

MEASUREMENT / TECHNICAL REPORT

COMPANY NAME: Matsushita Electric Industrial Co., Ltd.
 MODEL: TX-D1F64MA
 FCCID: ACJ93312140
 DATE OF REPORT: September 6, 1999



This report concerns [check one]: ☐ Original Grant ☒ Class 2 change

Equipment Type : 21" CRT Display Monitor ☐ Class A Digital Device
☒ Class B Digital Device

Differed grand requested par CFR0.475(d)(1)(ii)? ☐ Yes ☒ No

If Yes, differ until:

_____ date

Applicant agrees to notify the Commission by

_____ date

of the intended date of announcement of the product so that the grant can be issued on the date.

Transition Rules Request per 15.37? ☐ Yes ☒ No

If No, Assumed Part 15.Subpart B for uninternational radiators – the new 47 CFR [10-1-90]Edition] provision.

Report prepared by :

Name & Title:

K. Hamaguchi

K. Hamaguchi / President

Company Name: Cosmos Corporation

Address: 319 Akeno, Obata-cho, Watarai-gun,
Mie-ken 519-0501 JAPAN

Telephone number: +81-596-37-0190

Fax number: +81-596-37-3609

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Attachment

- Users Manual
- Block Diagram(s)
- Conducted and Radiated Emission Test Data Sheets

1. GENERAL INFORMATION

1.1 Product Description

Trade Name	Model Name	Product Name	Description
A Panasonic	TX-D1F64MA	FP9360006	Color Monitor
Type of Processor : IC100		Clock Speed : 4MHz	
Number of Storage : None		Interface Ports : D-Sub : RGB	
Power Supply AC 120 V, 60 Hz, 2.7 A			
Similar Model(to be covered) : None		Description for Difference(s) :None	
Accessories (to be sold with the model tested)			
Model Name : None		Description : None	

Note: See attached user manual for further description.

1.2 Related Submittal(s) / grant(s)

- ☐ Original application
- ☒ Modification and class 2 permissive change,
If this is a filling for class 2 permissive change.
List here the FCC's file on the original grant.
Original FCC ID: ACJ93312140
FCC's file: _____

1. GENERAL INFORMATION (Continued)

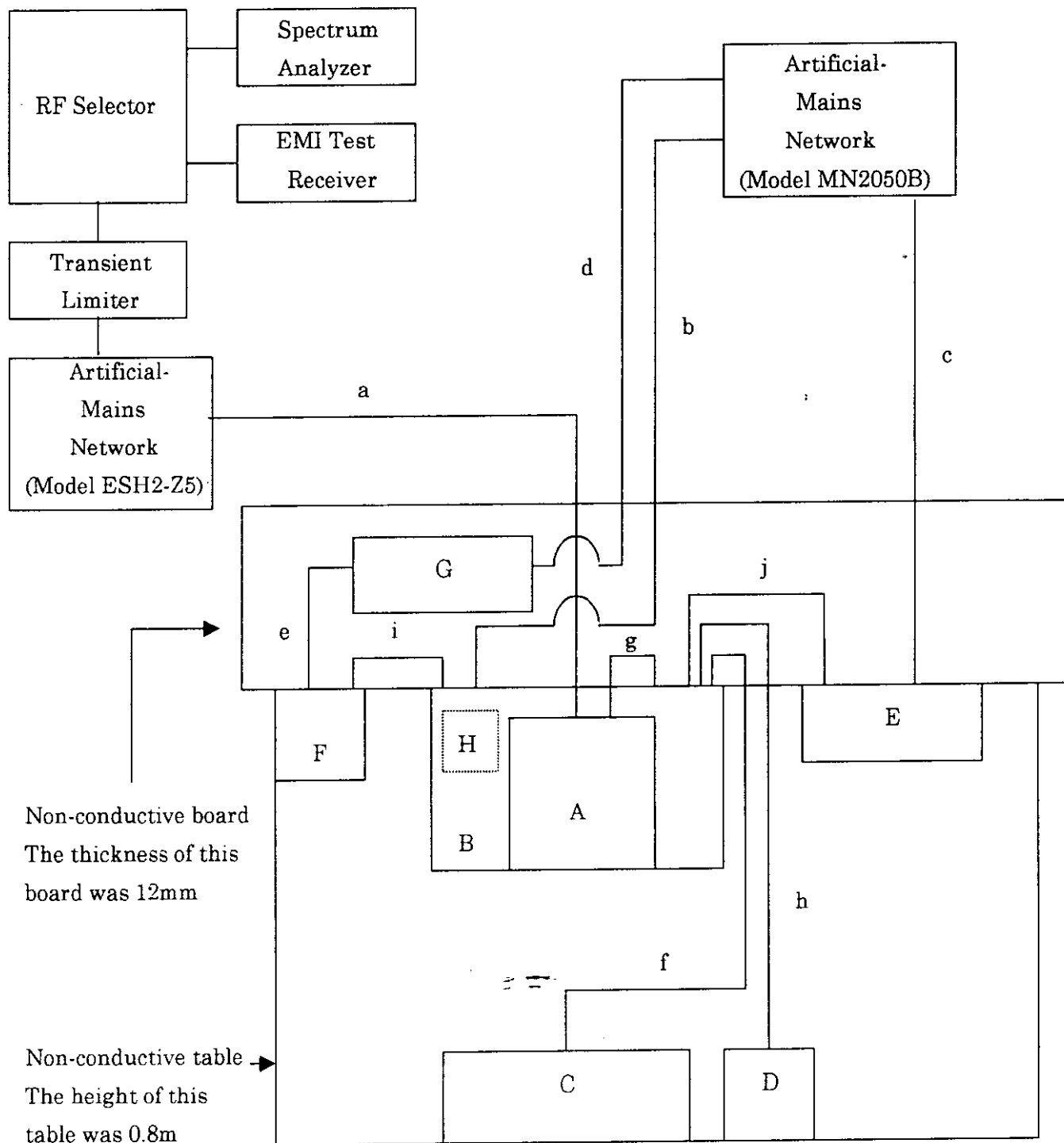
1.3 Tested System Details

Host Digital Device(Certified or Verified)				
Trade Name		Model Name	FCC ID Number	Description
B	Hewlett Packard	D4594B	Doc	Personal Computer
Peripheral Device(Certified or Verified)				
	Trade Name	Model Name	FCC ID Number	Description
C	Hewlett Packard	FKB8724-501	C9SKB8720	Keyboard
D	Hewlett Packard	M-S34	DZL211029	Mouse
E	Hewlett Packard	C4565A	B94C4555X	Printer
F	SEIKO EPSON Corp.	C202A	BKM552C202A	Modem
G	Kikusui Electronics Corp.	PAC70-2.5	N/A	Regulated DC Power Supply
H	Matrox Craphics	79075010153 (MGA-MIL/2/DIP)	ID7057600	Video Card
Power Supply Cord				
☐ 2P ☒ 3P ☐ Shielded ☒ Unshielded ☐ Equipment with filter				
Connection Cables				
	Type of Cable	Construction	Length	
a	AC Power Cord	U	1.7 m	
b	AC Power Cord	U	2.2 m	
c	AC Power Cord	U	1.8 m	
d	AC Power Cord	U	1.9 m	
e	DC Power Cord	U	1.0 m	
f	Keyboard Cable	S	1.5 m	
g	Monitor Cable (BNC - D-Sub)	S	1.8 m	
h	Mouse Cable	S	1.8 m	
i	Modem Cable	S	1.0 m	
j	Printer Cable	S	3.0 m	
Notes 1: S: Shielded P: Plastic Hoods F: Ferrite beans on Cable U: Unshielded M: Metallic Hoods 2: For location of cables used. Refer to photograph in item 5.				

1. GENERAL INFORMATION (Continued)

1.4 Configuration of Tested System

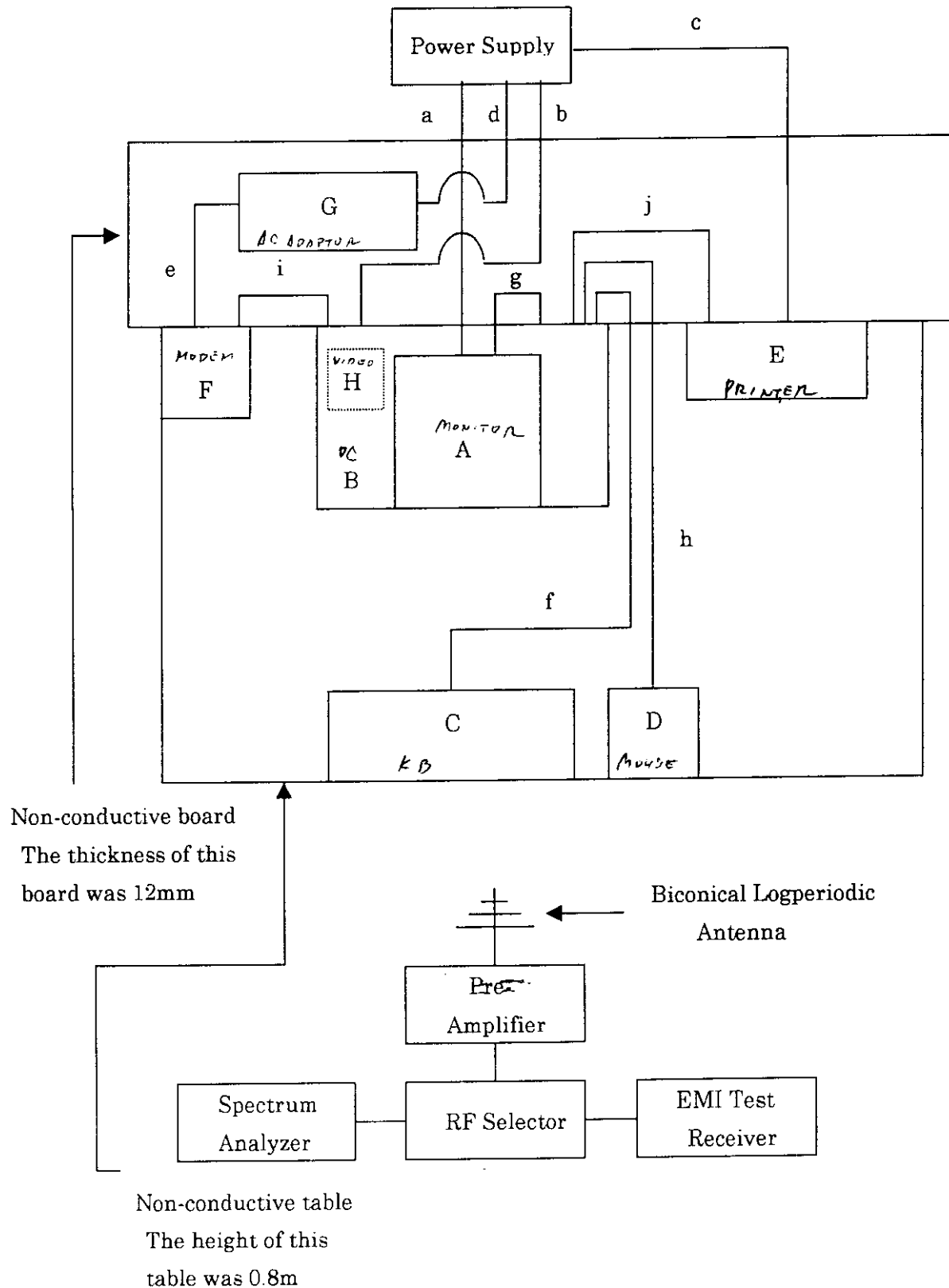
Conducted Emission



1. GENERAL INFORMATION (Continued)

1.4 Configuration of Tested System (Continued)

Radiated Emission



1. GENERAL INFORMATION (Continued)

1.5 Test Methodology

Measurement Procedure: ☐ MP-4(1987) ☒ C63..4(1992)
Radiation Measurement Distance: ☐ 3 meters ☒ 10 meters

1.6 Test Facility

Site for Radiated Emissions.

Cosmos EMC Lab.

543 Shimesasu, Watarai-cho, Watarai-gun, Mie-ken, 516-2119 Japan

Site for Conducted Emissions

Cosmos EMC Lab.

543 Shimesasu, Watarai-cho, Watarai-gun, Mie-ken, 516-2119 Japan

FCC Filling for the sites

The above sites have been fully reported to FCC dated May 23, 1996 and accepted in a letter dated July 10, 1996 (31040/SIT 1300F2). The listing letter has been updated on July 2, 1999. (Registration Number: 90522)

2. PRODUCT LABELING

Figure 2.1 FCC ID Label

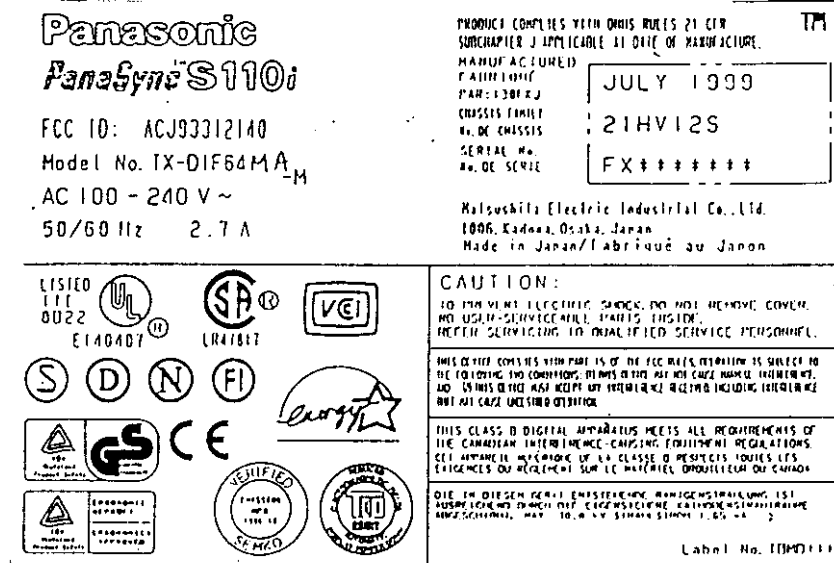
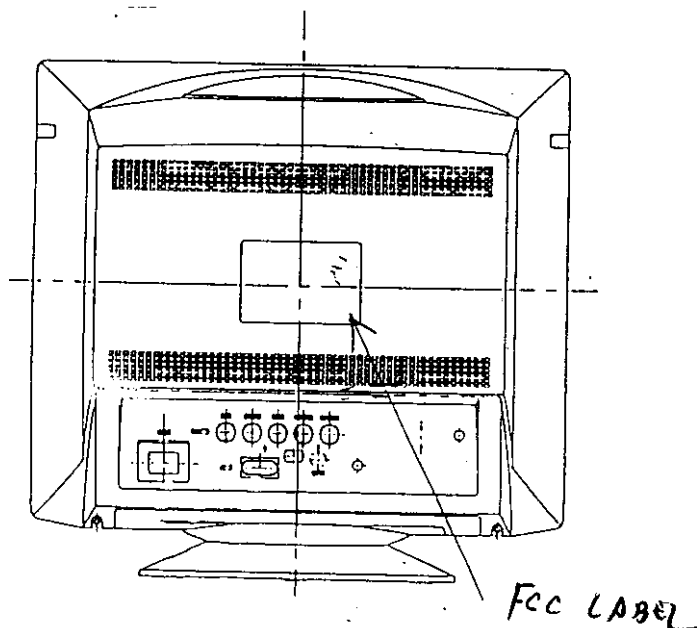


Figure 2.2 Location of label on EUT

FCC ID LABEL: On the rear enclosure.
Refer to figure 9.2 (photo)



3. SYSTEM CONFIGURATION

3.1 Justification

Since Matsushita Electric Industrial Co., Ltd. has not introduced any class B Computer in the US market.

We used a class B Computer manufactured by Hewlett Packard that was available at our side. The system was tested in displaying with H.

	<u>Specification</u>	<u>Worst case</u>
User accessible processor speeds:	N / A	N / A
Band rates:	N / A	N / A
Interface Ports	D-Sub RGB	RGB
Video Modes	640 × 480	640 × 480 (Conducted
☐ Default modes	1600 × 1200	Emission)
☒ Resolution modes	1800 × 1440	1600 × 1200 (Radiated Emission)
Power Connection	Wall Outlet Outlet of Personal Computer	Wall Outlet
I/O card Inserted	None	None
Other	D-Sub = D-Sub Cable 1.5 m D-Sub = D-Sub Cable 1.8 m BNC = D-Sub Cable 1.8 m	BNC = D-Sub Cable 1.8 m

3.2 EUT Exercise Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

The software contained on a Hard Disk, and is starting by clicking track pointer to the fielder of this program. Once loaded, the program sequentially exercise each system components in turn. The sequence used is:

- (1) An H is displayed on the monitor.

3. SYSTEM CONFIGURATION

3.3 Special accessories needed connection EUT to achieve compliance.

None

In an instruction manual of set there is description which tells users to use the interface Cable to satisfy FCC standards.

3.4 Equipment Modifications

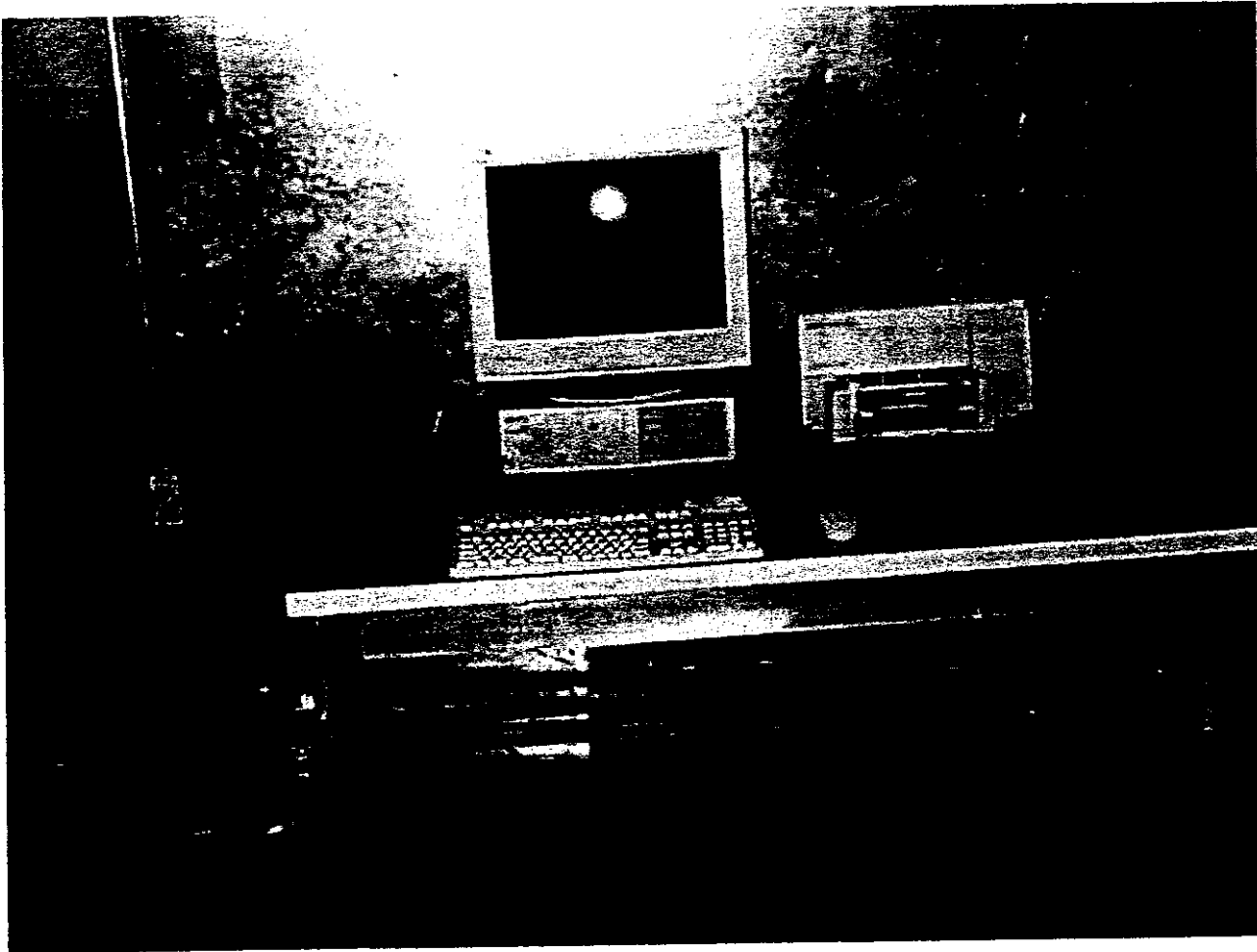
N / A

4. Block Diagram(s)

Refer to Attachment

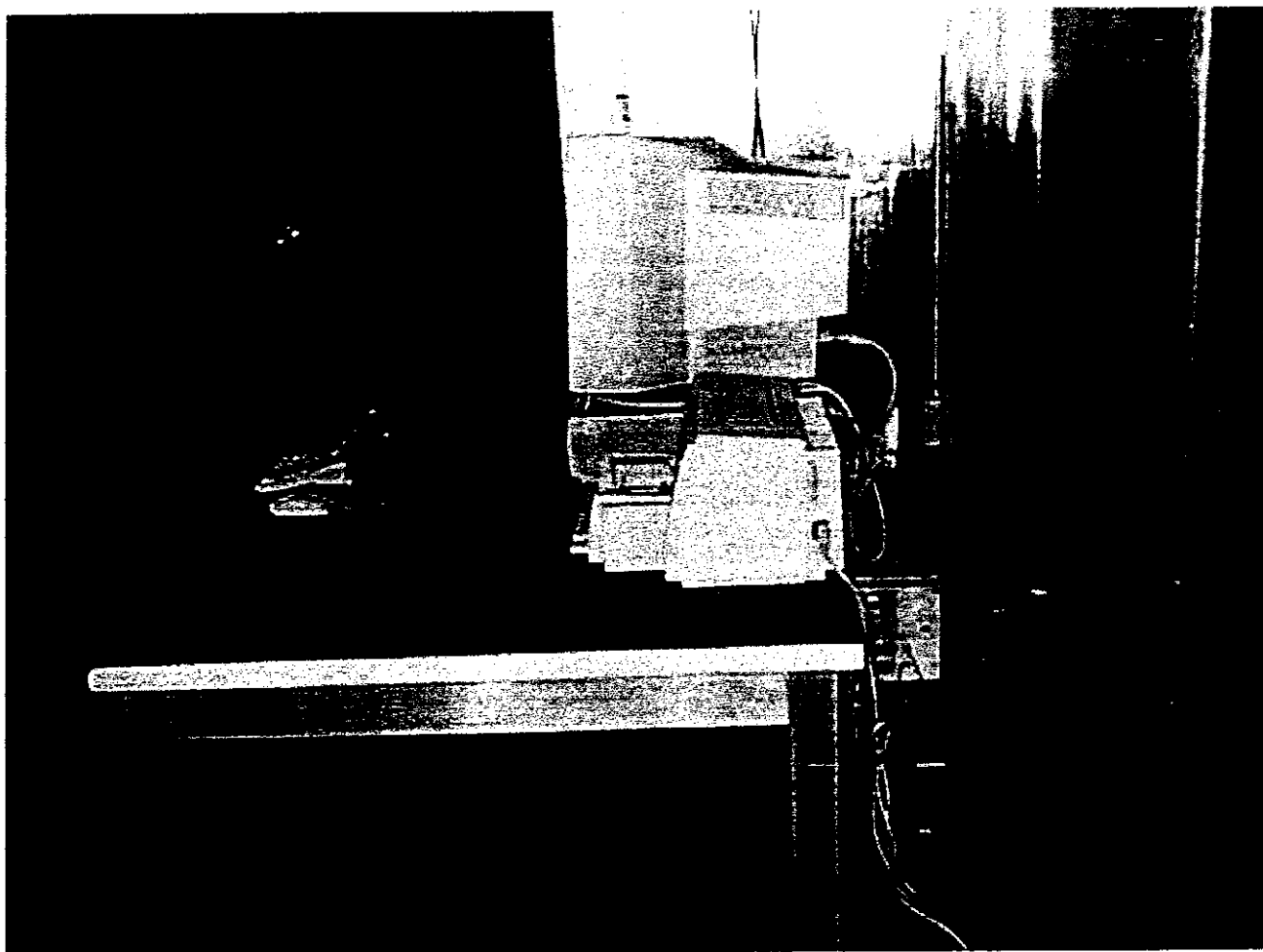
5. Conducted and Radiated measurement photos
(Model TX-D1F64MA)

Arrangement of EUT for Measurement of Conducted Emissions.(Front View)



5. Conducted and Radiated measurement photos (Continued)
(Model TX-D1F64MA)

Arrangement of EUT for Measurement of Conducted Emissions.(Side View)

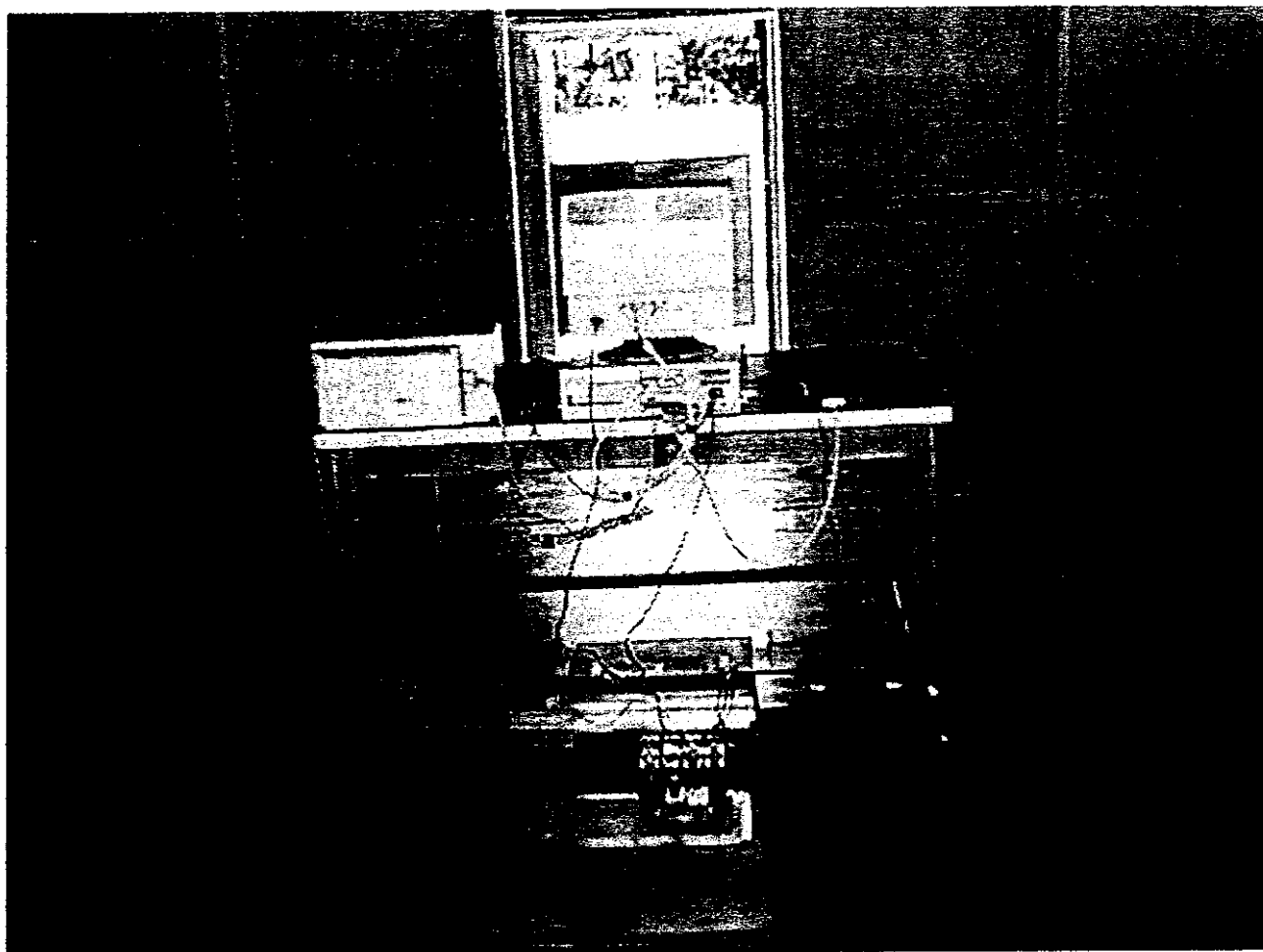


5. Conducted and Radiated measurement photos (Continued)
(Model TX-D1F64MA)
Arrangement of EUT for Measurement of Radiated Emissions.(Front View)



5. Conducted and Radiated measurement photos (Continued)
(Model TX-D1F64MA)

Arrangement of EUT for Measurement of Radiated Emissions.(Rear View)



6. CONDUCTED EMISSION DATA

6.1 The initial step in collection conducted data is a spectrum analyzer peak scan of the measurement range, Significant peaks are then marked as shown on the following data page and these signals are then quasi-peaked.

The measurement was conducted for the resolution 640×480 , 1600×1200 and 1800×1440 .
The Monitor Cable was conducted in D-Sub = D-Sub 1.5m length, D-Sub = D-Sub 1.8m length and BNC = D-Sub 1.8m.

Following was the worst condition:

Continuous Operating (Resolution: 640×480 "H" Pattern)
Dot Clock Frequency : 25.17 MHz
Vertical Frequency : 60 Hz
Horizontal Frequency : 31.5kHz
Monitor Cable : BNC = D-Sub 1.8m length
AC Power Supply : Outlet on the wall

	Frequency (MHz)	Measured * (dB μ V)	Limit (dB μ V)
Neutral Line	13.660	47.5	48.0
Neutral Line	15.947	47.8	48.0
Neutral Line	20.520	41.9	48.0
Neutral Line	11.407	36.7	48.0
Neutral Line	22.585	38.2	48.0
Neutral Line	24.582	36.4	48.0
L Line	13.660	47.0	48.0
L Line	11.403	37.8	48.0
L Line	15.948	47.5	48.0
L Line	20.522	41.9	48.0
L Line	22.584	38.6	48.0
L Line	24.581	37.7	48.0

Uncertainty of measurement result: ± 2.26 dB

Test Personal

Tester Signature: K. Hasegawa Date: August 24, 1999

Typed / Printed : K. Hasegawa : Cosmos EMC TEST DEPT.

7. RADIATED EMISSION DATA

- 7.1 The following data lists the significant emission frequencies, measured levels, correction factor(includes cable and antenna corrections), the corrected reading, the limit, plus margin. Explanation of the Correction Factor is given in paragraph.

The measurement was conducted for the resolution 640×480 , 1600×1200 and 1800×1440 .
The Monitor Cable was conducted in D-Sub = D-Sub 1.5m length, D-Sub = D-Sub 1.8m length and BNC = D-Sub 1.8m

Following was the worst condition:

Continuous Operating (Resolution: 1600×1200 "H" Pattern)
Dot Clock Frequency : 229.5 MHz
Vertical Frequency : 85 Hz
Horizontal Frequency : 106.3kHz
Monitor Cable : BNC = D-Sub 1.8m length
AC Power Supply : Outlet on the wall

Note: Attached reading data are measured with 10m and below results are converted to 3m method from 10m results.
Real test data of 10m are attached as ATTACHIMENT.

Frequency (MHz)	Antenna Polarity (H / V)	Meter Reading At 3m (dB μ V)	Correction Factor (dB/m)	Field Strength at 3m (dB μ V/m)	Limit (dB μ V/m)	Margin dB
140.014	V	47.5	-16.5	31.0	43.5	12.5
145.003	V	47.5	-16.7	30.8	43.5	12.7
149.996	V	53.5	-17.0	36.5	43.5	7.0
154.995	V	48.1	-17.4	30.7	43.5	12.8
312.519	V	52.5	-13.2	39.3	46.0	6.7
333.321	V	52.6	-12.4	40.2	46.0	5.8

Note: H / V: Horizontal / Vertical *: Quasi-peak mode
Uncertainty of measurement result: ± 3.234 dB
The worst data out of H or V are shown for identical frequencies.

Test Personal

Tester Signature: K. Hasegawa Date: August 24, 1999

Typed / printed Name: K. Hasegawa : Cosmos EMC TEST DEPT

8. METHOD OF CALCULATION

8.1 Radiated Emissions

$$\text{Fielded Strength (dB } [\mu \text{ V/m}) = \text{S.A. reading (dB } [\mu \text{ V/m}) + \text{C.F.}$$

Notes

(a) S.A. Reading: Reading of Spectrum Analyzer

- (b) C.F. ☐ Antenna Factor (including balun loss) + Cable loss.
☒ Antenna Factor (including balun loss) + Cable loss + $20\text{Log}(10\text{m} / 3\text{m})$
☐ Antenna Factor (including balun loss) + Cable loss + Amplifier gain
☐ Antenna Factor (including balun loss) + Cable loss + Amplifier gain
+ $20\text{Log}(10\text{m} / 3\text{m})$

8.2 Conducted Emissions

$$\text{RF Voltage (dB } [\mu \text{ V/m}) = \text{S.A. Reading (dB } [\mu \text{ V/m}) + \text{C.F. (dB)}$$

Notes

(a) S.A. Reading: Reading of Spectrum Analyzer

(b) C.F. : Correction Factor of LISN + Cable Loss

9. PHOTO OF TESTED EUT

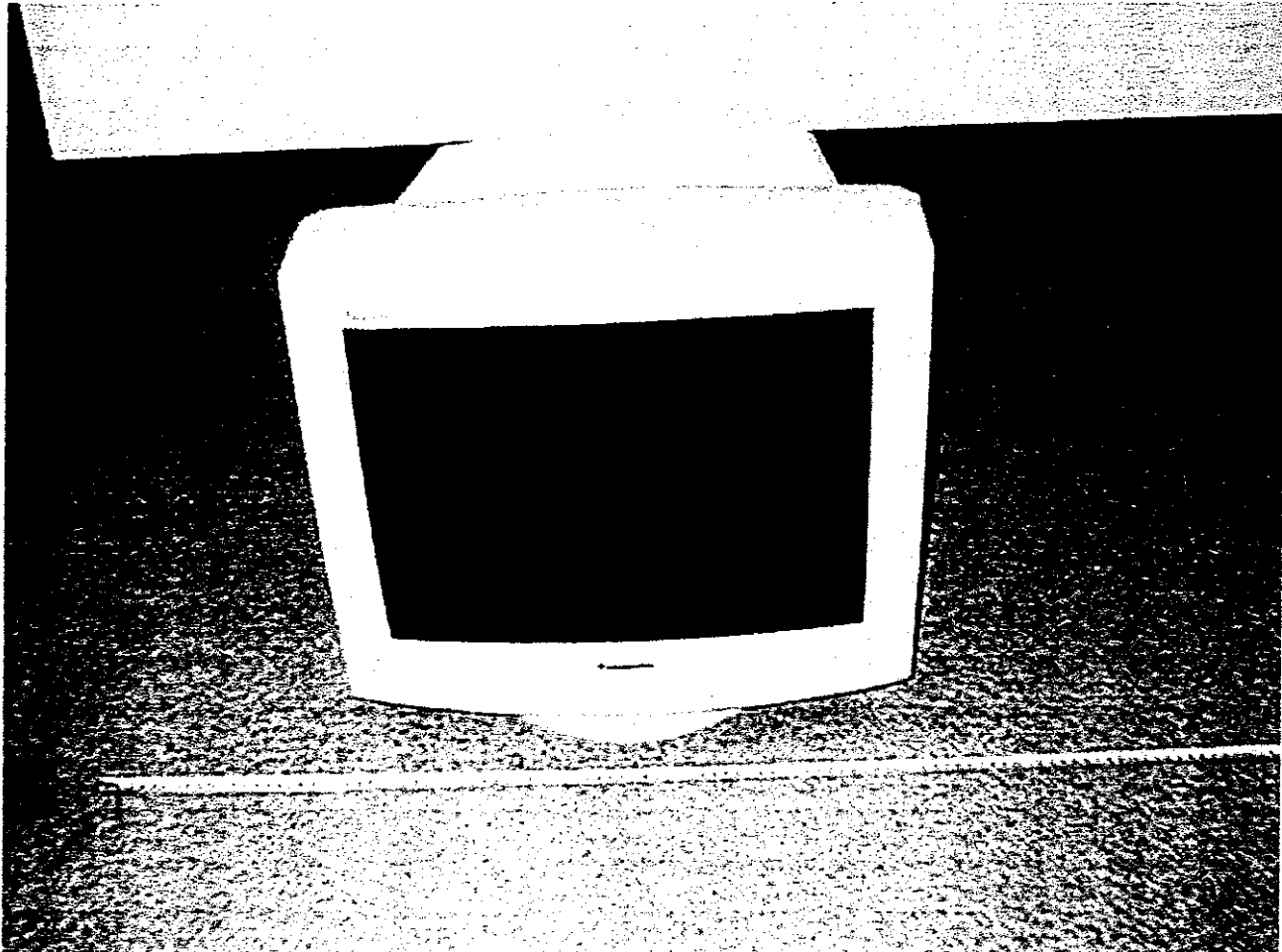
9. PHOTO OF TESTED EUT, Model TX-D1F64MA

The followings photos are attached.

Figure 9.1	Front View
Figure 9.2	Rear View
Figure 9.3	Top cover removed
Figure 9.4	Unit disassembly
Figure 9.5.1	CRT Board Surface
Figure 9.5.2	CRT Board Back Side
Figure 9.6.1	Interface Board Surface
Figure 9.6.2	Interface Board Back Side
Figure 9.7.1	Power Board Surface
Figure 9.7.2	Power Board Back Side

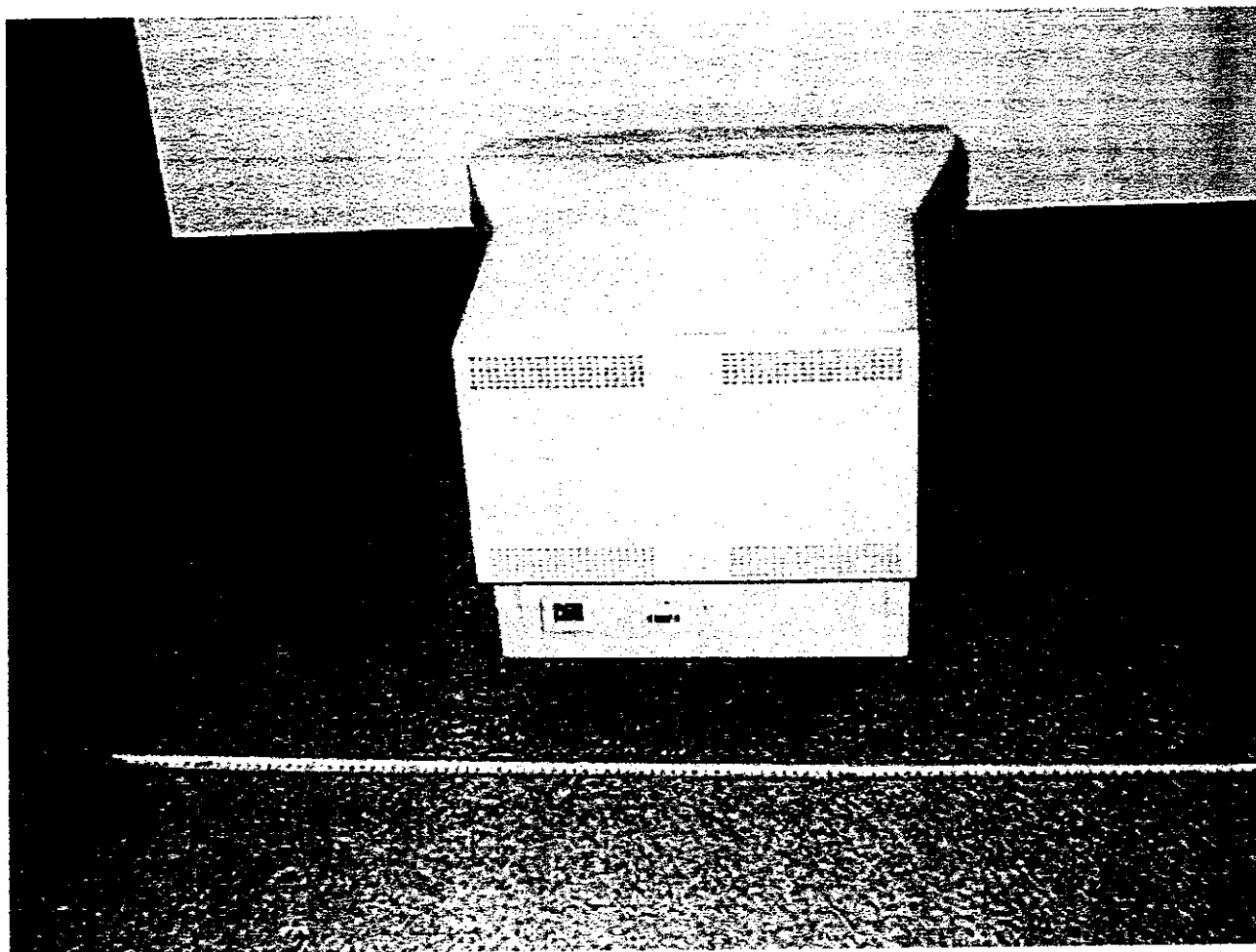
9. PHOTO OF TESTED EUT, Model TX-D1F64MA (Continued)

Figure 9.1 Front view



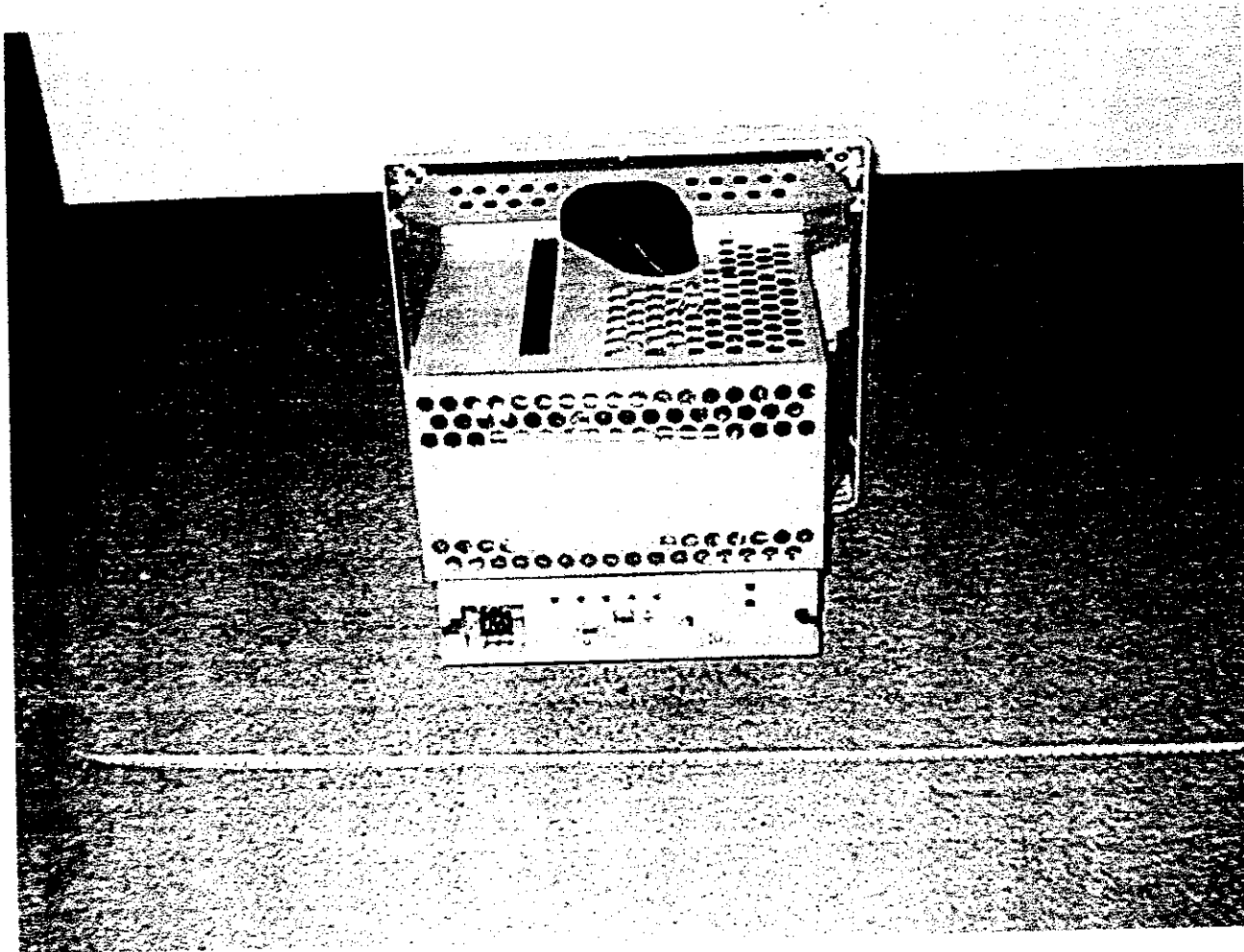
9. PHOTO OF TESTED EUT, Model TX-D1F64MA (Continued)

Figure 9.2 Rear view



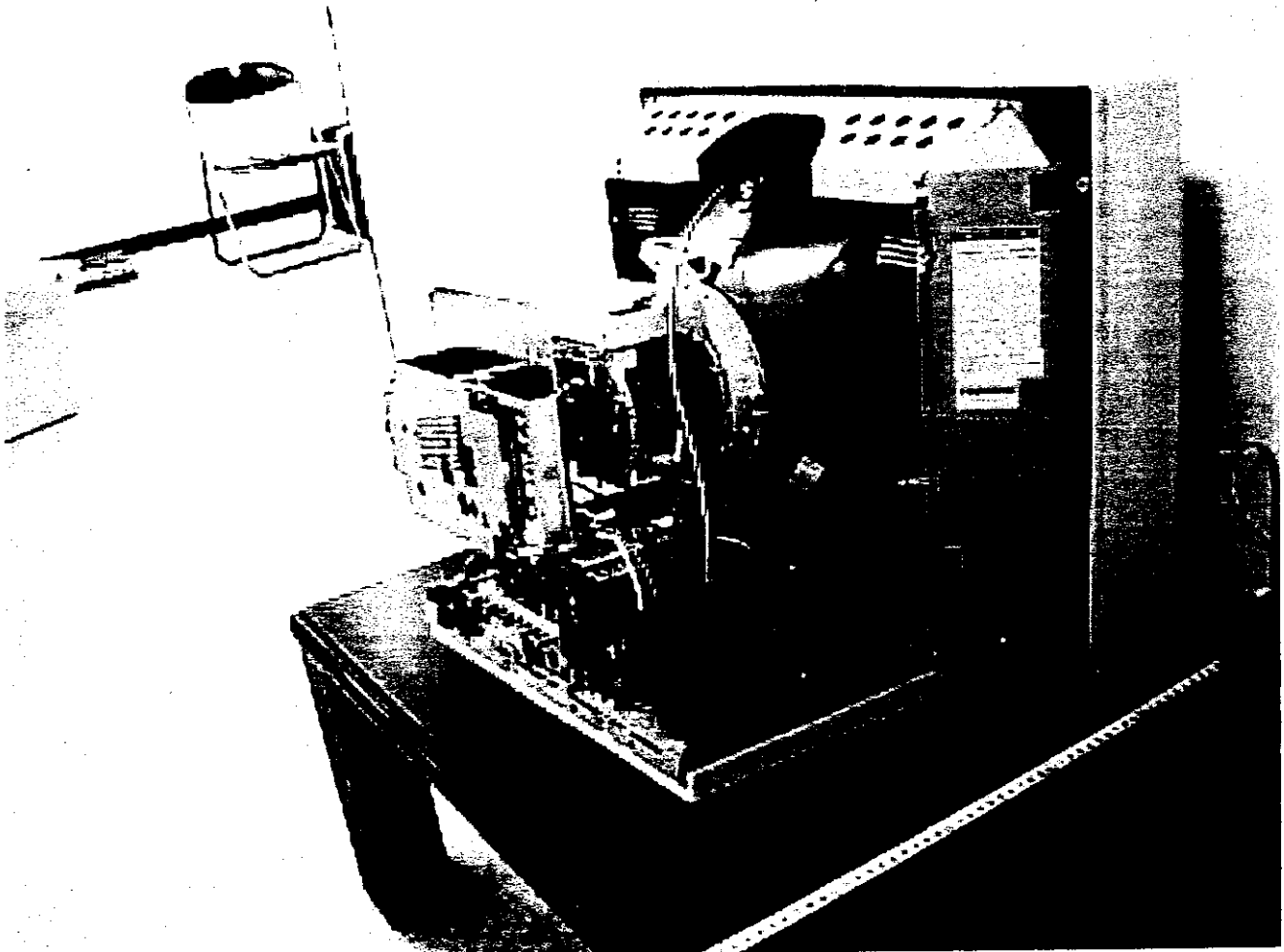
9. PHOTO OF TESTED EUT, Model TX-D1F64MA (Continued)

Figure 9.3 Top cover removed



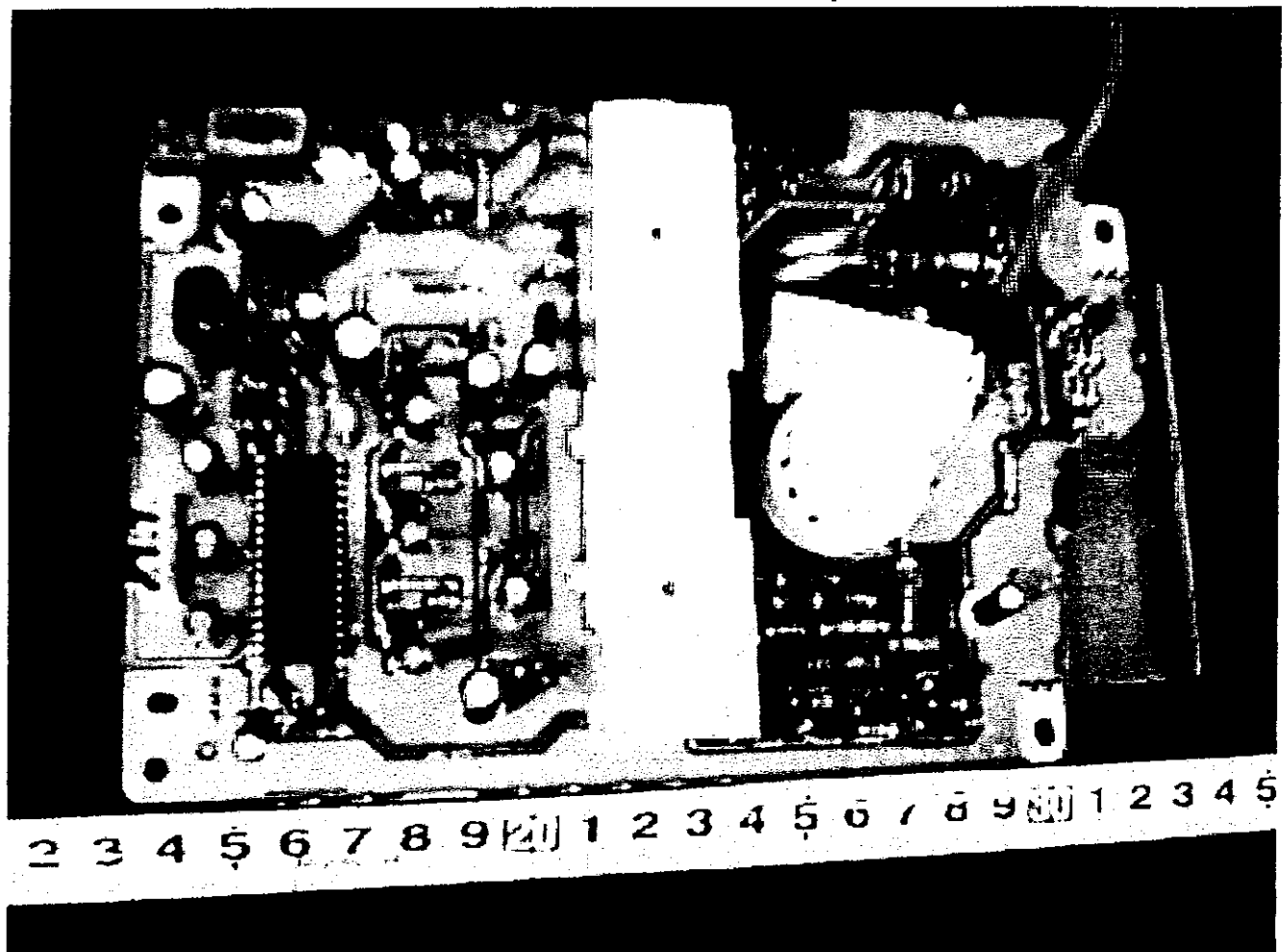
9. PHOTO OF TESTED EUT, Model TX-D1F64MA (Continued)

Figure 9.4 Unit disassembly



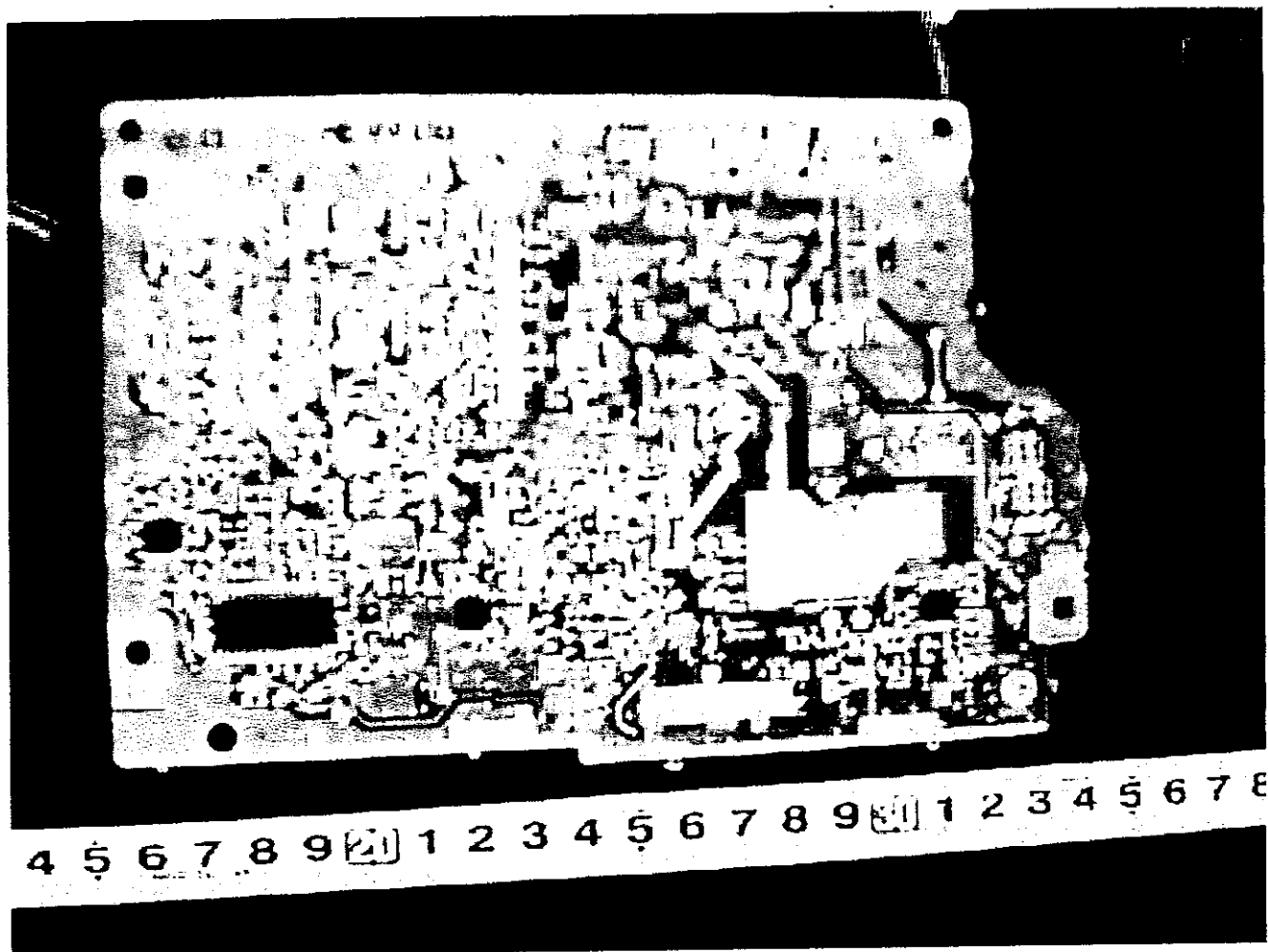
9. PHOTO OF TESTED EUT, Model TX-D1F64MA (Continued)

Figure 9.5-1 CRT Board Surface



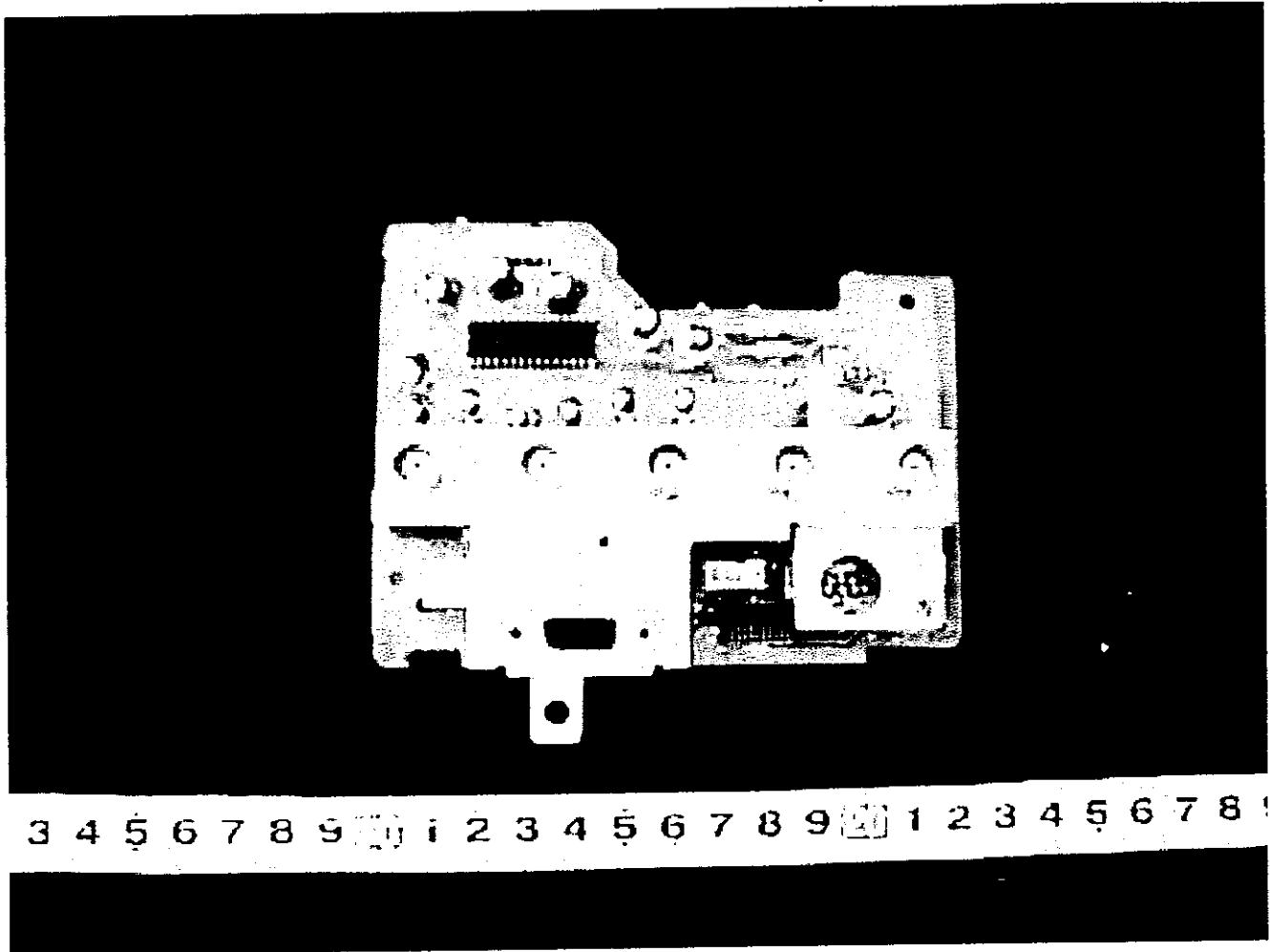
9. PHOTO OF TESTED EUT, Model TX-D1F64MA (Continued)

Figure 9.5-2 CRT Board Back Side



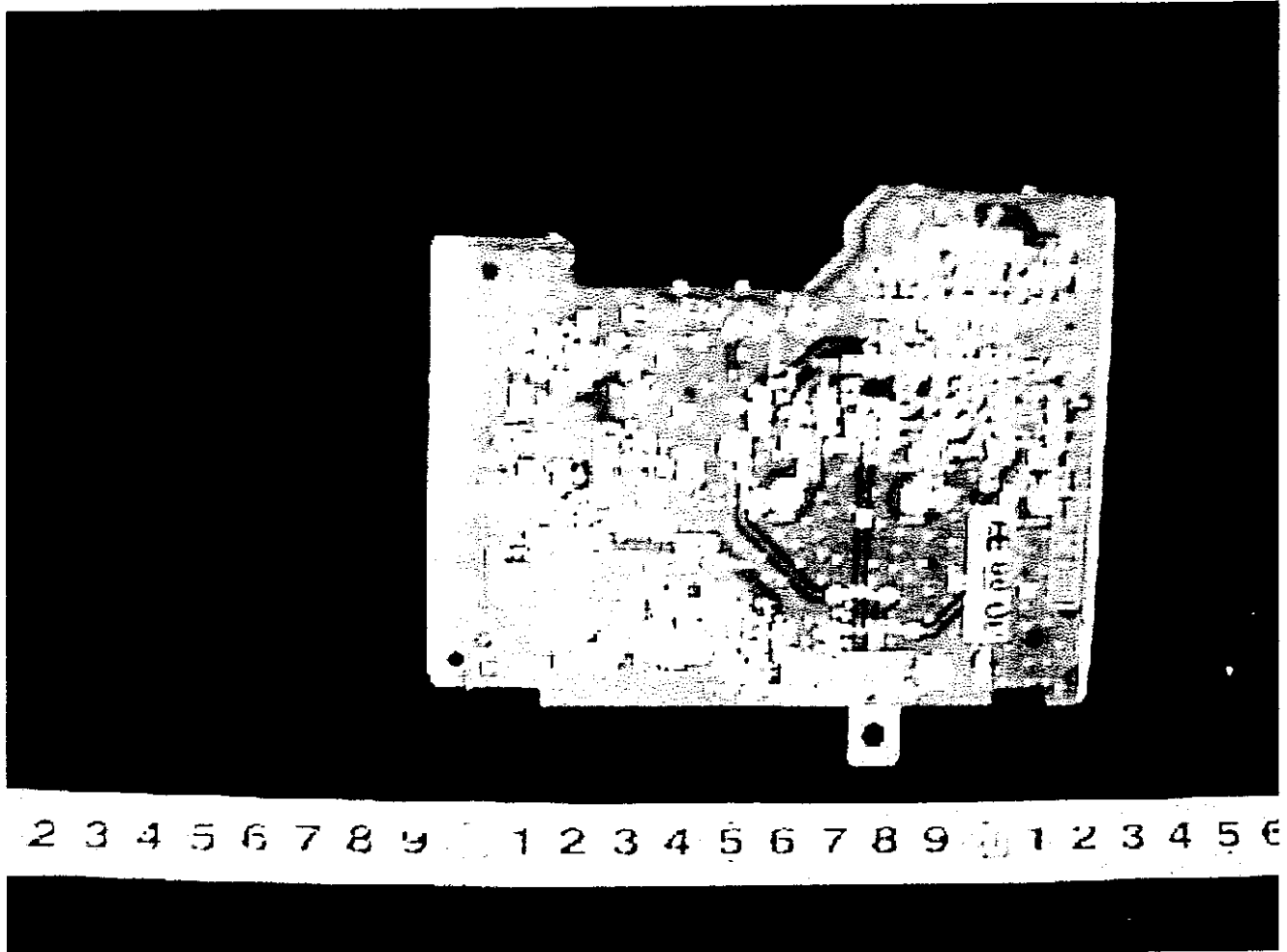
9. PHOTO OF TESTED EUT, Model TX-D1F64MA (Continued)

Figure 9.6-1 Interface Board Surface



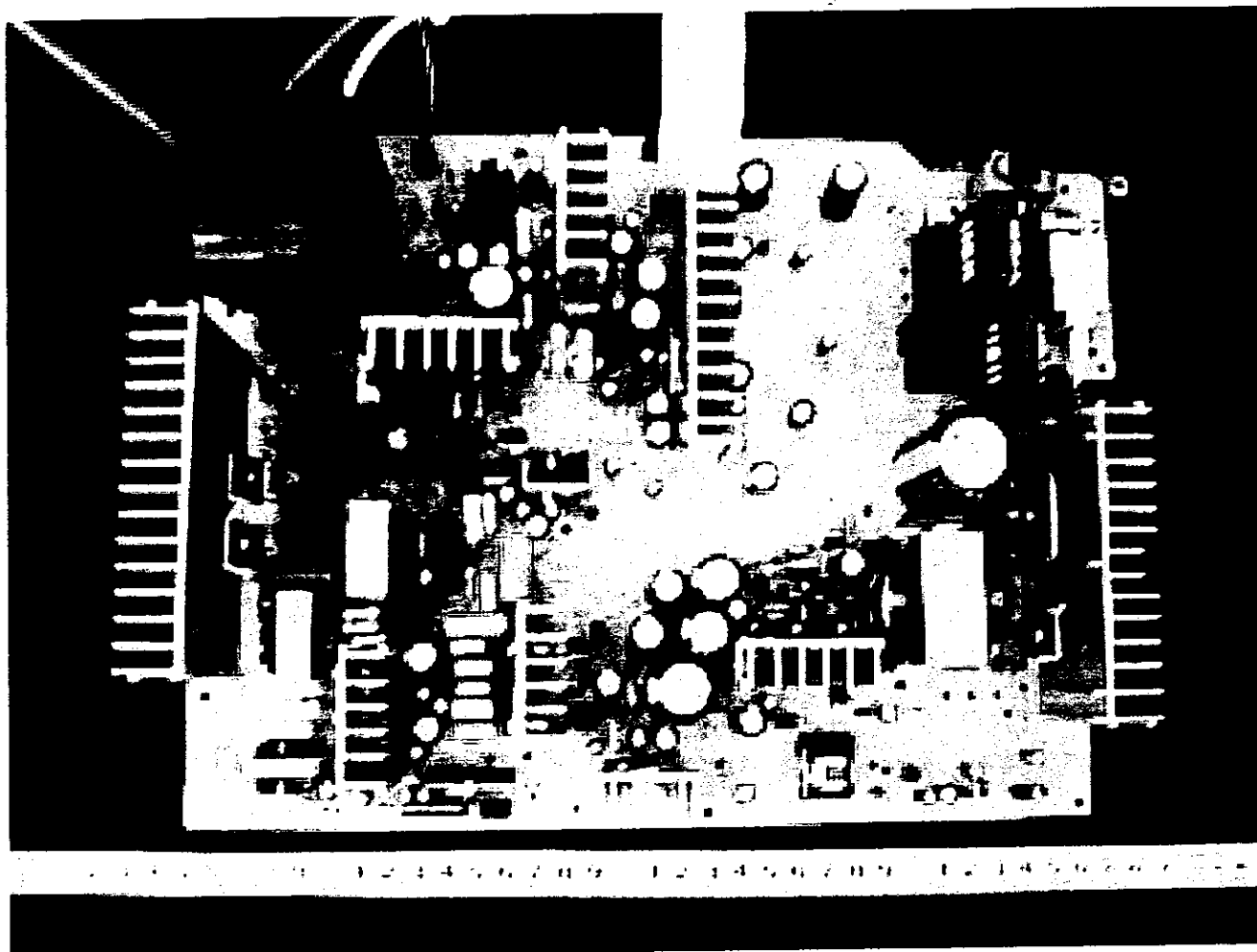
9. PHOTO OF TESTED EUT, Model TX-D1F64MA (Continued)

Figure 9.6-2 Interface Board Back Side



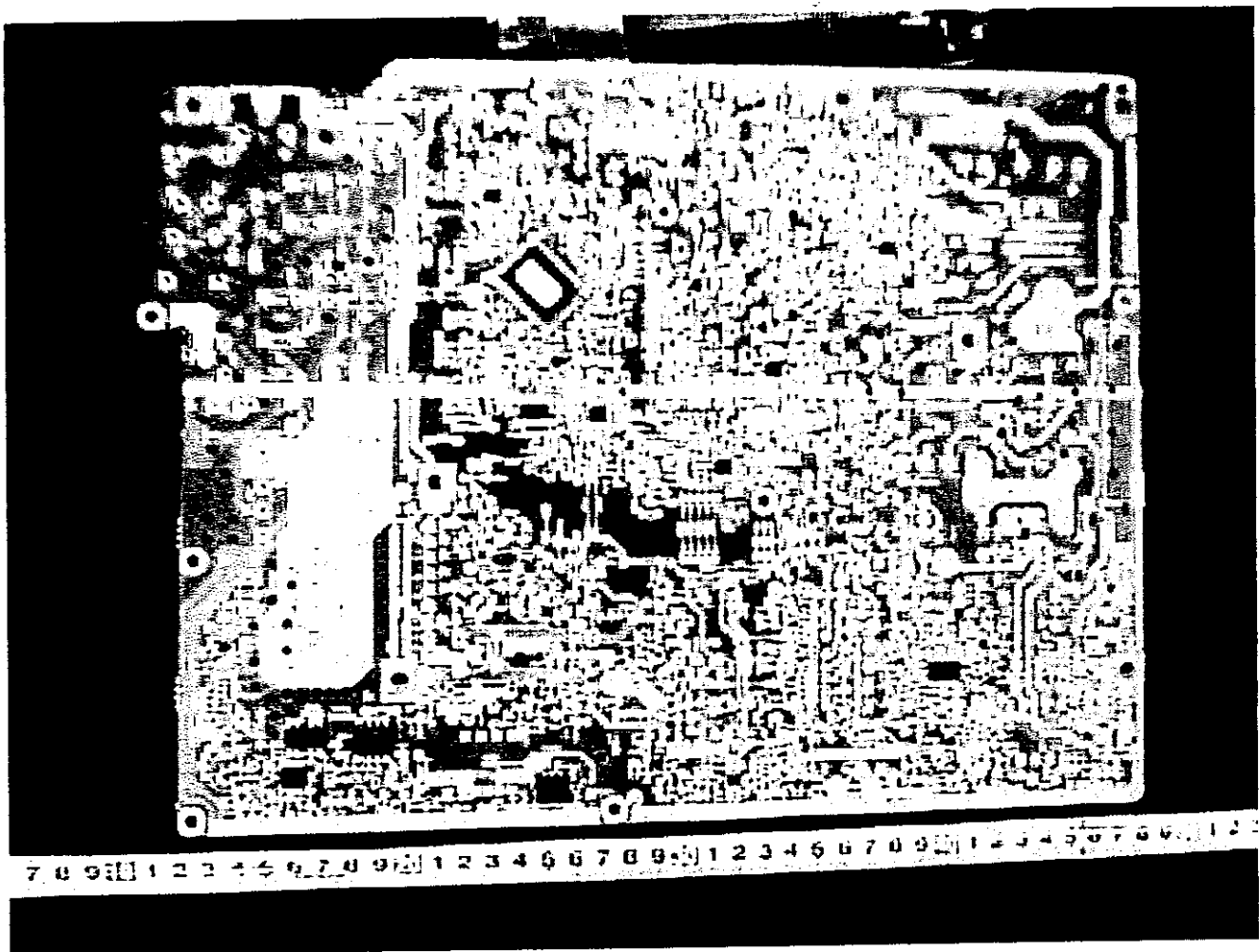
9. PHOTO OF TESTED EUT, Model TX-D1F64MA (Continued)

Figure 9.7-1 Power Board Surface



9. PHOTO OF TESTED EUT, Model TX-D1F64MA (Continued)

Figure 9.7-2 Power Board Surface



10. List of Test Equipment

Conducted Emission

Manufacturer	Instruments	Model / Type	Serial No.	Calibration Date Next Calibration
ROHDE & SCHWARZ	Spectrum Analyzer	FSB / DISPLAY	838497/005 / 838301/009	May, 1999 May, 2000
ROHDE & SCHWARZ	EMI Test Receiver	ESHS10	842121/012	May, 1999 May, 2000
ROHDE & SCHWARZ	Artificial-Mains Network	ESH2-Z5	842210/010	May, 1999 May, 2000
CHASE ELECTRONICS LIMITED	Artificial-Mains Network	MN2050B	1140	May, 1999 May, 2000

Radiated Emission

Manufacturer	Instruments	Model / Type	Serial No.	Calibration Date Next Calibration
ROHDE & SCHWARZ	Spectrum Analyzer	FSB / DISPLAY	838497/005 / 838301/009	May, 1999 May, 2000
ROHDE & SCHWARZ	EMI Test Receiver	ESVS10	842122/014	May, 1999 May, 2000
CHASE ELECTRONICS LIMITED	Pre-Amplifier	CPA9231	3045	February, 1999 February, 2000
SCHAFFNER CHASE EMC LTD.	Biconical Logperiodic Antenna	CBL6111C	2531	April, 1999 April, 2000

Attachment

- User's Manual
- Block Diagram
- Conducted Emission Test Data Sheets
- Radiated Emission Test Data Sheets

FEDERAL COMMUNICATIONS COMMISSION

Laboratory Division
7435 Oakland Mills Road
Columbia, MD. 21046

July 02, 1999

Registration Number: 90522

Cosmos Corporation
319 Akeno, Obata-cho
Watarai-gun
Mie-ken, 519-0501
Japan

Attention: Kay Hamaguchi

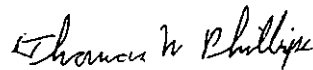
Re: Measurement facility located at Watarai-cho
10 & 30 meter site
Date of Listing: July 02, 1999

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that this filing must be updated for any changes made to the facility, and at least every three years from the date of listing the data on file must be certified as current.

If requested, the above mentioned facility has been added to our list of those who perform these measurement services for the public on a fee basis. An up-to-date list of such public test facilities is available on the Internet on the FCC Website at WWW.FCC.GOV, Electronic Filing, OET Equipment Authorization Electronic Filing.

Sincerely,



Thomas W Phillips
Electronics Engineer

COPY

***** Cosmos Corporation *****
 <<Conducted Emission>>

24 August, 1999 20:06
 640X480.dat

Standard : FCC Part 15 Class B
 Model : TX-D1F64MA
 Serial No. : FP9360006
 Operator : K. Hasegawa
 AC Power : 120 V
 Hz : 60 Hz
 Temperature : 30 deg
 Humidity : 58 %
 Remarks1 : 640 X 480
 Remarks2 : fH: 31.5 kHz, fV: 60 Hz

Final Result

--- N Phase ---

No.	Frequency	Reading	c. f	Result	Limit	Margin
	[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
1	13.660	36.1	11.4	47.5	48.0	0.5
2	15.947	36.4	11.4	47.8	48.0	0.2
3	20.520	29.2	12.7	41.9	48.0	6.1
4	11.407	25.8	10.9	36.7	48.0	11.3
5	22.585	25.7	12.5	38.2	48.0	9.8
6	24.582	23.4	13.0	36.4	48.0	11.6

--- L1 Phase ---

No.	Frequency	Reading	c. f	Result	Limit	Margin
	[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
1	13.660	35.6	11.4	47.0	48.0	1.0
2	11.403	26.9	10.9	37.8	48.0	10.3
3	15.948	36.0	11.5	47.5	48.0	0.5
4	20.522	29.0	12.9	41.9	48.0	6.1
5	22.584	25.9	12.7	38.6	48.0	9.4
6	24.581	24.5	13.2	37.7	48.0	10.3

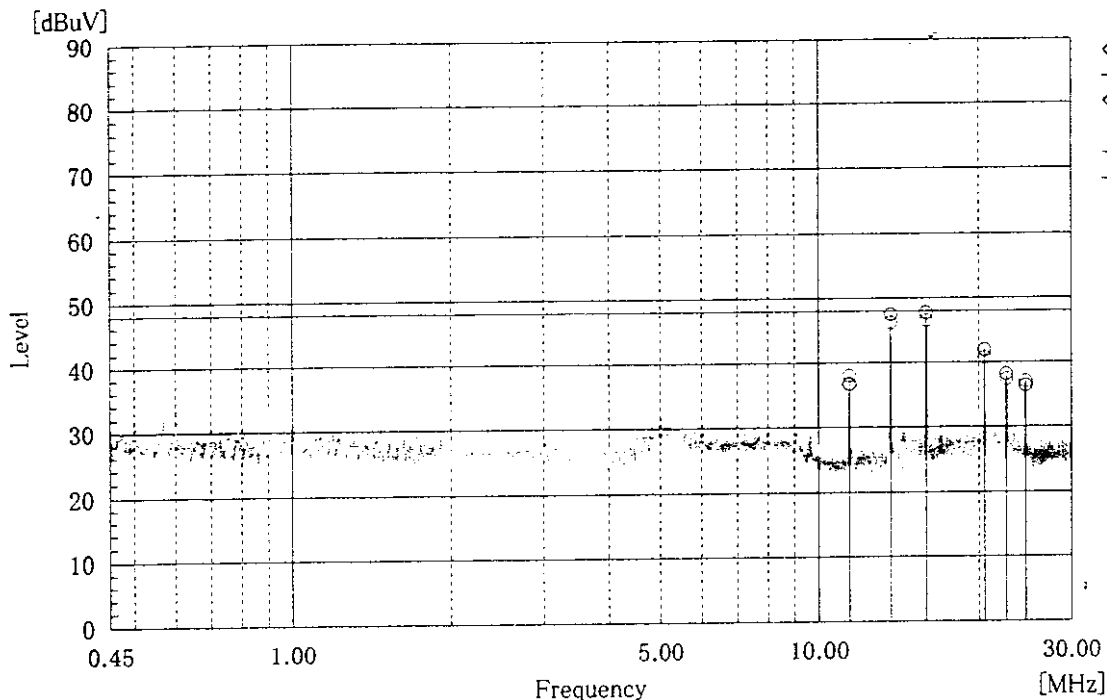
Cosmos Corporation
- EMC Site -

<<Conducted Emission>>

24 August, 1999 20:06
640X480.dat

Model : TX-D1F64MA
Serial No. : FP9360006
Operator : K.Hasegawa
AC Power : 120 V
Hz : 60 Hz

Standard : FCC Part 15 Class B
Temperature : 30 deg
Humidity : 58 %
Remarks1 : 640 X 480
Remarks2 : fH: 31.5 kHz, fV: 60 Hz



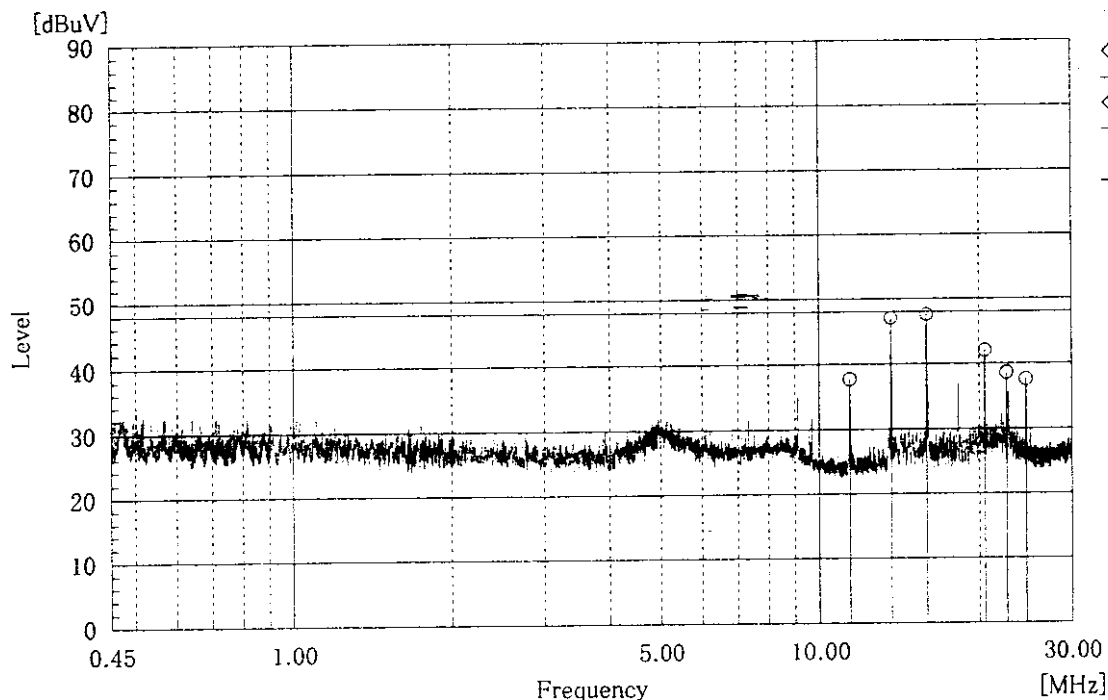
Cosmos Corporation
- EMC Site -

<<Conducted Emission>>

24 August, 1999 20:06
640X480.dat

Model : TX-D1F64MA
Serial No. : FP9360006
Operator : K.Hasegawa
AC Power : 120 V
Hz : 60 Hz

Standard : FCC Part 15 Class B
Temperature : 30 deg
Humidity : 58 %
Remarks1 : 640 X 480
Remarks2 : fH: 31.5 kHz, fV: 60 Hz



***** Cosmos Corporation *****
 <<Radiated Emission>> 1999. 8. 24
 1600X1200.dat

Standard : FCC Part.15 Class B 10m
 Model : TX-DIF 64MA
 Serial : FP9360006
 Operator : K. Hasegawa
 Power : AC 120 V, 60 Hz
 Temp, Humid : 33 deg, 46 %
 Remark1 : 1600 X 1200
 Remark2 : fH: 106.3 kHz, fV: 85 Hz
 Remark3 :
 Remark4 :

 Final Result

No.	Frequency	(P)	Reading	c.f	Result	Limit	Margin	Height	Angle
	[MHz]		QP	[dB]	QP	[dBuV/m]	QP	[cm]	[deg]
			[dBuV]			[dBuV/m]	[dB]		
1	140.014	V	37.5	-16.5	21.0	33.5	12.5	100.0	0.0
2	145.003	V	37.5	-16.7	20.8	33.5	12.7	100.0	0.0
3	149.996	V	43.5	-17.0	26.5	33.5	7.0	100.0	0.0
4	154.995	V	38.1	-17.4	20.7	33.5	12.8	100.0	0.0
5	312.519	V	42.5	-13.2	29.3	36.0	6.7	100.0	0.0
6	333.321	V	42.6	-12.4	30.2	36.0	5.8	100.0	0.0

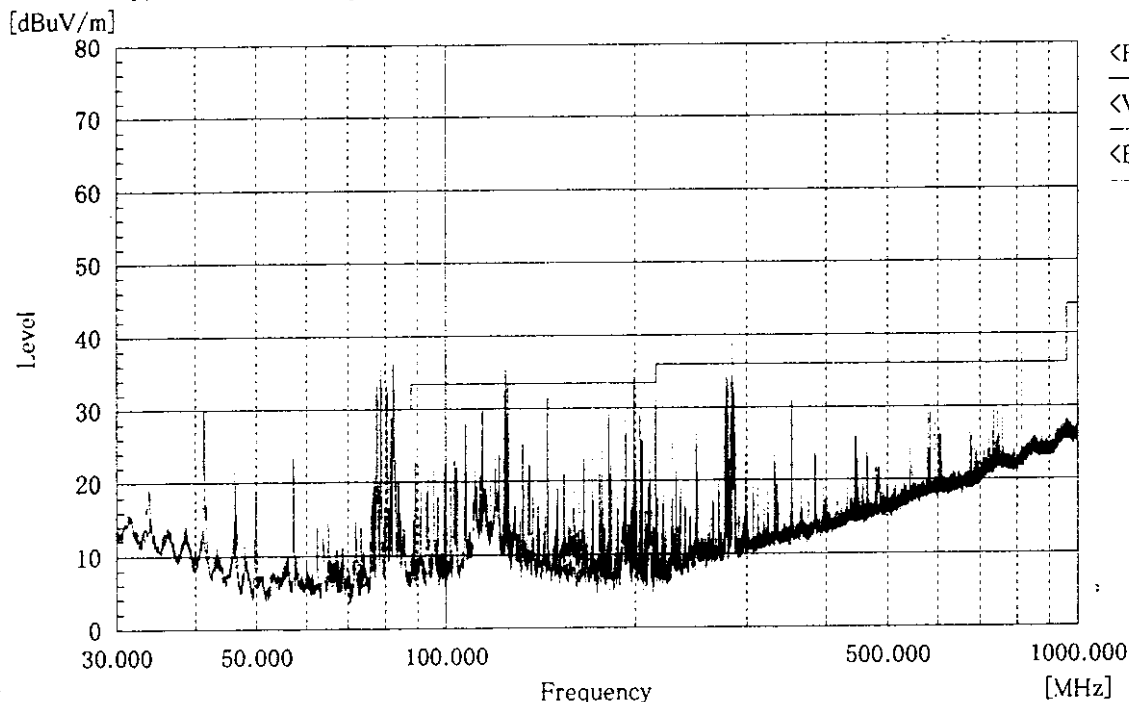
Cosmos Corporation
- EMC Site -

<<Radiated Emission>>

1999. 8. 24
1600X1200.dat

Model : TX-DIF64MA
Serial : FP9360006
Operator : K. Hasegawa
Power : AC 120 V, 60 Hz
Temp, Humid : 33 deg, 46 %

Standard : FCC Part.15 Class B 10m
Remark1 : 1600 X 1200
Remark2 : fH: 106.3 kHz, fV: 85 Hz
Remark3 :
Remark4 :



<FCCPart15ClassB10m>
Limit
<VCDTS21542-1 1600X1200>
Horizontal
<BackNoise>
Horizontal

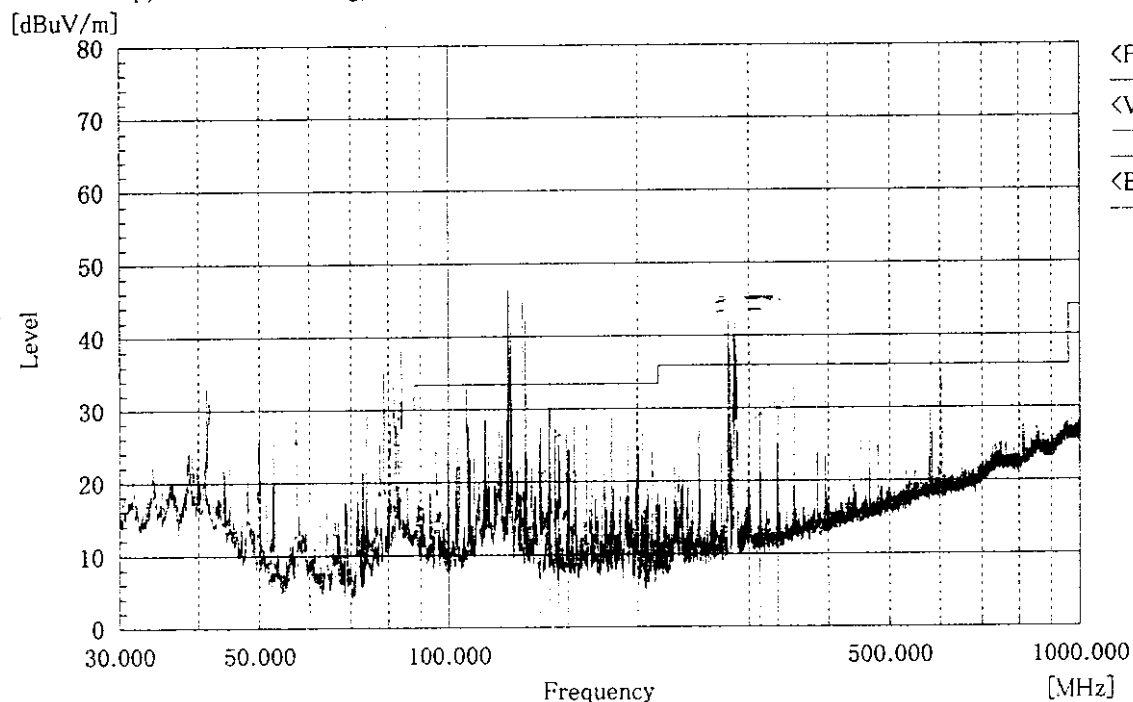
Cosmos Corporation
- EMC Site -

<<Radiated Emission>>

1999. 8. 24
1600X1200.dat

Model : TX-DIF64MA
Serial : FP9360006
Operator : K. Hasegawa
Power : AC 120 V, 60 Hz
Temp, Humid : 33 deg, 46 %

Standard : FCC Part.15 Class B 10m
Remark1 : 1600 X 1200
Remark2 : fH: 106.3 kHz, fV: 85 Hz
Remark3 :
Remark4 :



<FCCPart15ClassB10m>
Limit
<VCDTS21542-1 1600X1200>
Vertical
妨害レベル(V,QP)
<BackNoise>
Vertical

MEASUREMENT / TECHNICAL REPORT

COMPANY NAME: Matsushita Electric Industrial Co., Ltd.
MODEL: TX-D1F64MB / TX-D1F64NMB
FCCID: ACJ93312140
DATE OF REPORT: September 6, 1999

This report concerns [check one]: ☐ Original Grant ☒ Class 2 change

Equipment Type : 21" CRT Display Monitor ☐ Class A Digital Device
☒ Class B Digital Device

Differed grand requested par CFR0.475(d)(1)(ii)? ☐ Yes ☒ No

If Yes, differ until:

date

Applicant agrees to notify the Commission by

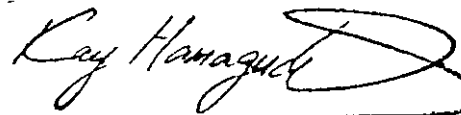
date

of the intended date of announcement of the product so that the grant can be issued
on the date.

Transition Rules Request per 15.37? ☐ Yes ☒ No

If No, Assumed Part 15.Subpart B for uninternational radiators – the new 47 CFR
[10-1-90]Edition] provision.

Report prepared by :



Name & Title: K. Hamaguchi / President

Company Name: Cosmos Corporation

Address: 319 Akeno, Obata-cho, Watarai-gun,
Mie-ken 519-0501 JAPAN

Telephone number: +81-596-37-0190

Fax number: +81-596-37-3609

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1.2 Related Submittal(s) / Grant(s)	4
1.3 Tested System Details	5
1.4 Configuration of Tested System	6 to 7
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Attachment

- Users Manual
- Block Diagram(s)
- Conducted and Radiated Emission Test Data Sheets

1. GENERAL INFORMATION

1.1 Product Description

Trade Name	Model Name	Product Name	Description
A Panasonic	TX-D1F64MB / TX-D1F64NMB	FP9360021	Color Monitor
Type of Processor : IC100		Clock Speed : 4MHz	
Number of Storage : None		Interface Ports : D-Sub	
Power Supply AC 120 V, 60 Hz, 2.7 A			
Similar Model(to be covered) : None		Description for Difference(s) :None	
<u>Accessories</u> (to be sold with the model tested)			
Model Name : None		Description : None	

Note: See attached user manual for further description.

1.2 Related Submittal(s) / grant(s)

- ☐ Original application
- ☒ Modification and class 2 permissive change,
If this is a filling for class 2 permissive change.
List here the FCC's file on the original grant.
Original FCC ID: ACJ93312140
FCC's file: _____

1. GENERAL INFORMATION (Continued)

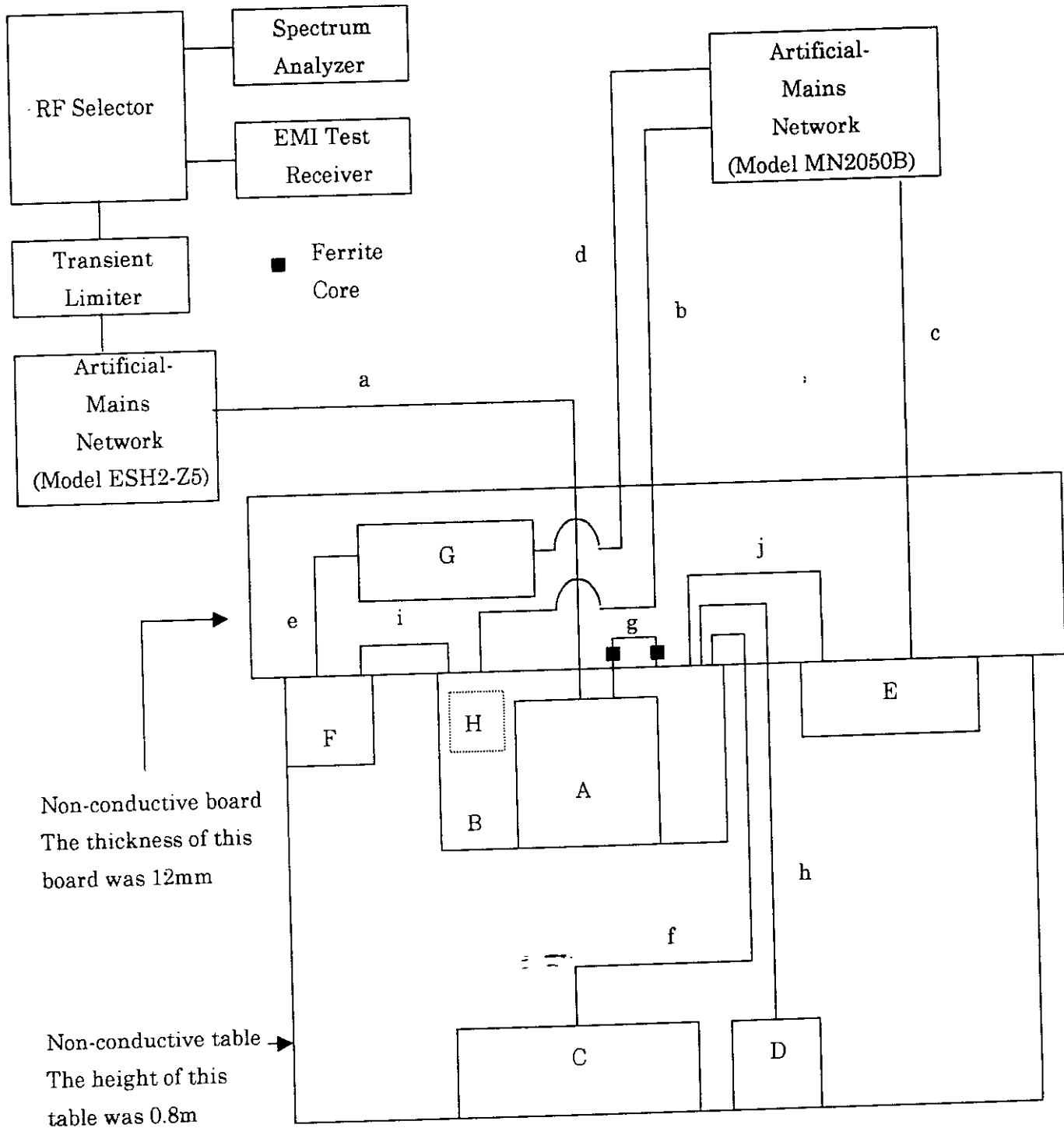
1.3 Tested System Details

Host Digital Device(Certified or Verified)			
Trade Name		Model Name	FCC ID Number
B	Hewlett Packard	D4594B	Doc
Personal Computer			
Peripheral Device(Certified or Verified)			
Trade Name		Model Name	FCC ID Number
C	Hewlett Packard	FKB8724-501	C9SKB8720
D	Hewlett Packard	M-S34	DZL211029
E	Hewlett Packard	C4565A	B94C4555X
F	SEIKO EPSON Corp.	C202A	BKM552C202A
G	Kikusui Electronics Corp.	PAC70-2.5	N/A
H	Matrox Graphics	79075010153 (MGA-MIL/2/DIP)	ID7057600
Regulated DC Power Supply			
Video Card			
Power Supply Cord ☐ 2P ☒ 3P ☐ Shielded ☒ Unshielded ☐ Equipment with filter			
Connection Cables			
	Type of Cable	Construction	Length
a	AC Power Cord	U	1.7 m
b	AC Power Cord	U	2.2 m
c	AC Power Cord	U	1.8 m
d	AC Power Cord	U	1.9 m
e	DC Power Cord	U	1.0 m
f	Keyboard Cable	S	1.5 m
g	Monitor Cable (D-Sub - D-Sub)	S,F	1.8 m
h	Mouse Cable	S	1.8 m
i	Modem Cable	S	1.0 m
j	Printer Cable	S	3.0 m
Notes: 1: S: Shielded P: Plastic Hoods F: Ferrite beans on Cable U: Unshielded M: Metallic Hoods 2: For location of cables used. Refer to photograph in item 5.			

1. GENERAL INFORMATION (Continued)

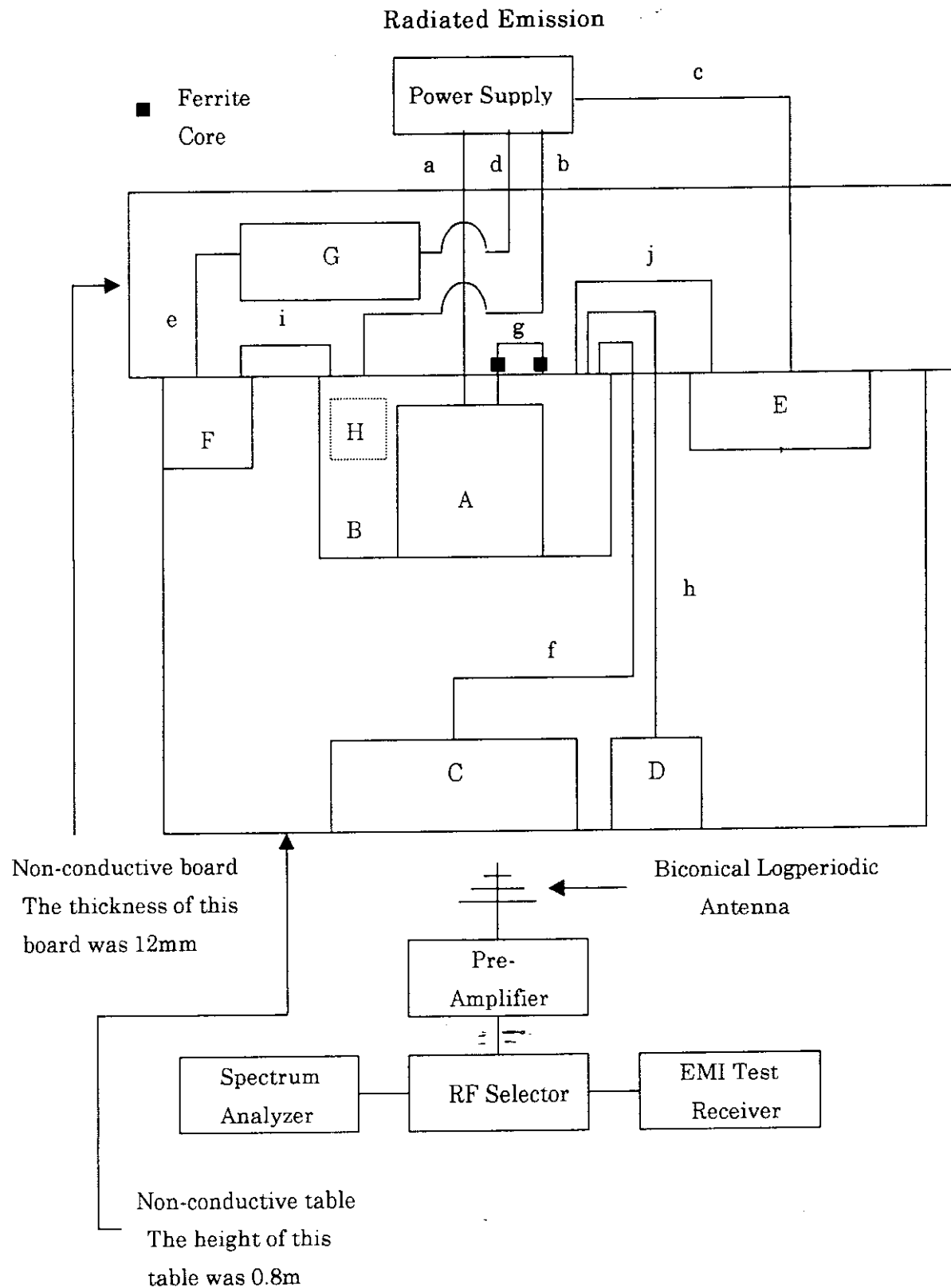
1.4 Configuration of Tested System

Conducted Emission



1. GENERAL INFORMATION (Continued)

1.4 Configuration of Tested System (Continued)



1. GENERAL INFORMATION (Continued)

1.5 Test Methodology

Measurement Procedure:	☐ MP-4(1987)	☒ C63..4(1992)
Radiation Measurement Distance:	☐ 3 meters	☒ 10 meters

1.6 Test Facility

Site for Radiated Emissions.

Cosmos EMC Lab.

543 Shimesasu, Watarai-cho, Watarai-gun, Mie-ken, 516-2119 Japan

Site for Conducted Emissions

Cosmos EMC Lab.

543 Shimesasu, Watarai-cho, Watarai-gun, Mie-ken, 516-2119 Japan

FCC Filing for the sites

The above sites have been fully reported to FCC dated May 23, 1996 and accepted in a letter dated July 10, 1996 (31040/SIT 1300F2). The listing letter has been updated on July 2, 1999. (Registration Number: 90522)

2. PRODUCT LABELING

Figure 2.1 FCC ID Label

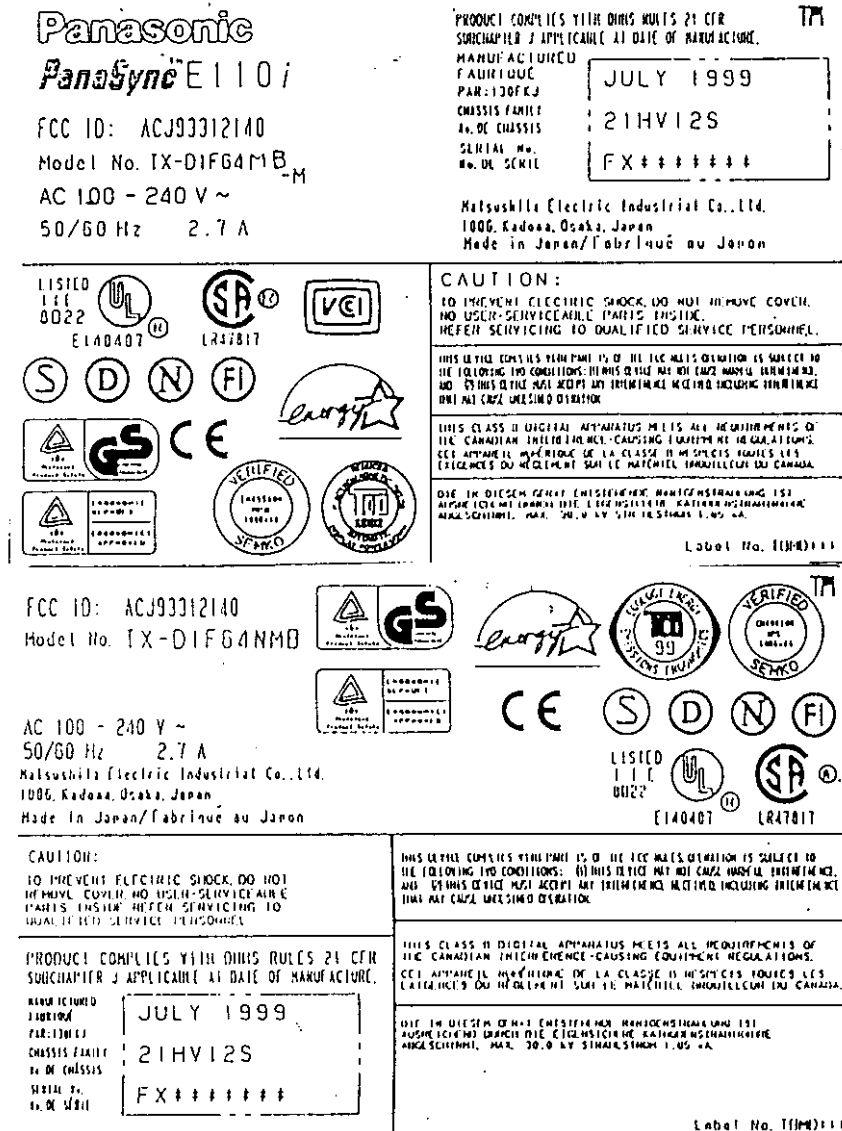
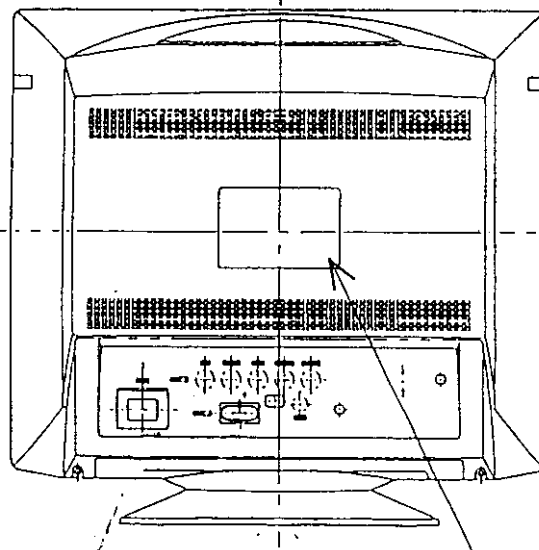


Figure 2.2 Location of label on EUT

FCC ID LABEL: On the rear enclosure.
Refer to figure 9.2 (photo)



3. SYSTEM CONFIGURATION

3.1 Justification

Since Matsushita Electric Industrial Co., Ltd. has not introduced any class B Computer in the US market.

We used a class B Computer manufactured by Hewlett Packard that was available at our side. The system was tested in displaying with H.

	<u>Specification</u>	<u>Worst case</u>
User accessible processor speeds:	N / A	N / A
Band rates:	N / A	N / A
Interface Ports	D-Sub	D-Sub
Video Modes	640 × 480	1600 × 1200
☐ Default modes	1600 × 1200	
☒ Resolution modes		
Power Connection	Wall Outlet Outlet of Personal Computer	Wall Outlet
I/O card Inserted	None	None
Other	D-Sub = D-Sub Cable 1.5 m D-Sub = D-Sub Cable 1.8 m	D-Sub = D-Sub Cable 1.8 m

3.2 EUT Exercise Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

The software contained on a Hard Disk, and is starting by clicking track pointer to the fielder of this program. Once loaded, the program sequentially exercise each system components in turn. The sequence used is:

- (1) An H is displayed on the monitor.

3. SYSTEM CONFIGURATION

3.3 Special accessories needed connection EUT to achieve compliance.

None

In an instruction manual of set there is description which tells users to use the interface Cable to satisfy FCC standards.

3.4 Equipment Modifications

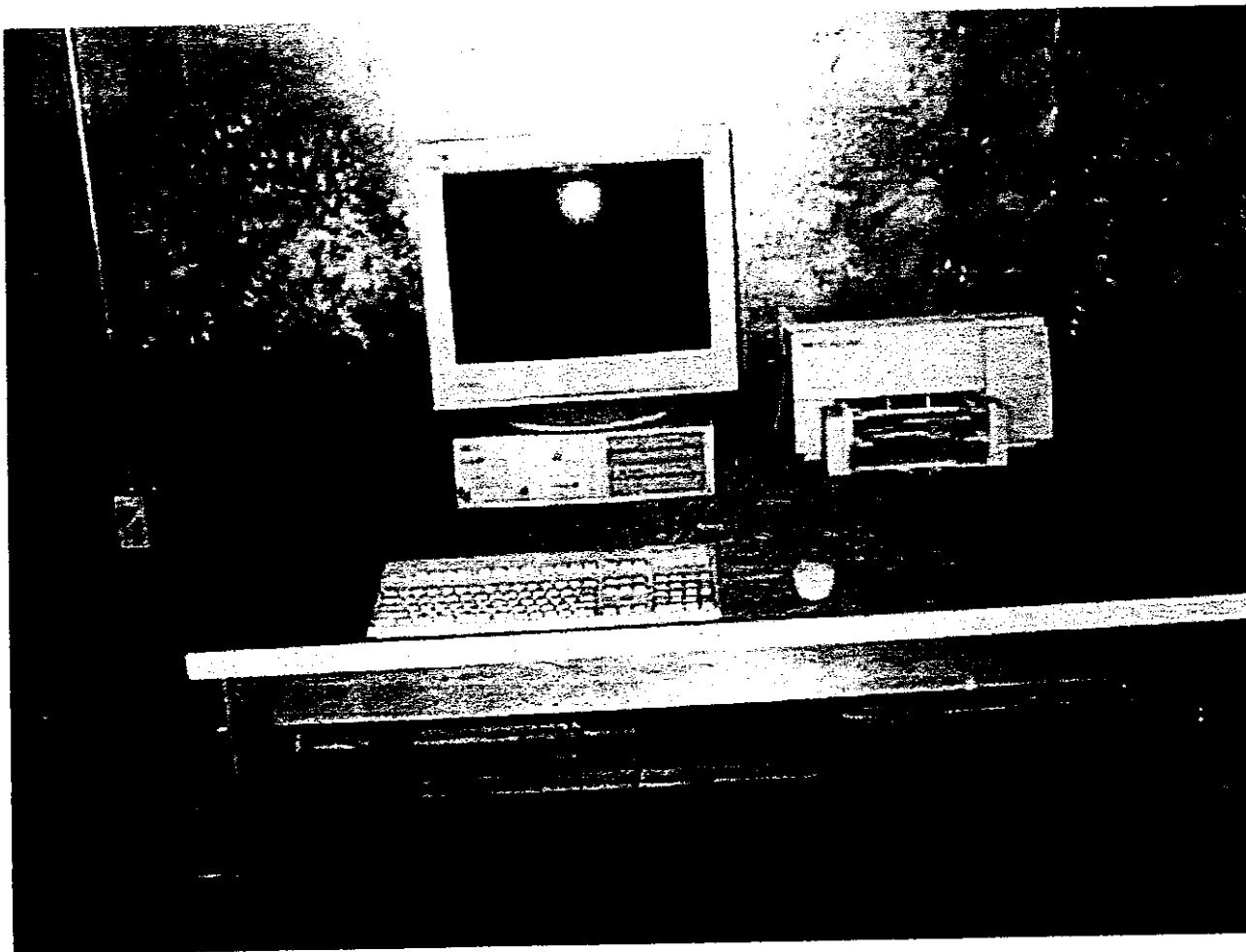
N / A

4. Block Diagram(s)

Refer to Attachment

5. Conducted and Radiated measurement photos
(Model TX-D1F64MB / TX-D1F64NMB)

Arrangement of EUT for Measurement of Conducted Emissions.(Front View)



5. Conducted and Radiated measurement photos (Continued)
(Model TX-D1F64MB / TX-D1F64NMB)

Arrangement of EUT for Measurement of Conducted Emissions.(Side View)



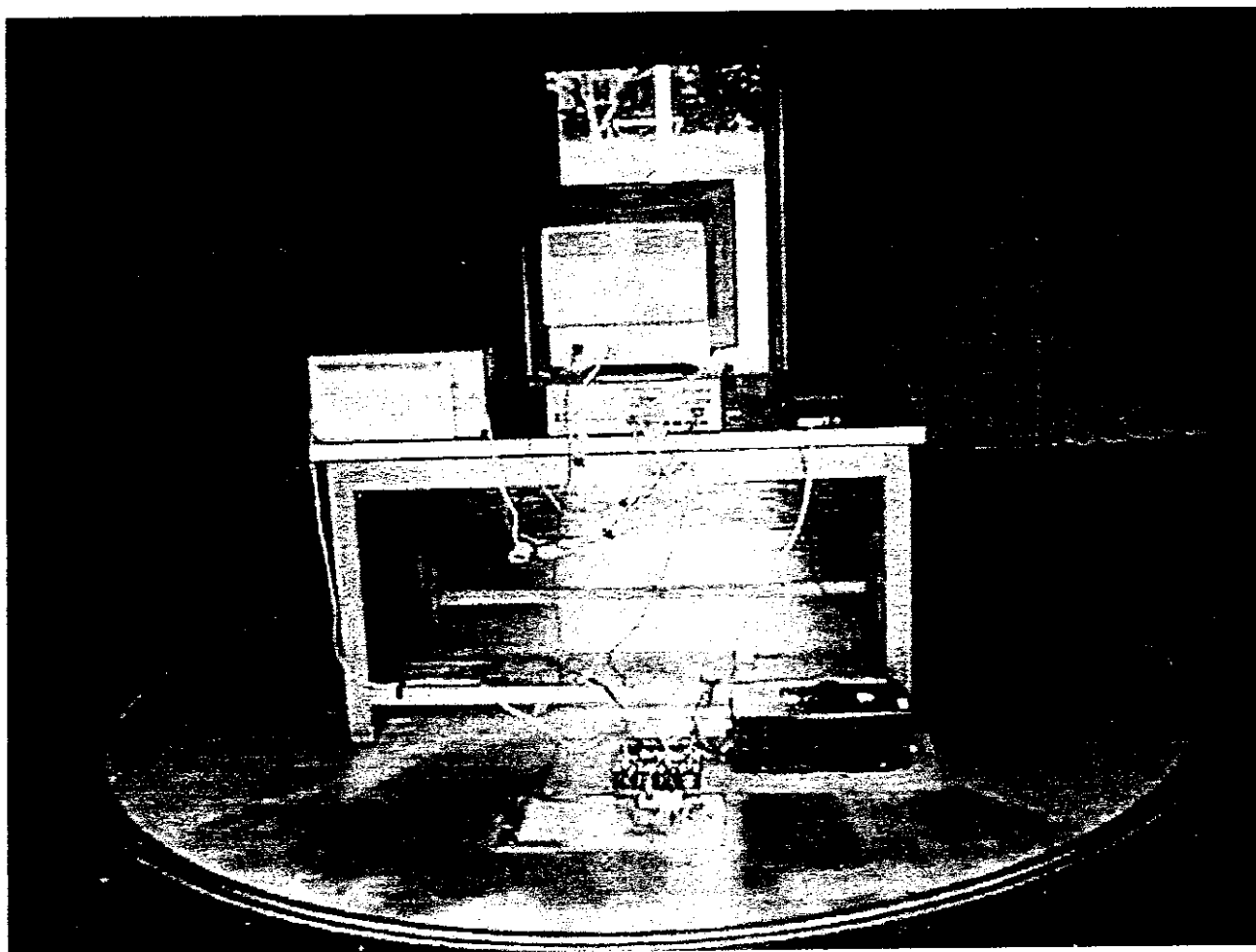
5. Conducted and Radiated measurement photos (Continued)
(Model TX-D1F64MB / TX-D1F64NMB)

Arrangement of EUT for Measurement of Radiated Emissions.(Front View)



5. Conducted and Radiated measurement photos (Continued)
(Model TX-D1F64MB / TX-D1F64NMB)

Arrangement of EUT for Measurement of Radiated Emissions.(Rear View)



6. CONDUCTED EMISSION DATA

6.1 The initial step in collection conducted data is a spectrum analyzer peak scan of the measurement range, Significant peaks are then marked as shown on the following data page and these signals are then quasi-peaked.

The measurement was conducted for the resolution 640×480 and 1600×1200 .
The Monitor Cable was conducted in D-Sub = D-Sub 1.5m length and D-Sub = D-Sub 1.8m length.

Following was the worst condition:

Continuous Operating (Resolution: 1600×1200 "H" Pattern)
Dot Clock Frequency : 229.5 MHz
Vertical Frequency : 85 Hz
Horizontal Frequency : 106.3 kHz
Monitor Cable : D-Sub = D-Sub 1.8m length
AC Power Supply : Outlet on the wall

	Frequency (MHz)	Measured * (dB μ V)	Limit (dB μ V)
Neutral Line	0.565	30.6	48.0
Neutral Line	5.209	35.3	48.0
Neutral Line	0.655	29.2	48.0
Neutral Line	7.039	32.7	48.0
Neutral Line	2.065	31.4	48.0
Neutral Line	1.022	12.8	48.0
L Line	0.565	30.9	48.0
L Line	0.656	31.3	48.0
L Line	5.114	34.9	48.0
L Line	0.801	29.5	48.0
L Line	0.941	29.2	48.0
L Line	1.313	29.7	48.0

Uncertainty of measurement result: ± 2.26 dB

Test Personal

Tester Signature: K. Hasegawa

Date: August 24, 1999

Typed / Printed : K. Hasegawa : Cosmos EMC TEST DEPT.

7. RADIATED EMISSION DATA

- 7.1 The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, the limit, plus margin. Explanation of the Correction Factor is given in paragraph.

The measurement was conducted for the resolution 640×480 and 1600×1200 .
The Monitor Cable was conducted in D-Sub = D-Sub 1.5m length and D-Sub = D-Sub 1.8m length.

Following was the worst condition:

Continuous Operating (Resolution: 1600×1200 "H" Pattern)
Dot Clock Frequency : 229.5 MHz
Vertical Frequency : 85 Hz
Horizontal Frequency : 106.3 kHz
Monitor Cable : D-Sub = D-Sub 1.8m length
AC Power Supply : Outlet on the wall

Note: Attached reading data are measured with 10m and below results are converted to 3m method from 10m results.

Real test data of 10m are attached as ATTACHMENT.

Frequency (MHz)	Antenna Polarity (H / V)	Meter Reading At 3m (dB μ V)	Correction Factor (dB/m)	Field Strength at 3m (dB μ V/m)	Limit (dB μ V/m)	Margin DB
140.001	V	47.6	-16.5	31.1	43.5	12.4
145.007	V	49.5	-16.7	32.8	43.5	10.7
149.999	V	55.0	-17.0	38.0	43.5	5.5
155.001	V	48.2	-17.4	30.8	43.5	12.7
294.772	V	50.0	-13.9	36.1	46.0	9.9
331.656	V	50.1	-12.5	37.6	46.0	8.4

Note: H / V: Horizontal / Vertical

*: Quasi-peak mode

Uncertainty of measurement result: ± 3.234 dB

The worst data out of H or V are shown for identical frequencies.

Test Personal

Tester Signature:

K. Hasegawa

Date:

August 24, 1999

Typed / printed Name: K. Hasegawa : Cosmos EMC TEST DEPT

8. METHOD OF CALCULATION

8.1 Radiated Emissions

Fielded Strength (dB [μ V/m]) = S.A. reading (dB [μ V/m]) + C.F.

Notes

(a) S.A. Reading: Reading of Spectrum Analyzer

- (b) C.F. ☐ Antenna Factor (including balun loss) + Cable loss.
☒ Antenna Factor (including balun loss) + Cable loss + $20\text{Log}(10\text{m} / 3\text{m})$
☐ Antenna Factor (including balun loss) + Cable loss + Amplifier gain
☐ Antenna Factor (including balun loss) + Cable loss + Amplifier gain
+ $20\text{Log}(10\text{m} / 3\text{m})$

8.2 Conducted Emissions

RF Voltage (dB [μ V/m]) = S.A. Reading (dB [μ V/m]) + C.F.(dB)

Notes

(a) S.A. Reading: Reading of Spectrum Analyzer

(b) C.F. : Correction Factor of LISN + Cable Loss

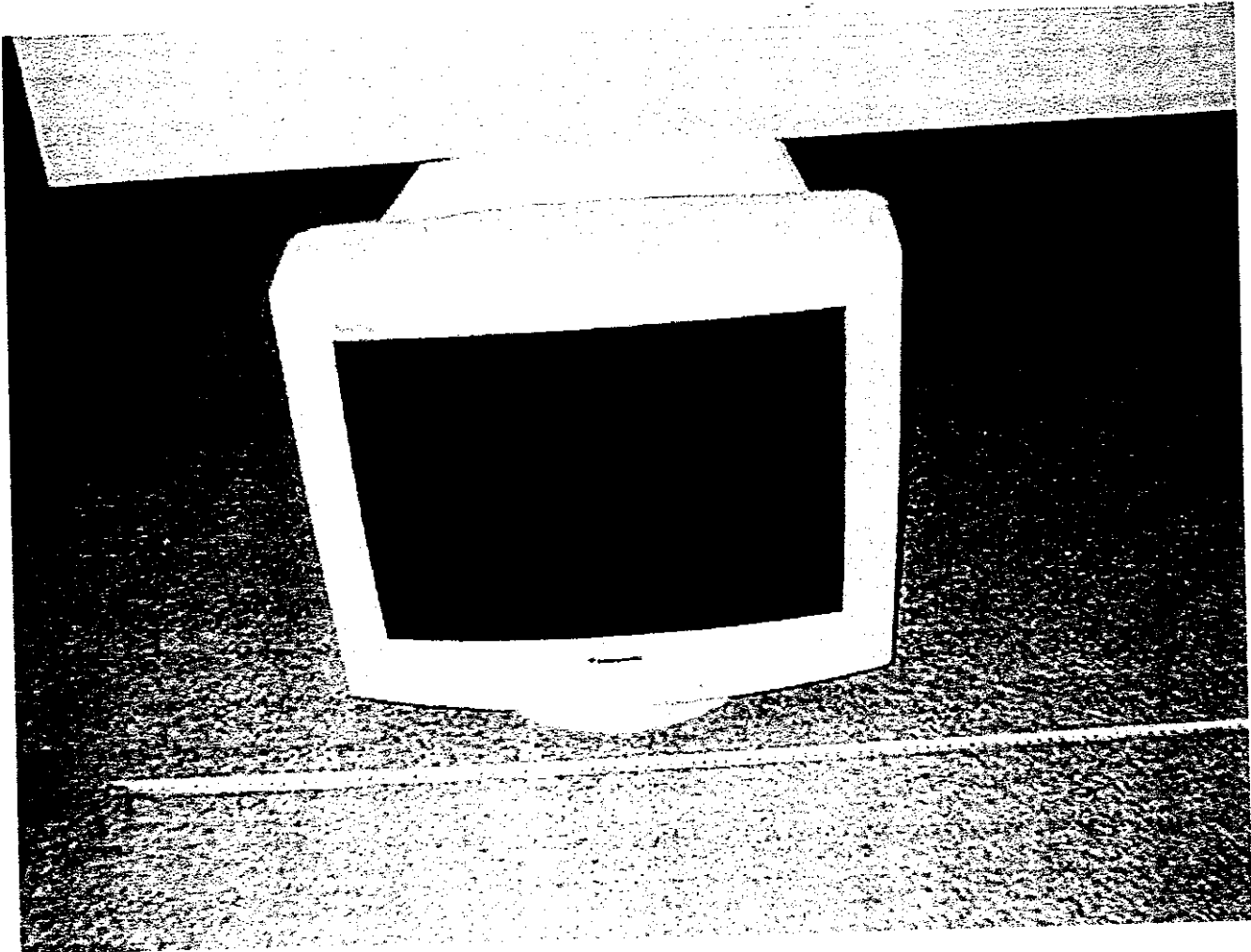
9. PHOTO OF TESTED EUT, Model TX-D1F64MB / TX-D1F64NMB

The followings photos are attached.

Figure 9.1	Front View
Figure 9.2	Rear View
Figure 9.3	Top cover removed
Figure 9.4	Unit disassembly
Figure 9.5-1	CRT Board Surface
Figure 9.5-2	CRT Board Back Side
Figure 9.6-1	Interface Board Surface
Figure 9.6-2	Interface Board Back Side
Figure 9.7-1	Power Board Surface
Figure 9.7-2	Power Board Back Side

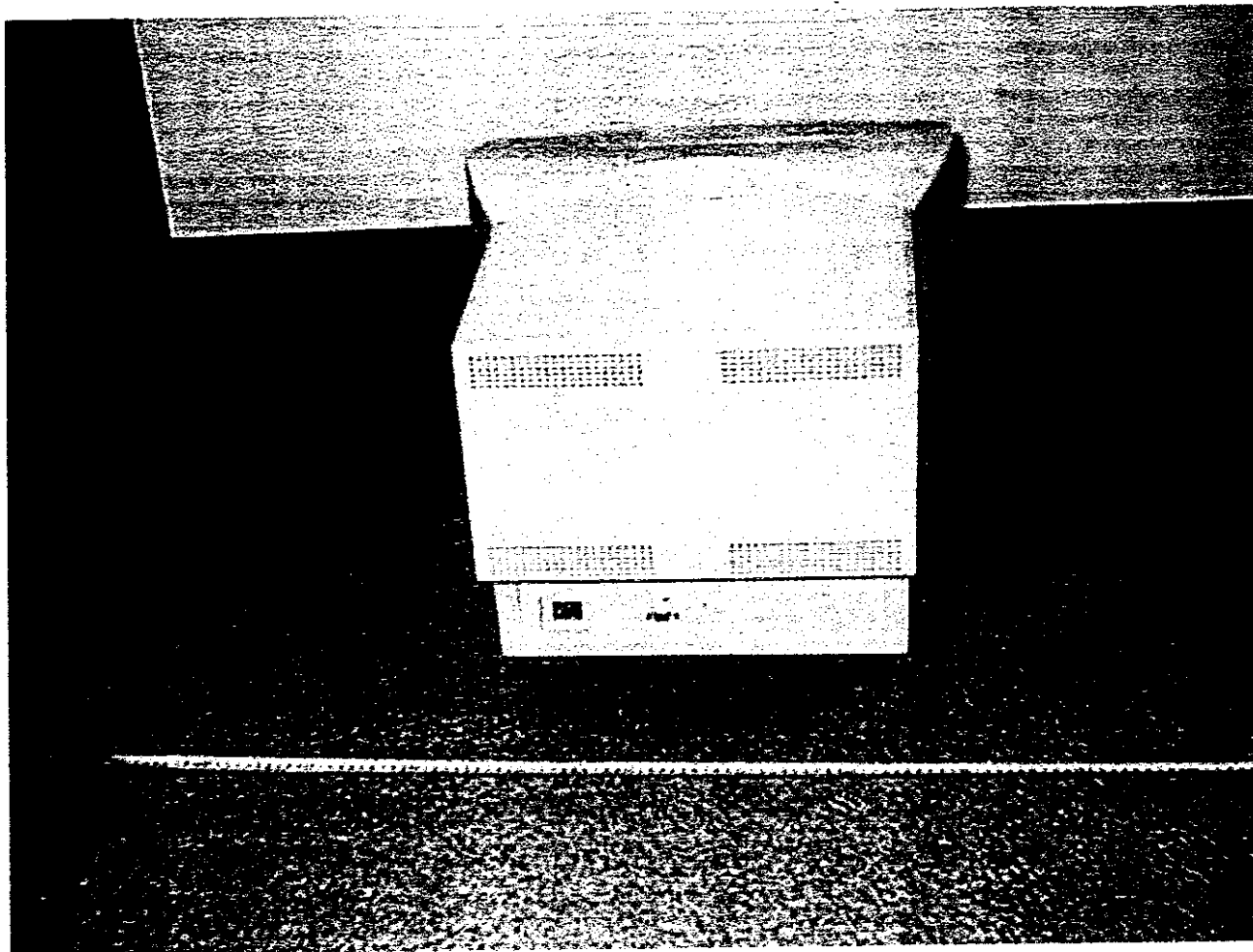
9. PHOTO OF TESTED EUT, Model TX-D1F64MB / TX-D1F64NMB (Continued)

Figure 9.1 Front View



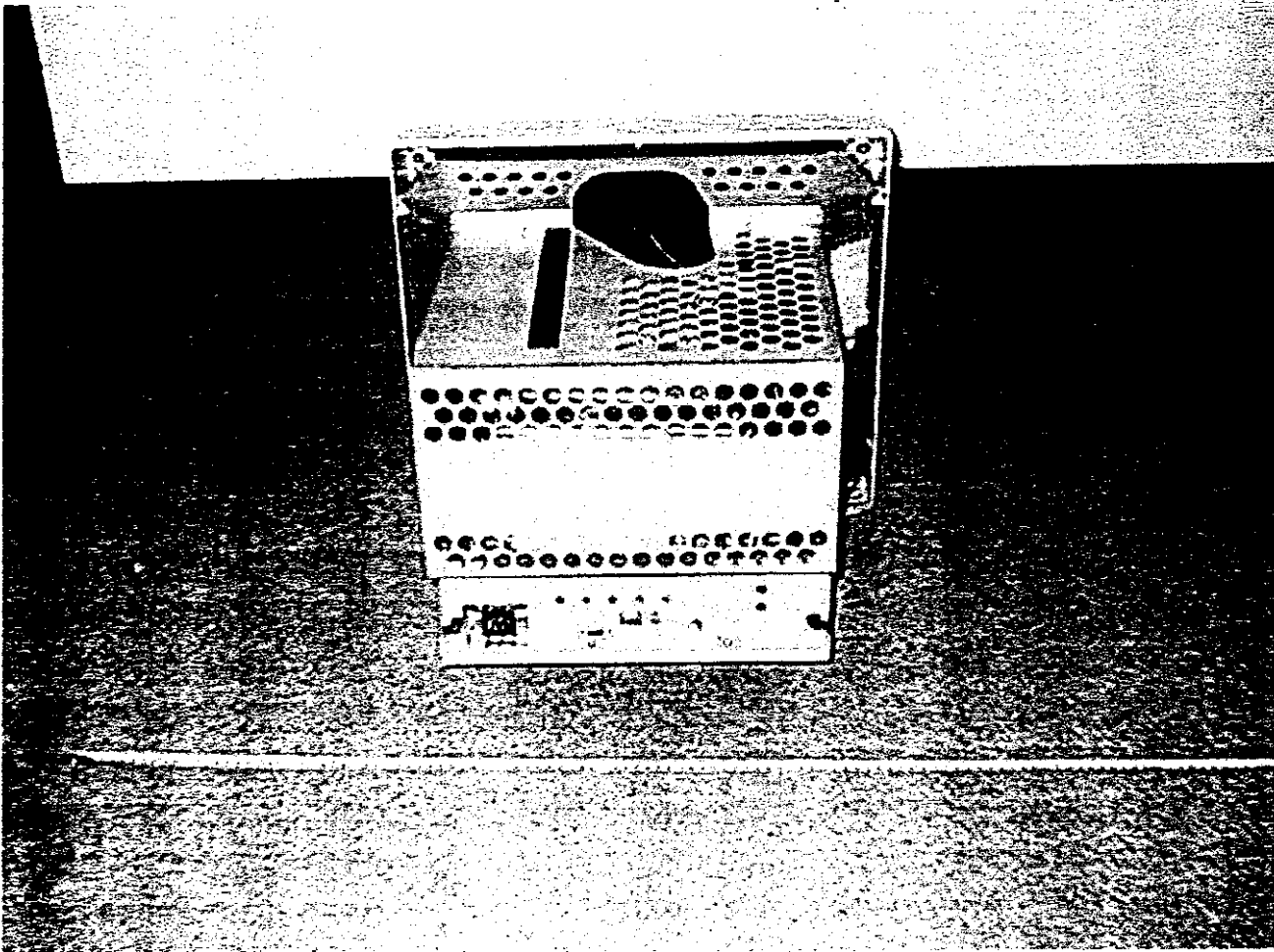
9. PHOTO OF TESTED EUT, Model TX-D1F64MB / TX-D1F64NMB (Continued)

Figure 9.2 Rear view



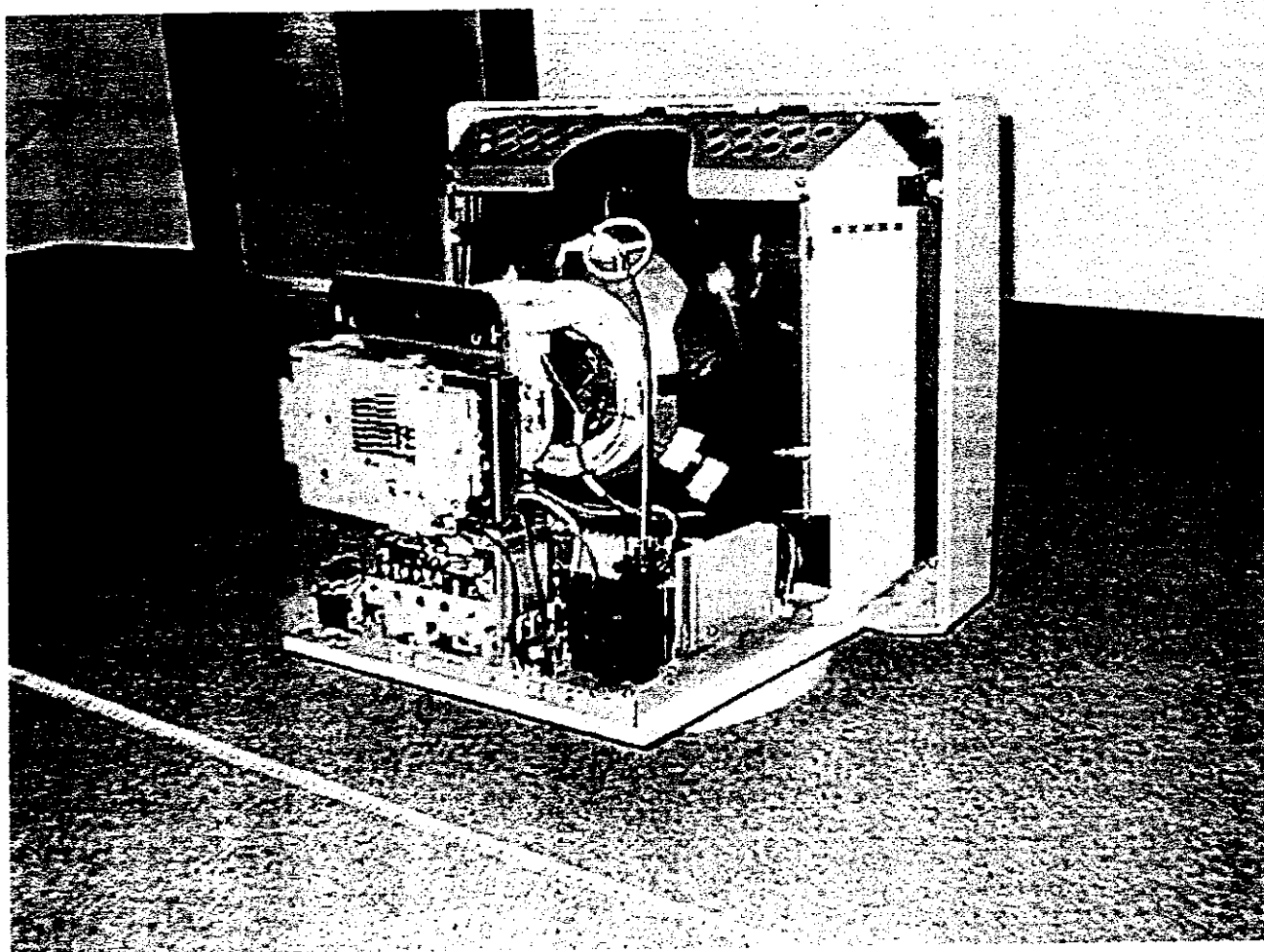
9. PHOTO OF TESTED EUT, Model TX-D1F64MB / TX-D1F64NMB (Continued)

Figure 9.3 Top cover removed



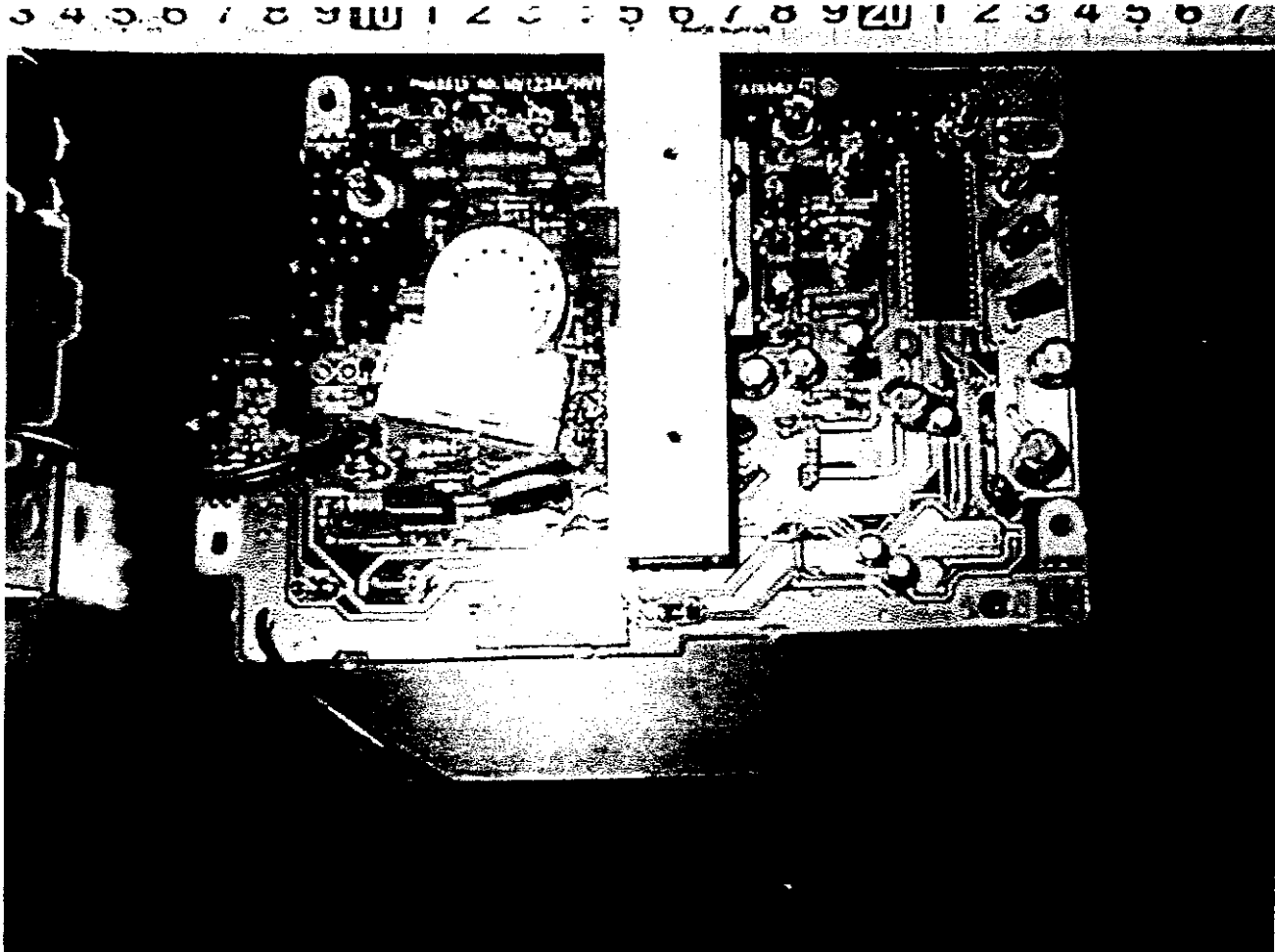
9. PHOTO OF TESTED EUT, Model TX-D1F64MB / TX-D1F64NMB (Continued)

Figure 9.4 Unit disassembly



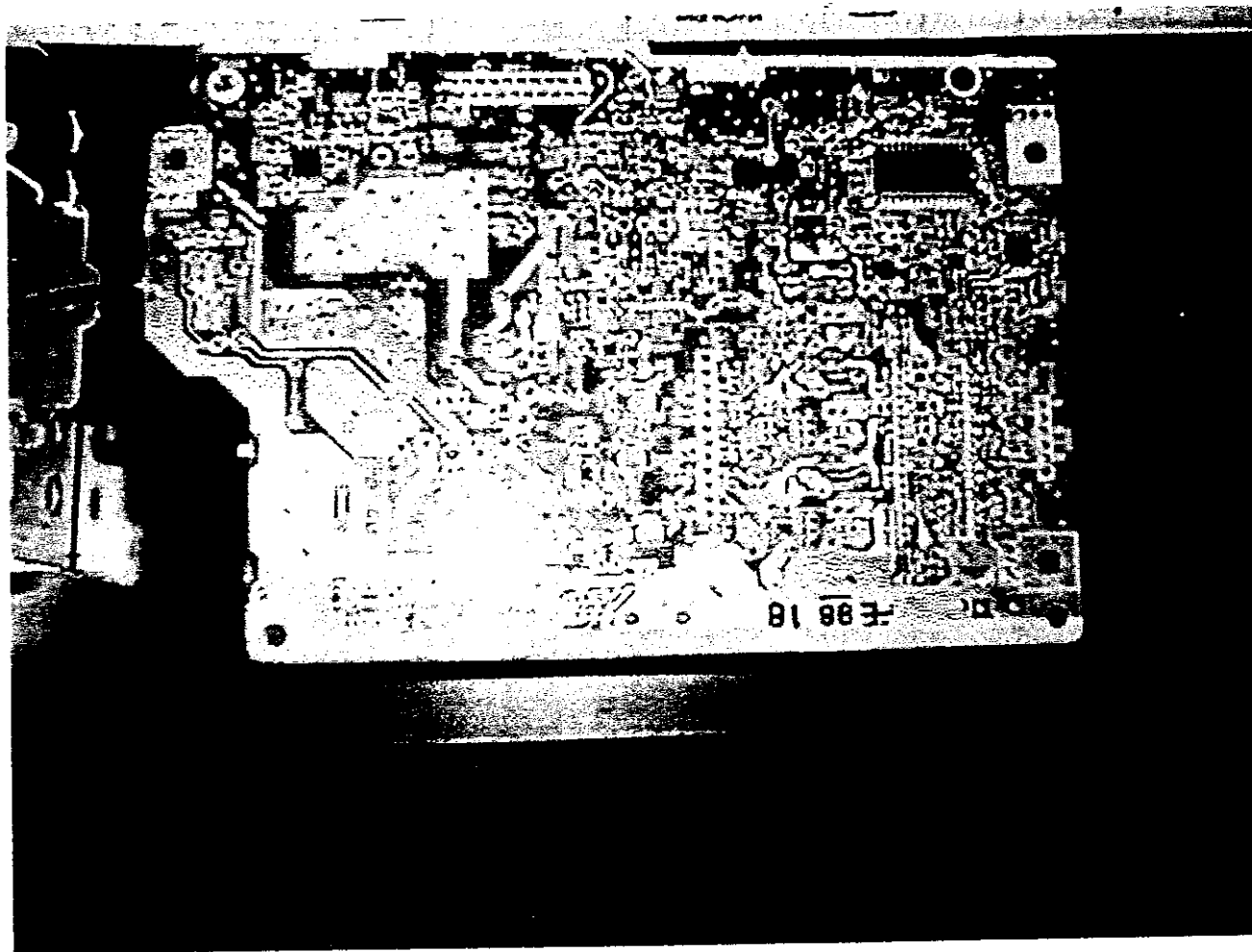
9. PHOTO OF TESTED EUT, Model TX-D1F64MB / TX-D1F64NMB (Continued)

Figure 9.5-1 CRT Board Surface



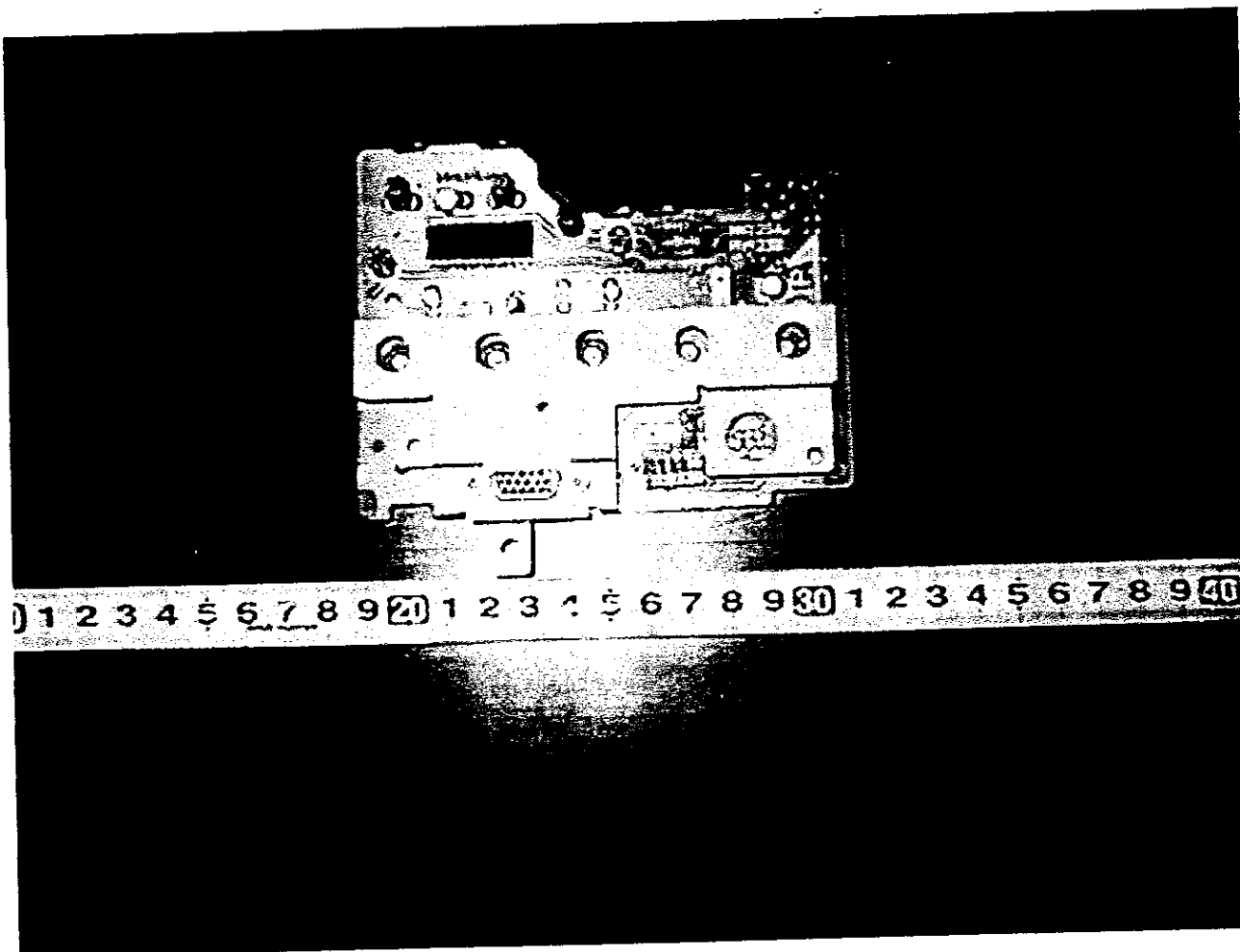
9. PHOTO OF TESTED EUT, Model TX-D1F64MB / TX-D1F64NMB (Continued)

Figure 9.5-2 CRT Board Back Side



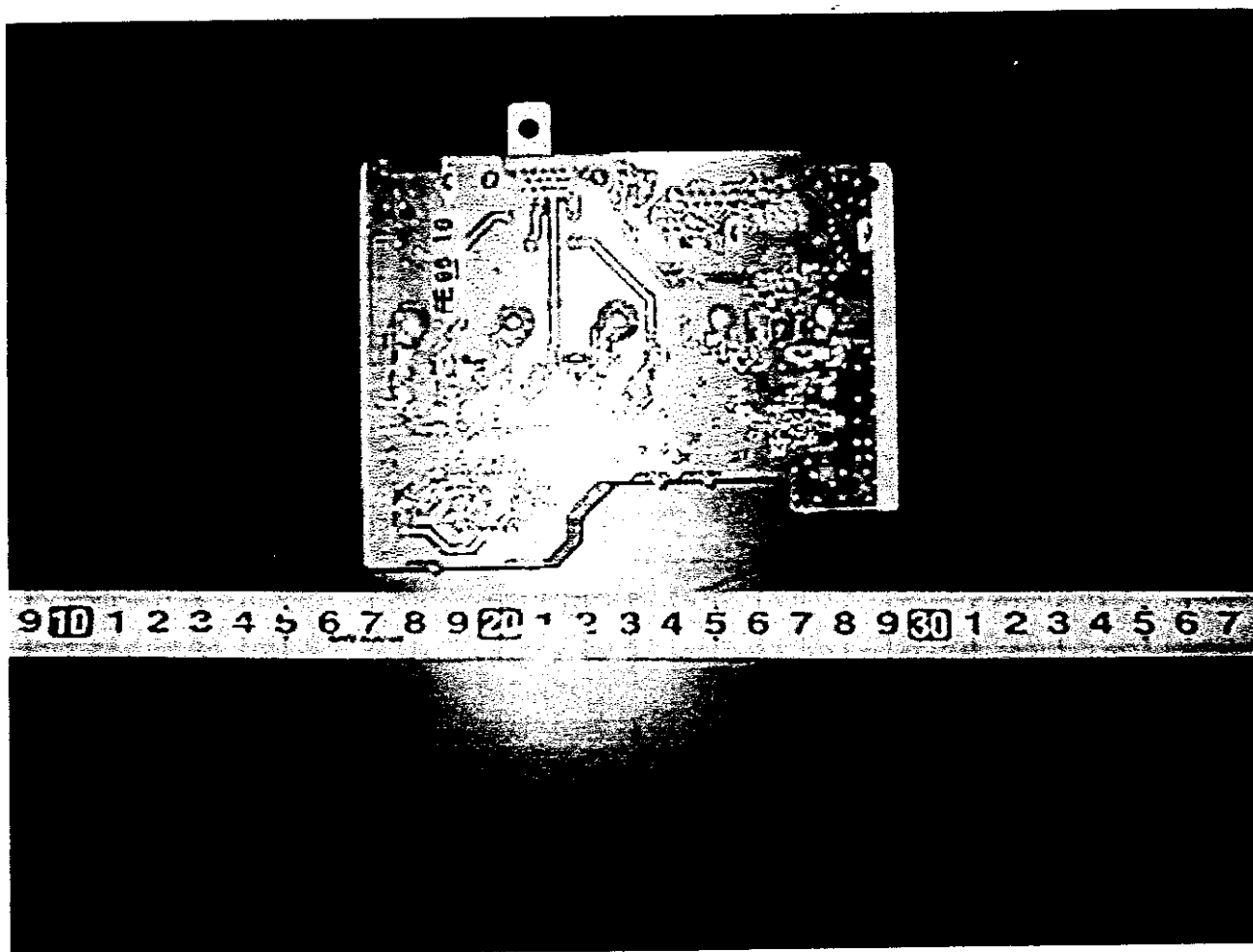
9. PHOTO OF TESTED EUT, Model TX-D1F64MB / TX-D1F64NMB (Continued)

Figure 9.6-1 Interface Board Surface



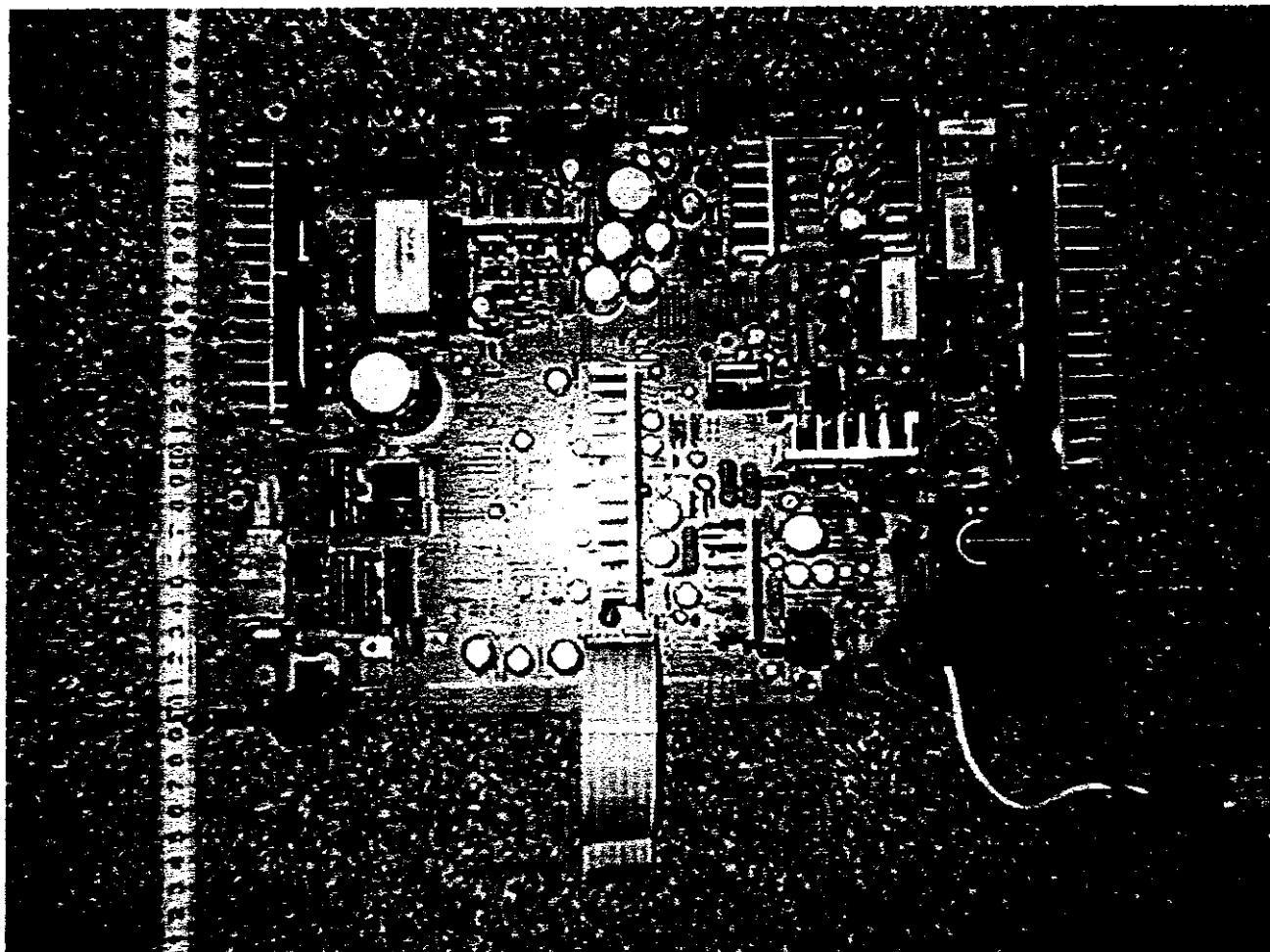
9. PHOTO OF TESTED EUT, Model TX-D1F64MB / TX-D1F64NMB (Continued)

Figure 9.6-2 Interface Board Back Side



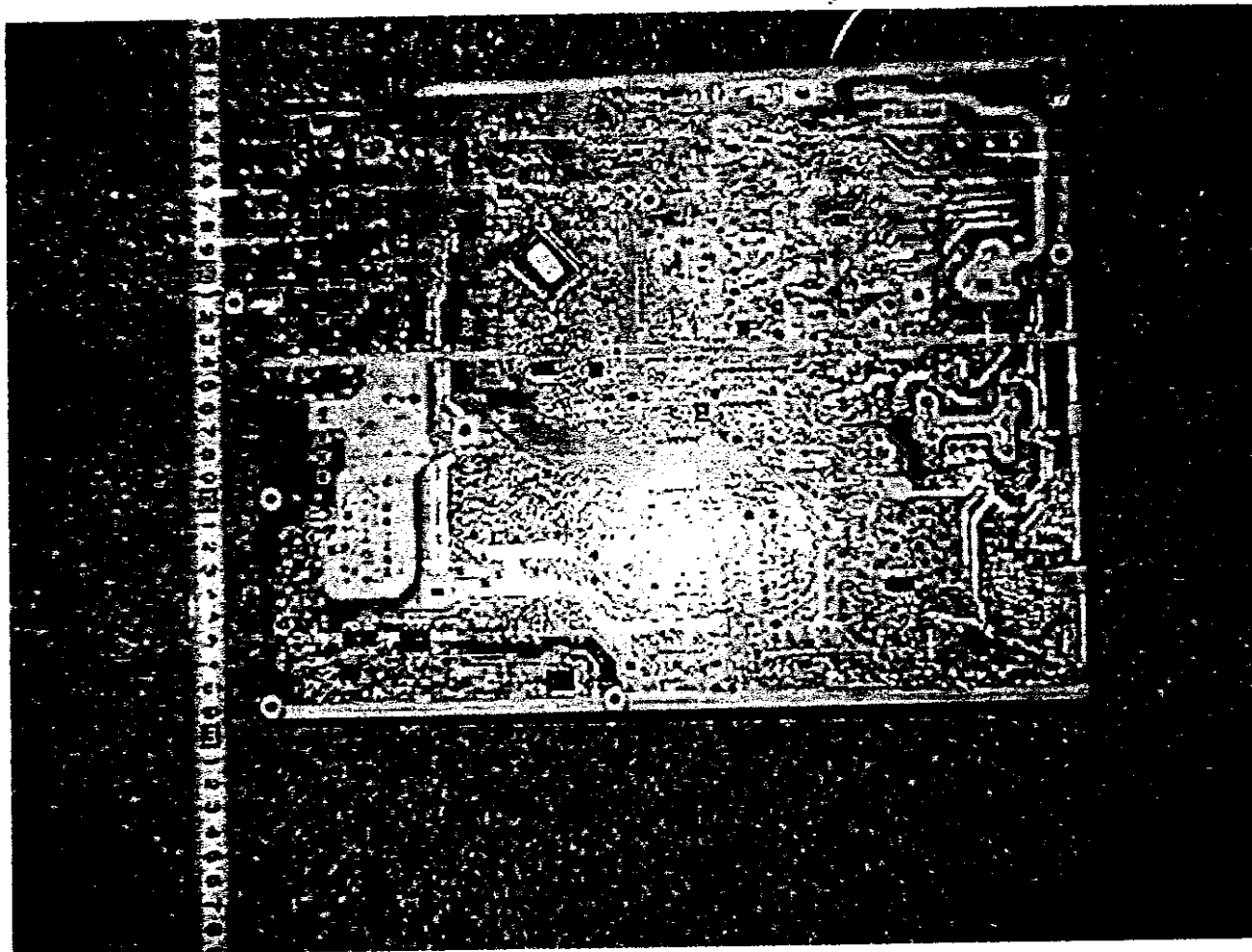
9. PHOTO OF TESTED EUT, Model TX-D1F64MB / TX-D1F64NMB (Continued)

Figure 9.7-1 Power Board Surface



9. PHOTO OF TESTED EUT, Model TX-D1F64MB / TX-D1F64NMB (Continued)

Figure 9.7-2 Power Board Back Side



10. List of Test Equipment

Conducted Emission

Manufacturer	Instruments	Model / Type	Serial No.	Calibration Date Next Calibration
ROHDE & SCHWARZ	Spectrum Analyzer	FSB / DISPLAY	838497/005 / 838301/009	May, 1999 May, 2000
ROHDE & SCHWARZ	EMI Test Receiver	ESHS10	842121/012	May, 1999 May, 2000
ROHDE & SCHWARZ	Artificial-Mains Network	ESH2-Z5	842210/010	May, 1999 May, 2000
CHASE ELECTRONICS LIMITED	Artificial-Mains Network	MN2050B	1140	May, 1999 May, 2000

Radiated Emission

Manufacturer	Instruments	Model / Type	Serial No.	Calibration Date Next Calibration
ROHDE & SCHWARZ	Spectrum Analyzer	FSB / DISPLAY	838497/005 / 838301/009	May, 1999 May, 2000
ROHDE & SCHWARZ	EMI Test Receiver	ESVS10	842122/014	May, 1999 May, 2000
CHASE ELECTRONICS LIMITED	Pre-Amplifier	CPA9231	3045	February, 1999 February, 2000
SCHAFFNER CHASE EMC LTD.	Biconical Logperiodic Antenna	CBL6111C	2531	April, 1999 April, 2000

Attachment

- User's Manual
- Block Diagram
- Conducted Emission Test Data Sheets
- Radiated Emission Test Data Sheets

FEDERAL COMMUNICATIONS COMMISSION

Laboratory Division
7435 Oakland Mills Road
Columbia, MD. 21046

July 02, 1999

Registration Number: 90522

Cosmos Corporation
319 Akeno, Obata-cho
Watarai-gun
Mie-ken, 519-0501

Japan

Attention: Kay Hamaguchi

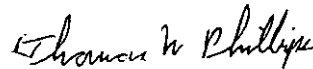
Re: Measurement facility located at Watarai-cho
10 & 30 meter site
Date of Listing: July 02, 1999

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for Certification under Parts 15 or 18 of the Commission's Rules. Please note that this filing must be updated for any changes made to the facility, and at least every three years from the date of listing the data on file must be certified as current.

If requested, the above mentioned facility has been added to our list of those who perform these measurement services for the public on a fee basis. An up-to-date list of such public test facilities is available on the Internet on the FCC Website at WWW.FCC.GOV, Electronic Filing, OET Equipment Authorization Electronic Filing.

Sincerely,



Thomas W Phillips
Electronics Engineer

COPY

***** Cosmos Corporation *****
 <<Conducted Emission>>

24 August, 1999 16:50
 1600X1200.dat

Standard : FCC Part 15 Class B
 Model : TX-DIF64MB/TX-DIF64NMB
 Serial No. : FP9360021
 Operator : K.Hasegawa
 AC Power : 120 V
 Hz : 60 Hz
 Temperature : 30 deg
 Humidity : 58 %
 Remarks1 : 1600 X 1200
 Remarks2 : fH: 94.0 kHz, fV: 75 Hz

Final Result

--- N Phase ---

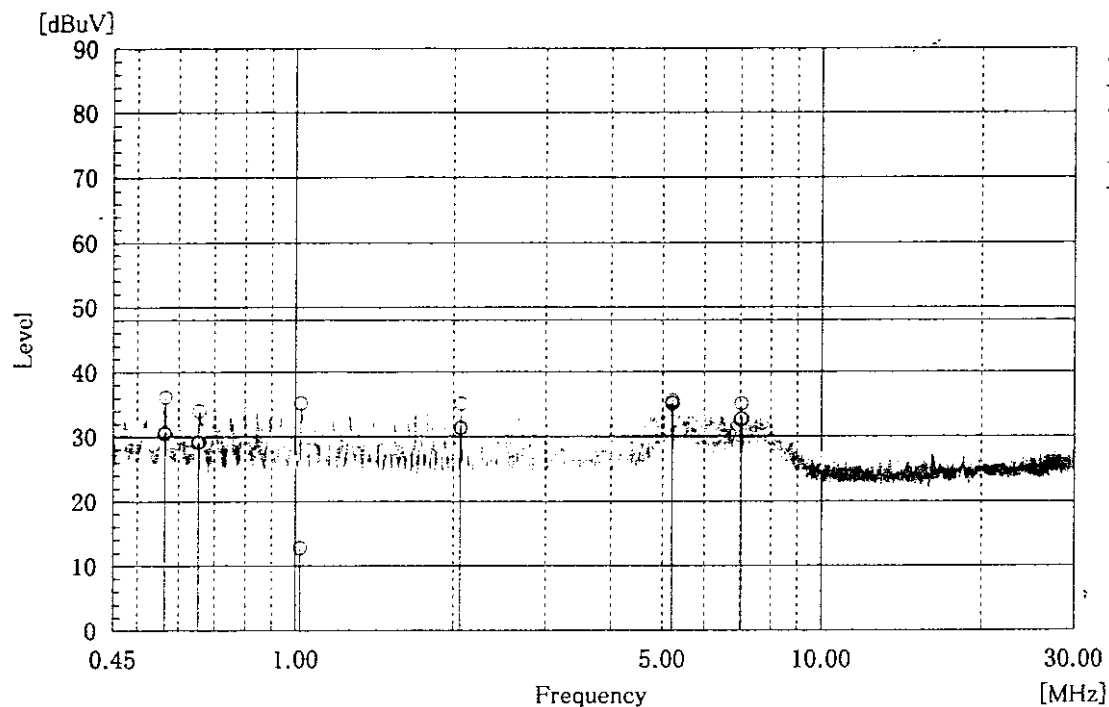
No.	Frequency	Reading	c. f	Result	Limit	Margin
	[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
1	0.565	19.9	10.7	30.6	48.0	17.4
2	5.209	24.4	10.9	35.3	48.0	12.8
3	0.655	18.4	10.8	29.2	48.0	18.8
4	7.039	21.9	10.8	32.7	48.0	15.3
5	2.065	20.6	10.8	31.4	48.0	16.6
6	1.022	2.1	10.7	12.8	48.0	35.2

--- L1 Phase ---

No.	Frequency	Reading	c. f	Result	Limit	Margin
	[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
1	0.565	20.2	10.7	30.9	48.0	17.1
2	0.656	20.5	10.8	31.3	48.0	16.7
3	5.114	24.0	10.9	34.9	48.0	13.1
4	0.801	18.6	10.9	29.5	48.0	18.5
5	0.941	18.3	10.9	29.2	48.0	18.8
6	1.313	18.8	10.9	29.7	48.0	18.3

Model : TX-DIF64MB/TX-DIF64NMB
Serial No. : FP9360021
Operator : K.Hasegawa
AC Power : 120 V
Hz : 60 Hz

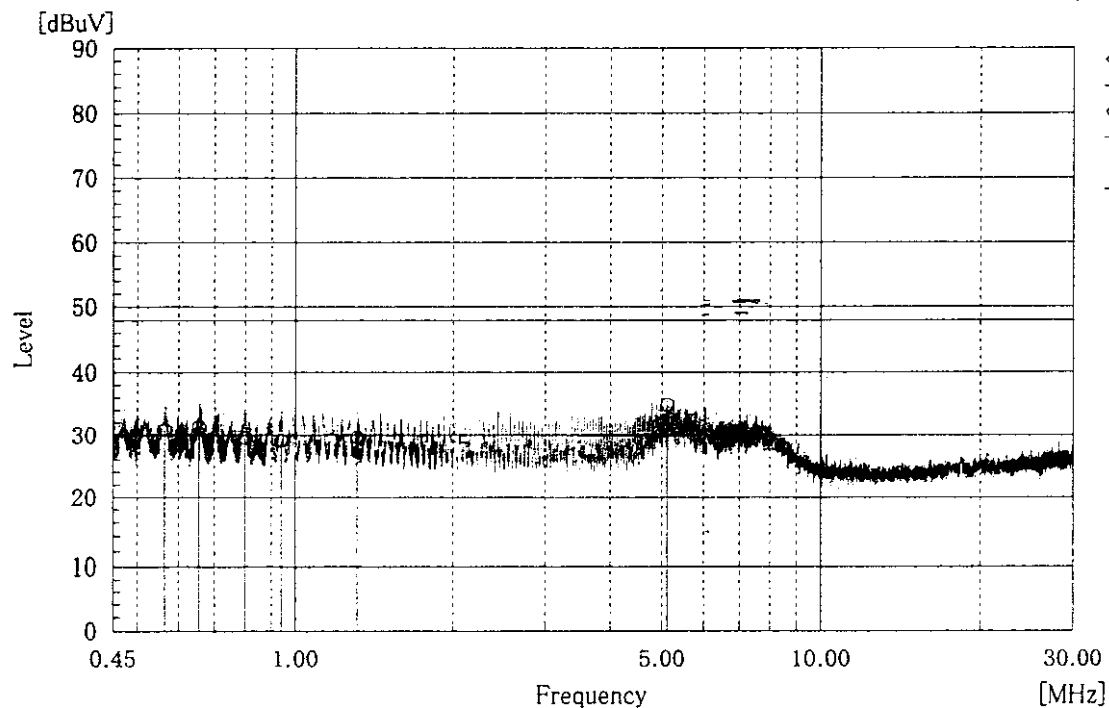
Standard : FCC Part 15 Class B
Temperature : 30 deg
Humidity : 58 %
Remarks1 : 1600 X 1200
Remarks2 : fH: 94.0 kHz, fV: 75 Hz



<FCCPart15SubpartBClassB>
Limit(QP)
<VCDTS21541-1 1600X1200>
LinePhase(N)
PickUpPoint(N)
NoiseLevelQP(N)

Model : TX-DIF64MB/TX-DIF64NMB
Serial No. : FP9360021
Operator : K.Hasegawa
AC Power : 120 V
Hz : 60 Hz

Standard : FCC Part 15 Class B
Temperature : 30 deg
Humidity : 58 %
Remarks1 : 1600 X 1200
Remarks2 : fH: 94.0 kHz, fV: 75 Hz



<FCCPart15SubpartBClassB>
Limit(QP)
<VCDTS21541-1 1600X1200>
LinePhase(L1)
PickUpPoint(L1)
NoiseLevelQP(L1)

***** Cosmos Corporation *****
 <<Radiated Emission>> 1999. 8. 24
 1600X1200.dat

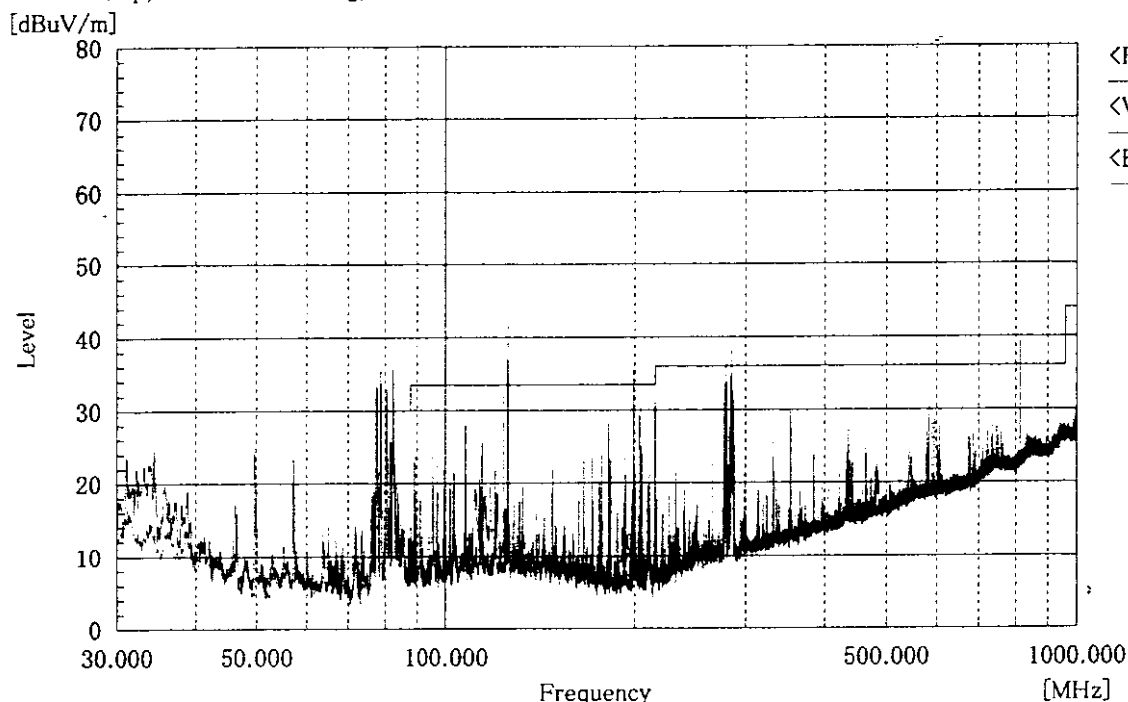
Standard : FCC Part.15 Class B 10m
 Model : TX-D1F64MB/TX-D1F64NMB
 Serial : FP9360021
 Operator : K. Hasegawa
 Power : AC 120 V, 60 Hz
 Temp, Humid : 33 deg, 46 %
 Remark1 : 1600 X 1200
 Remark2 : fH: 94.0 kHz, fV: 75 Hz
 Remark3 :
 Remark4 :

 Final Result

No.	Frequency	(P)	Reading	c.f	Result	Limit	Margin	Height	Angle
	[MHz]		QP	[dB]	QP	[dBuV/m]	QP	[cm]	[deg]
1	140.001	V	37.6	-16.5	21.1	33.5	12.4	100.0	0.0
2	145.007	V	39.5	-16.7	22.8	33.5	10.7	100.0	0.0
3	149.999	V	45.0	-17.0	28.0	33.5	5.5	100.0	0.0
4	155.001	V	38.2	-17.4	20.8	33.5	12.7	100.0	0.0
5	294.772	V	40.0	-13.9	26.1	36.0	9.9	100.0	0.0
6	331.656	V	40.1	-12.5	27.6	36.0	8.4	100.0	0.0

Model : TX-DIF64MB/TX-DIF64NMB
Serial : FP9360021
Operator : K. Hasegawa
Power : AC 120 V, 60 Hz
Temp, Humid : 33 deg, 46 %

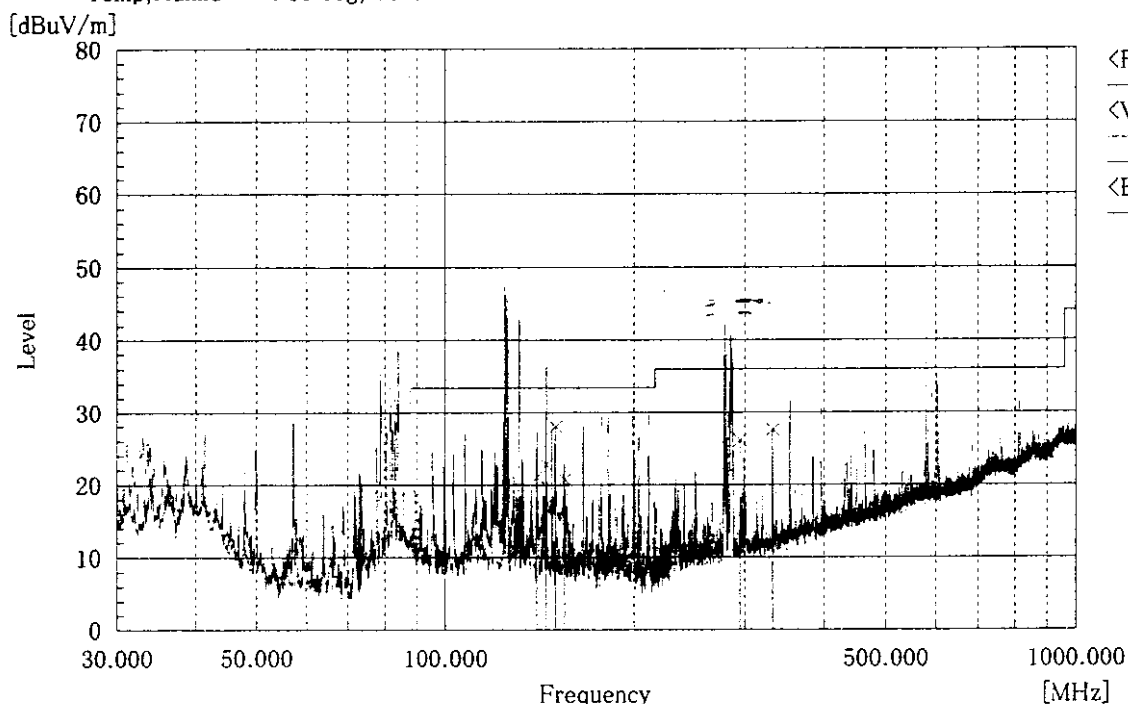
Standard : FCC Part.15 Class B 10m
Remark1 : 1600 X 1200
Remark2 : fH: 94.0 kHz, fV: 75 Hz
Remark3 :
Remark4 :



<FCCPart15ClassB10m>
Limit
<VCDTS21541-1 1600X1200>
Horizontal
<BackNoise>
Horizontal

Model : TX-DIF64MB/TX-DIF64NMB
Serial : FP9360021
Operator : K. Hasegawa
Power : AC 120 V, 60 Hz
Temp, Humid : 33 deg, 46 %

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Remark1 : 1600 X 1200
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Remark3 :
Remark4 :



<FCCPart15ClassB10m>
Limit
<VCDTS21541-1 1600X1200>
Vertical
× 妨害レベル(V,QP)
<BackNoise>
Vertical

