated according to FCC ANSI C63.4-1992 on conducted measurement.

The bandwidth of the field strength meter (R&S Test Receiver ESH3) was set at 10KHz.

The frequency range from 450KHz to 30MHz was checked.

All the test results are listed in section 2.7.

2.7. Line Conducted RF Voltage Measurement Results

The frequency range from 150KHz to 30 MHz was investigated.

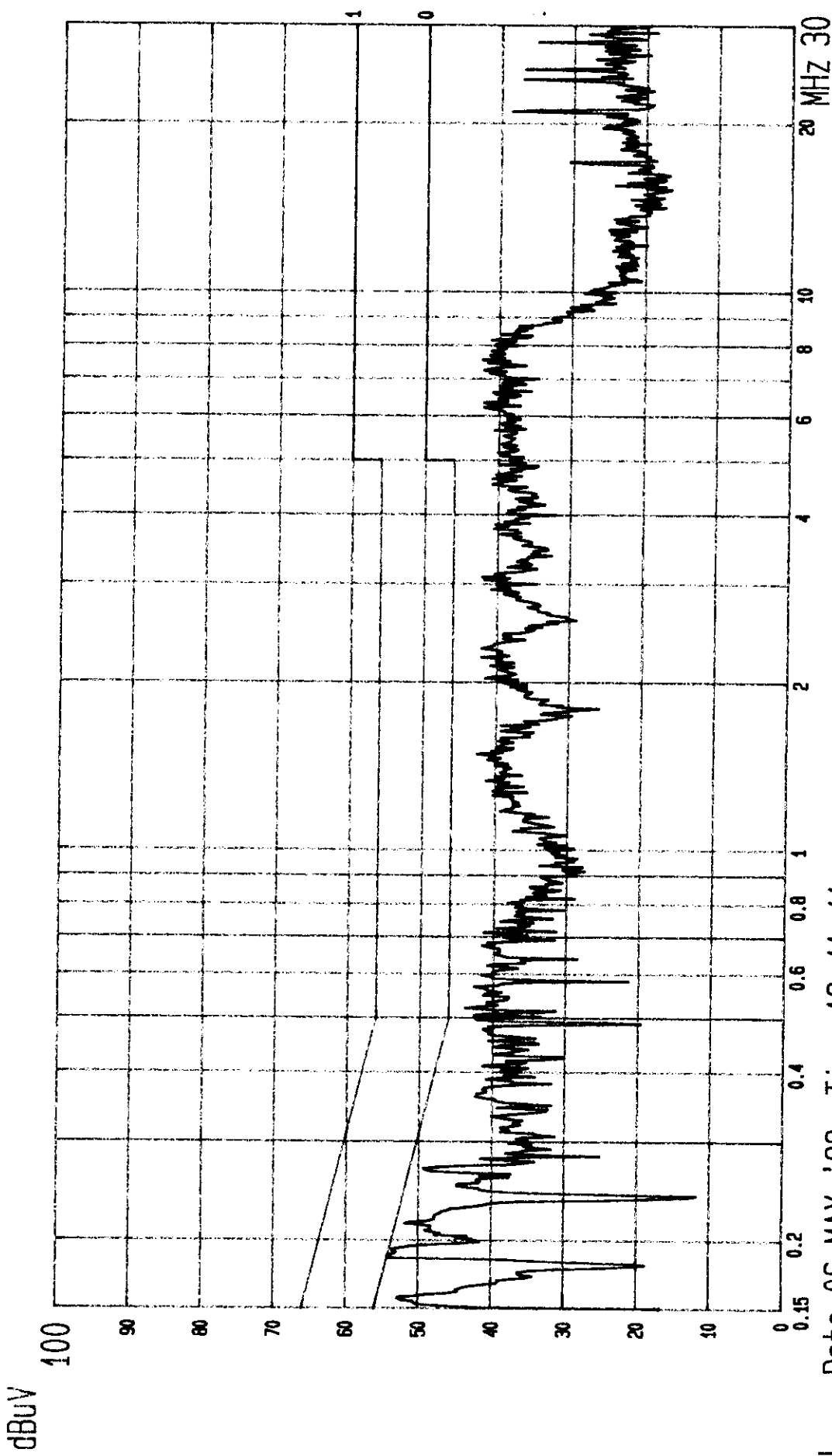
All emissions not reported below are too low against the prescribed limits.

Date of Test : May 06, 1998 Temperature : 25 °C

EUT : Scanner Humidity : 51 %

Frequency MHz	Factor dB	Measurement (dBuV)				Reading (dBuV)				Limits (dBuV)	
		Phase A Neutral		Phase B Line		Phase A Neutral		Phase B Line		Q.P.	Average
		Q.P.	Average	Q.P.	Average	Q.P.	Average	Q.P.	Average		
0.1500	0.4	51.1	30.0	*	*	51.5	30.4	*	*	66.0	56.0
0.1601	0.4	*	*	50.7	49.9	*	*	51.1	50.3	65.5	55.5
0.1801	0.4	52.0	48.3	*	*	52.4	48.7	*	*	64.4	54.4
0.2362	0.3	*	*	46.8	42.6	*	*	47.1	42.9	62.2	52.2
0.2541	0.3	47.0	38.6	*	*	47.3	38.9	*	*	61.6	51.6
0.5038	0.2	41.2	37.5	*	*	41.4	37.7	*	*	56.0	46.0
0.8077	0.2	*	*	42.0	40.1	*	*	42.2	40.3	56.0	46.0
1.4884	0.2	40.2	36.1	*	*	40.4	36.3	*	*	56.0	46.0
2.2766	0.2	*	*	37.6	32.2	*	*	37.8	32.4	56.0	46.0
6.7788	0.3	*	*	40.1	30.9	*	*	40.4	31.2	60.0	50.0
7.4907	0.3	41.0	34.7	*	*	41.3	35.0	*	*	60.0	50.0
23.0934	1.1	*	*	34.2	34.0	*	*	35.3	35.1	60.0	50.0

- Remark :
1. All readings are Quasi-Peak and Average values.
 2. Factor = Insertion Loss + Cable Loss
 3. "*" means the emission level undetectable.

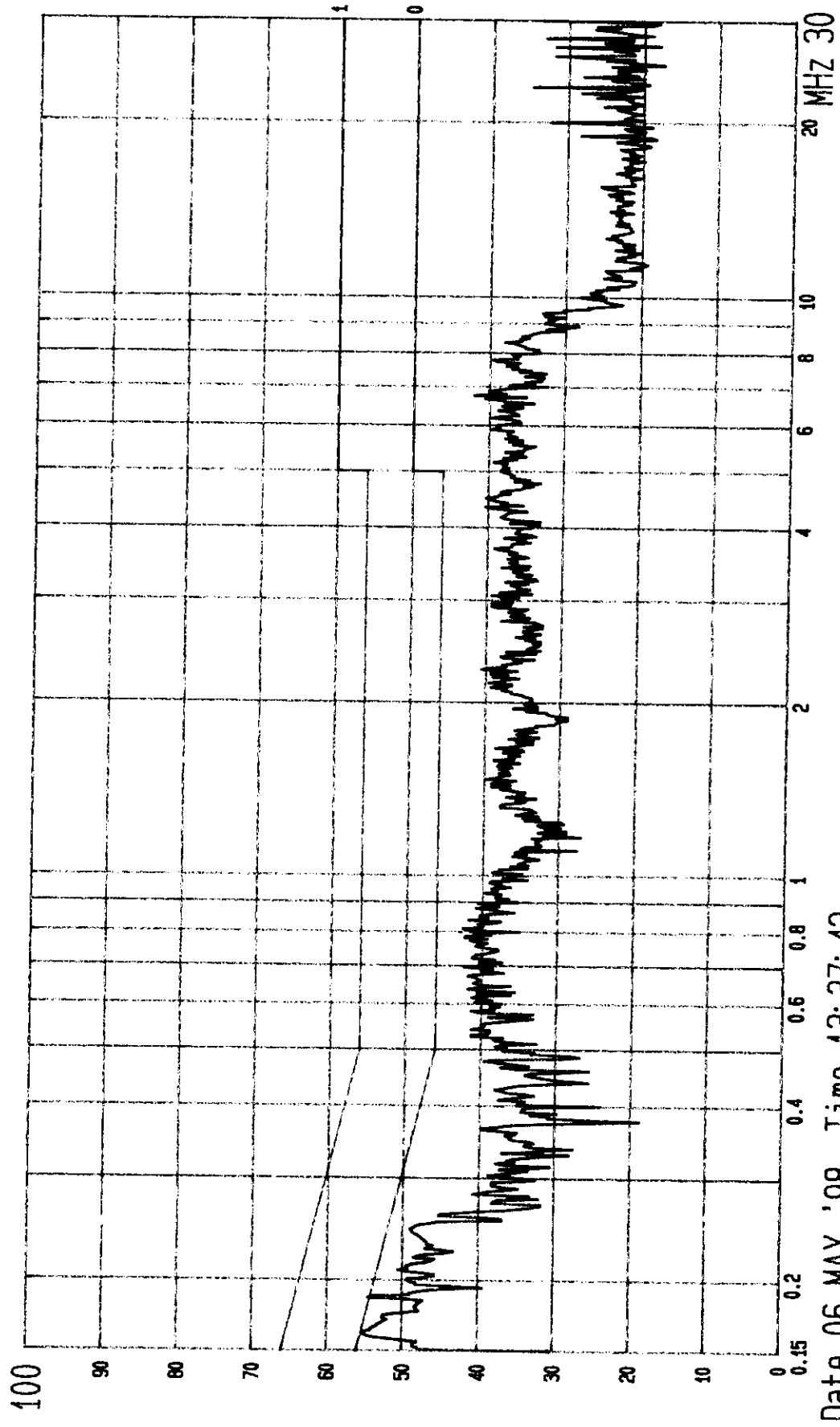


---- Date 06.MAY '98 Time 13:41:41
 MUSTEK EUT: SCANNER
 LINE: VA.

M/N: A3 SP
 (PEAK VALUE) TAIWAN TOKIN EMC. ENG. CORP.

PAGE: 002

dBuV



--- Date 06.MAY '98 Time 13:37:42
MUSTEK
LINE: VB.

M/N: A3 SP
(PEAK VALUE) TAIWAN TOKIN EMC.ENG.CORP.

3. RADIATED EMISSION TEST

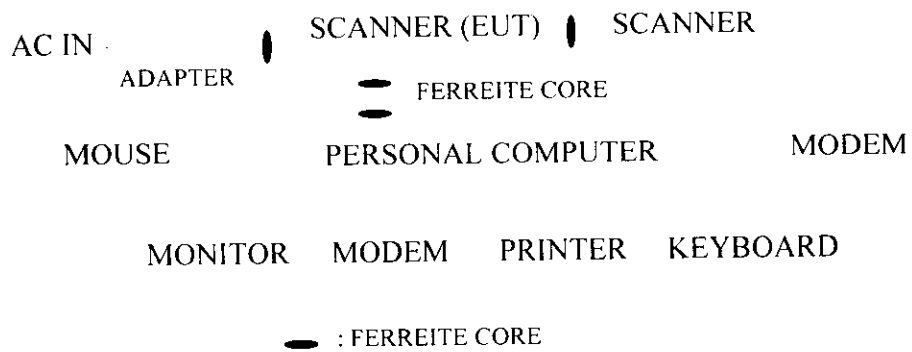
3.1. Test Equipment

The following test equipments are used during the radiated emission tests :

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde&Schwarz	ESVP	893202/001	Aug.04, 97'	1 Year
2.	Broadband Antenna	CHASE	VBA6106A	1240	Jan.14, 98'	1 Year
3.	Broadband Antenna	Schwarzbeck	UHALP 9108-A	0139	Jan.14, 98'	1 Year

3.2. Block Diagram of Test Setup

3.2.1. Block Diagram of connection between EUT and simulators



3.2.2. Open Field Test Site Setup Diagram

ANTENNA TOWER

ANTENNA ELEVATION VARIES FROM 1METER TO 4 METER

10 METERS

EUT

0.8
METER

TURN TABLE

GROUND PLANE

3.3. Radiation Limit (CISPR 22 CLASS B)

FREQUENCY	DISTANCE	FIELD STRENGTHS LIMITS
MHz	Meters	dBuV/m
30 ~ 230	10	30
230 ~ 1000	10	37

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

3.4. EUT Configuration on Measurement

The configuration of EUT and its simulators were the same as those used in conducted measurement. Please refer to 2.4.

3.5. Operating Condition of EUT

Same as conducted measurement which was listed in 2.5.

3.6. Test Procedure

The EUT and its simulators were placed on a turn table which is 0.8 meter above ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT was set 10 meters away from the receiving antenna which is mounted on a antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) and dipole antenna were used as receiving antenna. Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4-1992 on radiated measurement.

The bandwidth setting on the field strength meter (R&S TEST RECEIVER ESVP) was 120KHz.

The frequency range from 30MHz to 1000MHz was checked.

All the test results are listed in section 3.7.

3.7. Radiated Emission Noise Measurement Results

The frequency spectrum from 30 MHz to 1000 MHz is investigated. All the emissions not reported below are too low against the CISPR 22 CLASS B limit..

Date of Test : May 25, 1998 Temperature : 26 °C
 EUT : Scanner Humidity : 70 %

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading		Emission Level Horizontal dBuV/m	Limits dBuV/m	Margin dBuV/m
			Horizontal dBuV				
42.190	17.70	1.61	- 2.00		17.31	30.00	12.69
66.300	11.32	2.37	- 3.00		10.69	30.00	19.31
70.318	11.77	2.32	3.00		17.09	30.00	12.91
82.371	14.15	2.43	- 5.00		11.58	30.00	18.42
110.502	18.63	2.76	0.00		21.39	30.00	8.61
130.594	19.65	3.12	- 4.00		18.77	30.00	11.23
142.645	20.01	3.35	- 5.00		18.36	30.00	11.64
170.770	21.14	3.76	- 6.00		18.90	30.00	11.10
182.837	21.00	3.83	- 5.00		19.83	30.00	10.17
* 198.908	21.67	4.01	- 4.00		21.68	30.00	8.32
227.026	21.48	4.34	- 6.00		19.82	30.00	10.18
263.179	22.85	4.82	0.00		27.67	37.00	9.33
351.553	14.46	5.77	- 6.00		14.23	37.00	22.77
383.688	15.28	5.90	- 7.00		14.18	37.00	22.82
419.837	16.04	6.17	- 7.00		15.21	37.00	21.79
472.063	16.82	6.68	- 6.00		17.50	37.00	19.50
524.283	17.14	6.98	- 6.50		17.62	37.00	19.38
640.778	18.45	7.75	- 4.00		22.20	37.00	14.80

Remark : 1. All readings are Quasi-Peak values.

2. The worst emission was detected at 198.908MHz with corrected signal level of 21.68dBuV/m (limit is 30dBuV/m) when the antenna was at horizontal polarization and was at 4m high and the turn table was at 270 ° .

3. 0 ° was the table front facing the antenna. Degree is calculated from 0 ° clockwise facing the antenna.

Date of Test : Mar. 18, 1998 Temperature : 21 °C
 EUT : Scanner Humidity : 65 %

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading		Limits dBuV/m	Margin dBuV/m
			Vertical dBuV	Emission Level Vertical dBuV/m		
45.187	16.14	1.75	5.26	23.15 ~	30.00	6.85
54.239	14.22	1.97	3.30	19.49	30.00	10.51
66.294	11.82	2.37	8.80	22.99 ~	30.00	7.01
* 78.349	14.80	2.36	8.00	25.16 ✓	30.00	4.84
114.511	17.93	2.89	3.00	23.82 ✓	30.00	6.18
126.564	19.09	3.02	- 4.00	18.11	30.00	11.89
158.718	22.37	3.54	- 7.66	18.25	30.00	11.75
190.848	20.00	3.92	- 2.08	21.84	30.00	8.16
247.092	22.04	4.69	- 7.36	19.37	37.00	17.63
259.187	22.69	4.81	0.00	27.50 ✓	37.00	9.50
359.558	15.35	5.81	- 7.00	14.16	37.00	22.84
403.772	15.86	6.06	- 7.00	14.92	37.00	22.08
464.029	16.45	6.68	- 6.00	17.13	37.00	19.87
540.354	17.58	7.20	- 5.00	19.78	37.00	17.22
620.691	18.79	7.59	- 5.00	21.38	37.00	15.62

- Remark : 1. All readings are Quasi-Peak values.
 2. The worst emission was detected at 78.349MHz with corrected signal level of 25.16dBuV/m (limit is 30dBuV/m) when the antenna was at vertical polarization and was at 1m high and the turn table was at 220 ° .
 3. 0 ° was the table front facing the antenna. Degree is calculated from 0 ° clockwise facing the antenna..

4. DEVIATIONS TO TEST SPECIFICATIONS

【 NONE 】