

EXHIBIT 4

Test Report

Test Report

TTEMC-F98126

APPLICATION FOR CERTIFICATION

On Behalf of
Microtek International Inc.
Image Scanner

Model : MRS-1200X6U

FCC ID : EF9MRS-1200X6U

Prepared for : Microtek International Inc.
No. 6 Industry East Road 3,
Science-Based Industrial Park,
Hsincu, Taiwan, R.O.C.

Prepared By : Taiwan Tokin EMC Eng. Corp.
No. 53-11, Tin-Fu Tsun, Lin-Kou,
Taipei Hsien, Taiwan, R.O.C.

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Date of Test : Jul. 23/27, 1998
Date of Report : Aug. 03, 1998

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TEST REPORT CERTIFICATION

Applicant : Microtek International Inc.
Manufacturer : Microtek International Inc.
FCC ID : EF9MRS-1200X6U
EUT Description : Image Scanner
(A) MODEL NO. : MRS-1200X6U
(B) SERIAL NO. : N/A
(C) POWER SUPPLY : AC 120V/60Hz

Measurement Procedure Used :

FCC RULES AND REGULATIONS PART 15 SUBPART B CLASS B OCTOBER 1996
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 FCC Part 15B 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 was submitted for FCC certification purposes if a 6dB margin below FCC 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 : Jul. 23/ 27, 1998

Prepared by : Julia Hsu 8/1/98
(JULIE HSU)

Test Engineer : Allen Wang 8/11/98
(ALLEN WANG)

Approve & Authorized Signer : Jeff Chen 8/18/98
(JEFF CHEN)

Tokyo E054

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Image Scanner
Model Number	:	MRS-1200X6U
FCC ID	:	EF9MRS-1200X6U
Applicant	:	Microtek International Inc. No. 6 Industry East Road 3, Science-Based Industrial Park, Hsinchu, Taiwan, R.O.C.
Manufacturer	:	Microtek International Inc. No. 6 Industry East Road 3, Science-Based Industrial Park, Hsinchu, Taiwan, R.O.C.
Switching Power Supply	:	Kentex, M/N KTX-3337
Light Plate	:	Microtek, M/N MLP-VX Cable : Shielded, Undetachable, 0.2m Bonded a ferrite core
USB Cable	:	Shielded, Detachable, 1.5m
Power Cord	:	Non-Shielded, Detachable, 1.8m
Date of Test	:	Jul. 23/27, 1998

1.2. Details of Support Equipments

1.2.1. PERSONAL COMPUTER

Mother Board	:	Ausu, M/N P2L97 FCC ID by DoC
Case	:	Enlight, M/N EN-7230
CPU	:	Intel Pentium II 233 MMX
Switching Power Supply	:	Enlighth, M/N EN-8257901 FCC ID by DoC
Floppy Driver 3.5"	:	Mitsumi, M/N D359T6
Hard Disk Driver	:	Seagate, M/N ST32122A
Disk Ctrl Card	:	Within Mother Board
Serial/Parallel Card	:	Within Mother Board
VGA Card	:	Dataexpert , M/N CP765V2 FCC ID LUT-CP765
Power Cord	:	Non-Shielded, Detachable, 1.8m

1.2.2. MONITOR

Model Number	:	PM36B
Serial Number	:	W821111451
FCC ID	:	IIBTC1
Manufacturer	:	Funai Electric Company of Taiwan
Data Cable	:	Shielded, Undetachable, 1.2m
Power Cord	:	Non-Shielded, 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 Cord: Nonshielded, Undetachable, 2.0m
Data Cable	:	Shielded, Detachable, 1.2m

1.2.5. MODEM #1

Model Number	:	1414
Serial Number	:	950110300
FCC ID	:	IFAXDM1414
Manufacturer	:	Aceex
Data Cable	:	Shielded, Detachable, 1.2m
Power Adapter	:	Amigo, Model AM-91000A Non-Shielded, Undetachable, 1.8m

1.2.6. MODEM #2

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

1.2.7. MOUSE

Model Number	:	PC7XS-AA
Serial Number	:	LT41804589
FCC ID	:	DZL210513
Manufacturer	:	Digital
Data Cable	:	Non-Shielded, Undetachable, 1.8m

1.2.8. USB GAMEPAD

Model Number	:	INT-002
Serial Number	:	N/A
FCC ID	:	CETEAK032
Manufacturer	:	Alps
Data Cable	:	Shielded, Undetachable, 2.3m 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 Lab Code	:	200077-0

REMARKS : RF LINE VOLTAGE (dBuV) = 20 log RF LINE VOLTAGE (uV)

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. Image Scanner (EUT)

Model Number	:	MRS-1200X6U
Serial Number	:	N/A
FCC ID	:	EF9MRS-1200X6U
Manufacturer	:	Microtek International Inc.
Light Plate	:	Microtek, M/N MLP-VX
		Cable : Shielded, Undetachable, 0.2m
		Bonded a ferrite core
USB Cable	:	Shielded, Detachable, 1.5m
Power Cord	:	Non-Shielded, Detachable, 1.8m

2.4.2. Support Simulators : As in section 1.2.

2.5. Operating Condition of EUT

- 2.5.1. Setup the EUT and simulators as shown on 2.2.
- 2.5.2. Turned on the power of all equipments.
- 2.5.3. Setup the personal computer to drive the EUT through the Microtek's scanner software driver "Scan Test" by windows.
- 2.5.4. Data was communicated between host personal computer and Image Scanner (EUT) through USB port.
- 2.5.5. The Light Plate (EUT) was lighting and running.
- 2.5.6. Personal Computer displayed the test software image by windows to monitor.
- 2.5.7. The other peripheral devices were driven 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 during 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 450KHz to 30 MHz was investigated.

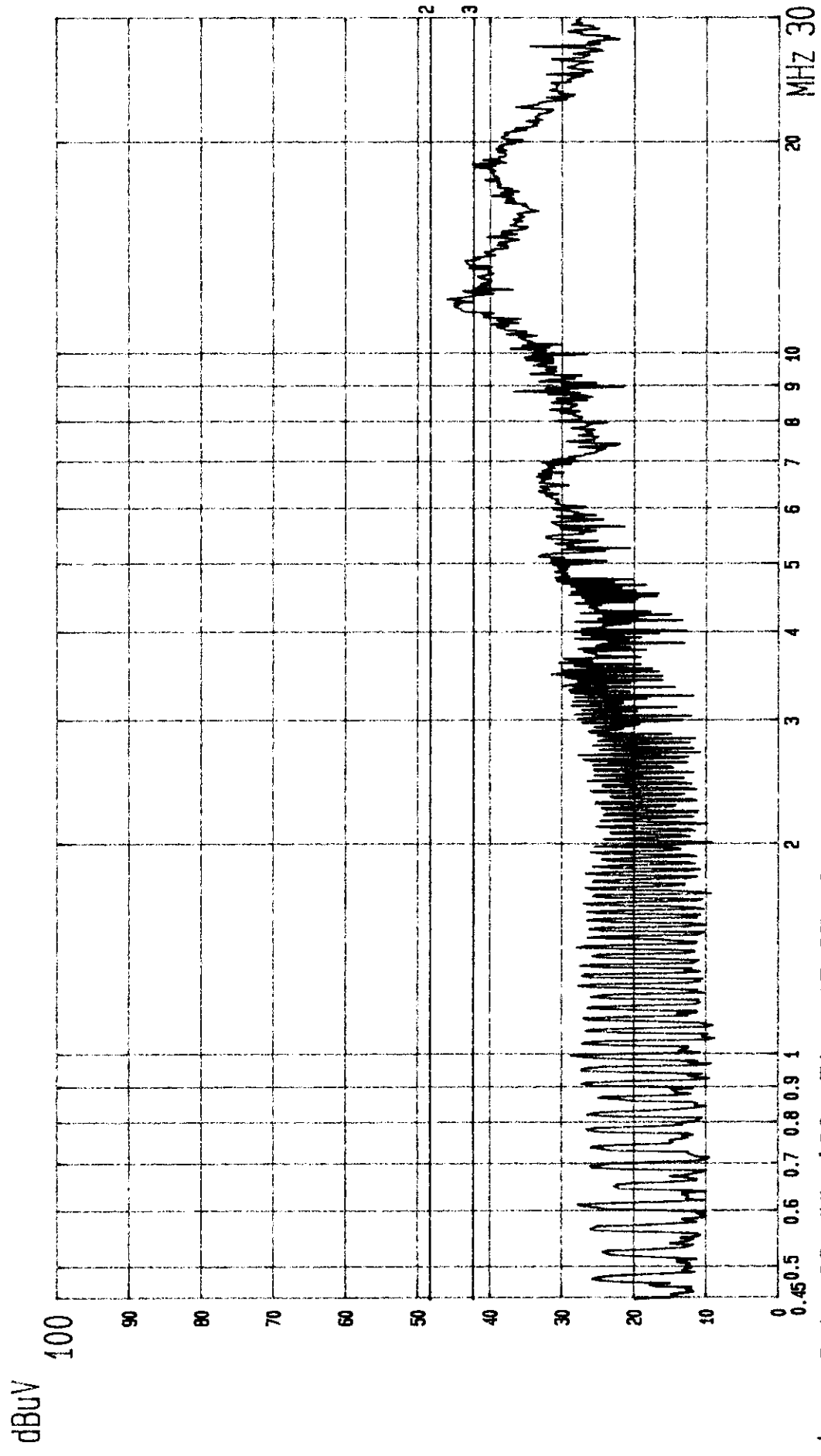
All emissions not reported below are too low against the prescribed limits.

Date of Test : Jul. 27, 1998 Temperature : 26 °C

EUT : Image Scanner Humidity : 65 %

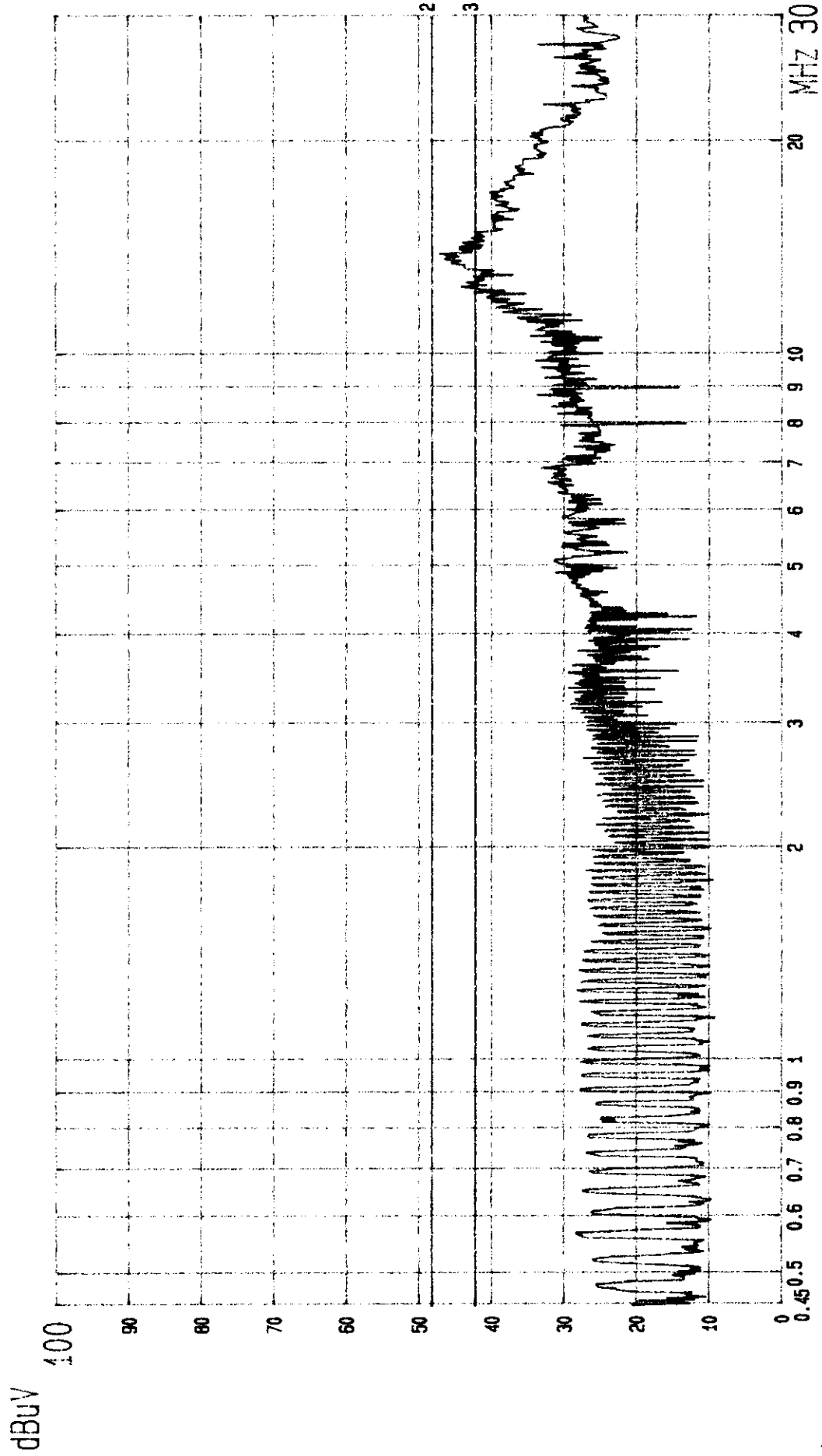
Frequency (MHz)	Factor dB	Measurement (dBuV)		Reading (dBuV)		Limits (dBuV)	Margin (dBuV)	
		VA	VB	VA	VB		VA	VB
3.4997	0.5	26.3	*	26.8	*	48.0	21.2	*
3.3641	0.5	*	25.8	*	26.3	48.0	*	21.7
5.1321	0.8	*	26.9	*	27.7	48.0	*	20.3
5.1813	0.8	28.6	*	29.4	*	48.0	18.6	*
6.6920	0.8	29.8	*	30.6	*	48.0	17.4	*
6.9018	0.8	*	27.2	*	28.0	48.0	*	20.0
8.7582	0.8	*	28.9	*	29.7	48.0	*	18.3
11.9989	1.0	41.2	*	42.2	*	48.0	5.8	*
12.5043	1.0	*	39.9	*	40.9	48.0	*	7.1
13.5076	1.0	39.8	*	40.8	*	48.0	7.2	*
13.9264	1.0	*	42.8	*	43.8	48.0	*	4.2
18.4668	1.0	38.2	*	39.2	*	48.0	8.8	*

- Remark :
1. All readings are Quasi-Peak values.
 2. Factor = Insertion Loss + Cable Loss
 3. The worst emission was detected at 13.9264MHz with corrected signal level of 43.8dBuV (limit is 48dBuV) when the VB side of the EUT was connected to L.I.S.N.



--- Date 23.JUL.'98 Time 15:37:49
MICROTEK EUT: IMAGE SCANNER M/N: MRS-1200X6U
LINE: VA.

PAGE: 001.
(PEAK VALUE) TTEMPC.



--- Date 23.JUL.'98 Time 15:48:20
MICROTEK EUT: IMAGE SCANNER M/N: YRS-1200X6U
LINE: VB.
(PEAK VALUE) TTEMG. PAGE: 002.

Doc 12-0054

3. RADIATED EMISSION TEST

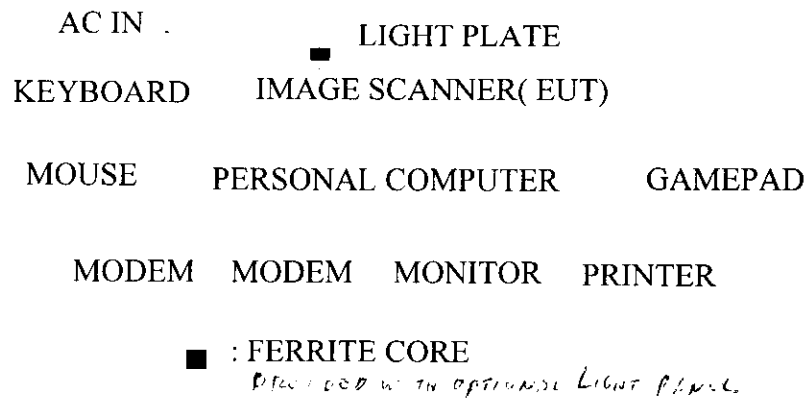
3.1. Test Equipment

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	861190/011	Nov.27, 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

3 METERS

EUT

0.8
METER

TURN TABLE

GROUND PLANE

3.3. Radiation Limit (CLASS B)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMITS	
		uV/M	dBuV/M
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0

- Remark :
- (1) Emission level (dBuV/M) = 20 log Emission level (uV/M)
 - (2) The tighter limit applies at the edge between two frequency bands.
 - (3) 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 are same as those used in conducted measurement. Please refer to 2.4.

3.5. Operating Condition of EUT

Same as conducted measurement which is listed in 2.5.

3.6. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. EUT was set 3 meters away from the receiving antenna which was 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 were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4-1992 during radiated measurement.

The bandwidth setting on the field strength meter (R&S TEST RECEIVER ESH3) 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 was investigated. All the emissions not reported below are too low against the FCC CLASS B limit..

Date of Test : Jul. 27, 1998 Temperature : 33 °C
 EUT : Image Scanner Humidity : 65 %

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBuV	Emission Level Horizontal dBuV/m	Limits dBuV/m	Margin dBuV/m
35.010	22.45	1.60	0.30	24.35	40.00	15.65
50.013	16.21	2.00	9.50	27.71	40.00	12.29
65.016	11.42	2.35	13.90	27.67	40.00	12.33
80.019	13.85	2.48	7.60	23.93	40.00	16.07
109.998	18.77	2.83	6.70	28.30	43.50	15.20
125.032	19.72	3.09	5.10	27.91	43.50	15.59
155.038	21.12	3.60	4.50	29.22	43.50	14.28
170.041	21.38	3.71	2.90	27.99	43.50	15.51
185.043	21.80	3.89	3.80	29.49	43.50	14.01
200.051	22.19	3.98	2.70	28.87	43.50	14.63
230.056	22.67	4.34	3.40	30.41	46.00	15.59
245.059	22.88	4.54	7.60	35.02	46.00	10.98
* 260.062	23.91	4.73	6.90	35.54	46.00	10.46
275.067	25.00	4.83	- 0.50	29.33	46.00	16.67
290.071	25.66	4.98	- 0.89	29.75	46.00	16.25
305.075	13.62	5.19	4.60	23.41	46.00	22.59
334.995	14.06	5.53	10.80	30.39	46.00	15.61
350.083	14.76	5.70	5.40	25.86	46.00	20.14
380.094	16.59	5.92	3.70	26.21	46.00	19.79
410.101	17.00	6.13	8.10	31.23	46.00	14.77
470.114	17.31	6.89	- 1.40	22.80	46.00	23.20
500.120	17.65	7.20	1.10	25.95	46.00	20.05

- Remark :
1. All readings are Quasi-Peak values.
 2. The worst emission was detected at 260.062MHz with corrected signal level of 35.54dBuV/m (limit is 46dBuV/m) when the antenna was at horizontal polarization and was at 2.5m high and the turn table was at 120 ° .
 3. 0 ° was the table front facing the antenna. Degree is calculated from 0 ° clockwise facing the antenna.

Date of Test : Jul. 27, 1998 Temperature : 33 °C
 EUT : Image Scanner Humidity : 65 %

	Antenna	Cable	Meter Reading	Emission Level			
Frequency	Factor	Loss	Vertical	Vertical	Limits	Margin	
MHz	dB/m	dB	dBuV	dBuV/m	dBuV/m	dBuV/m	
	35.009	21.88	1.60	6.20	29.68	40.00	10.32
	50.012	15.42	2.00	14.50	31.92	40.00	8.08
	65.016	12.46	2.35	16.80	31.61	40.00	8.39
	80.009	15.39	2.48	13.10	30.97	40.00	9.03
*	109.998	17.36	2.83	18.60	38.79	43.50	4.71
	125.006	18.51	3.09	5.80	27.40	43.50	16.10
	154.997	21.41	3.60	3.10	28.11	43.50	15.39
	170.040	21.15	3.71	0.90	25.76	43.50	17.74
	184.997	21.48	3.89	2.90	28.27	43.50	15.23
	200.053	20.98	3.98	3.90	28.86	43.50	14.64
	230.056	21.75	4.34	4.80	30.89	46.00	15.11
	245.061	22.92	4.54	4.30	31.76	46.00	14.24
	260.063	24.29	4.73	1.60	30.62	46.00	15.38
	290.071	25.12	4.98	- 0.10	30.00	46.00	16.00
	305.075	14.17	5.19	2.60	21.96	46.00	24.04
	320.077	14.33	5.36	0.60	20.29	46.00	25.71
	380.081	15.49	5.92	6.10	27.51	46.00	18.49
	395.095	16.03	5.99	4.20	26.22	46.00	19.78
	410.101	16.10	6.13	7.50	29.73	46.00	16.27
	425.105	16.03	6.34	0.90	23.27	46.00	22.73
	500.122	18.24	7.20	2.80	28.24	46.00	17.76
	530.127	19.28	7.46	1.90	28.64	46.00	17.36

- Remark :
1. All readings are Quasi-Peak values.
 2. The worst emission was detected at 109.998MHz with corrected signal level of 38.79dBuV/m (limit is 43.5dBuV/m) when the antenna was at vertical polarization and was at 1m high and the turn table was at 230 ° .
 3. 0 ° was the table front facing the antenna. Degree is calculated from 0 ° clockwise facing the antenna.

4. DEVIATION TO TEST SPECIFICATIONS

【 NONE 】