

MEASUREMENT / TECHNICAL REPORT

COMPANY NAME: Matsushita Electric Industrial Co., Ltd.
 MODEL: TX-M9T55
 FCCID: ACJ93312141
 DATE OF REPORT: September 10, 1999

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

Equipment Type : 19" 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

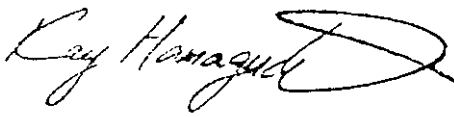
_____ date

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 :



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 Company Name: Cosmos Corporation
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 Mie-ken 519-0501 JAPAN
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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-M9T55	FX9430009	19" CRT Display Monitor
Type of Processor : X101 Number of Storage : None Power Supply AC 120 V, 60 Hz, 2.0 A		Clock Speed : 10MHz Interface Ports : D-Sub : RGB	
Similar Model(to be covered) : TX-M9T55NM : TX-M9T55*****		Description for Difference(s) :None	
<u>Accessories (to be sold with the model tested)</u>			
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: ACJ93312141
 FCC's file: _____

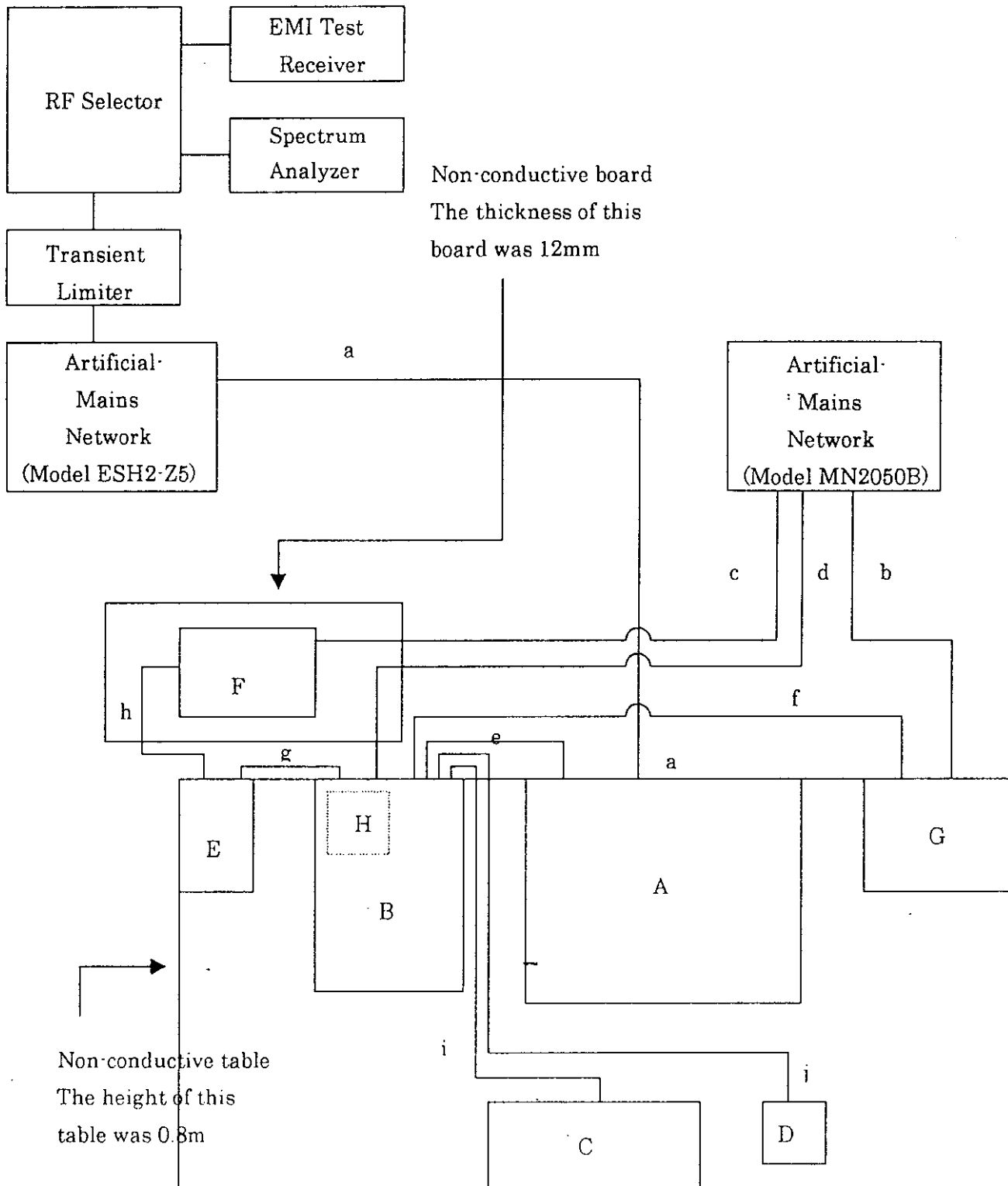
1. GENERAL INFORMATION (Continued)

1.3 Tested System Details

<u>Host Digital Device(Certified or Verified)</u>			
Trade Name	Model Name	FCC ID Number	Description
B Hewlett Packard	D6564-WJ101	Doc	Personal Computer
<u>Peripheral Device(Certified or Verified)</u>			
Trade Name	Model Name	FCC ID Number	Description
C Hewlett Packard	SK-2502	GYUR41SK	Keyboard
D Hewlett Packard	C3751B	DZL211029	Mouse
E SEIKO EPSON Corp.	C202A	BKM552C202A	Modem
F Kikusui Electronics Corp.	PAC70-2.5	None	Regulated DC Power Supply
G Hewlett Packard	C4565A	B94C4555X	Printer
H Diamond Multimedia System Inc.	Fire GL 1000 Pro	Doc	Video Card
<u>Power Supply Cord</u>			
<input type="checkbox"/> 2P <input checked="" type="checkbox"/> 3P <input type="checkbox"/> Shielded <input checked="" type="checkbox"/> Unshielded <input type="checkbox"/> Equipment with filter			
<u>Connection Cables</u>			
	Type of Cable	Construction	Length
a	AC Power Cord	U	1.8 m
b	AC Power Cord	U	1.8 m
c	AC Power Cord	U	1.9 m
d	AC Power Cord	U	1.8 m
e	Monitor Cable (BNC = D-Sub Without Ferrite Core)	S	1.7 m
f	Printer Cable	S	3.0 m
g	Modem Cable	S	1.0 m
h	DC Power Cord	U	0.9 m
i	Keyboard Cable	S	1.8 m
j	Mouse Cable	S	1.8 m
<u>Notes</u> 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)

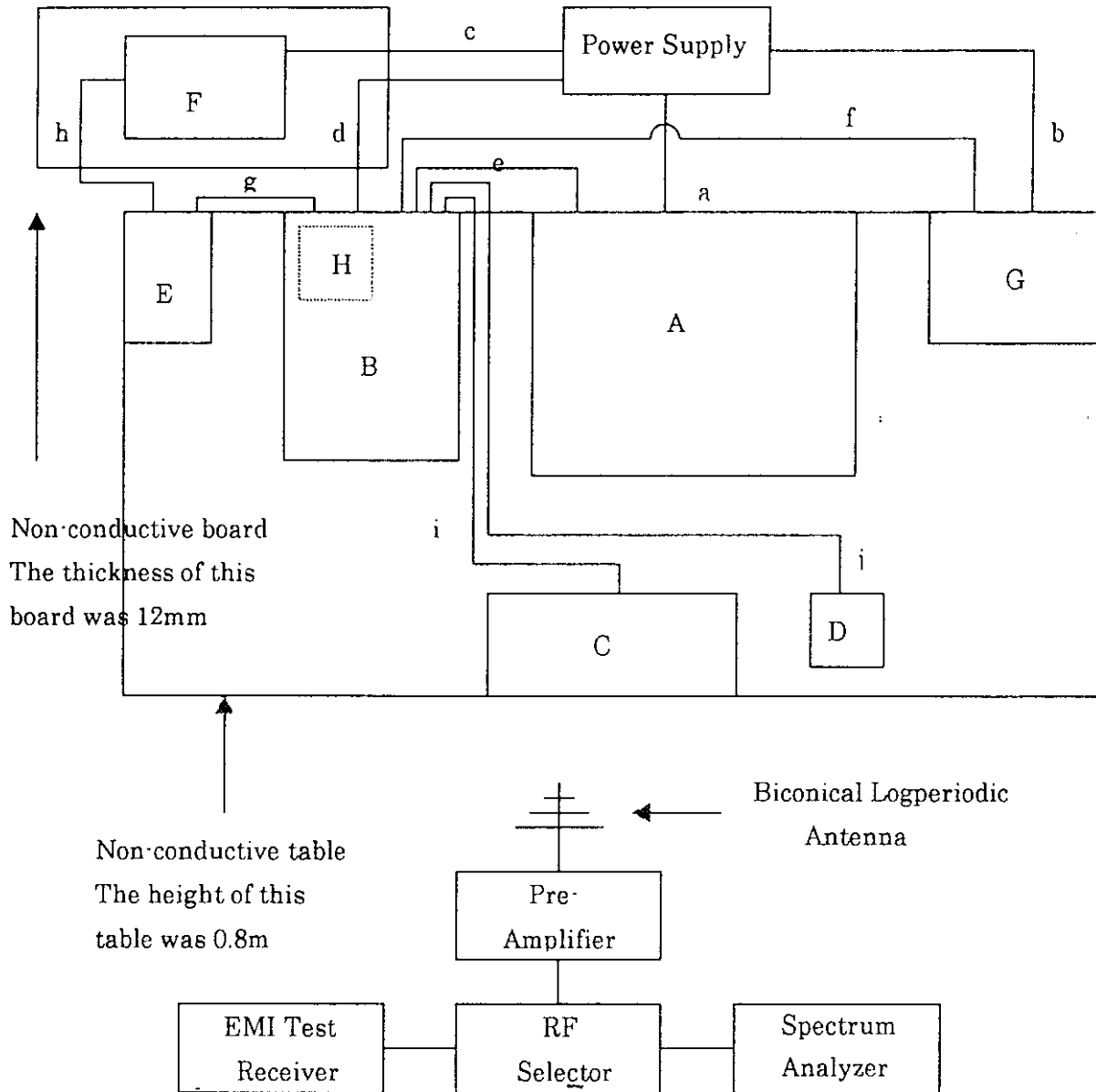
1.4 Configuration of Tested System



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

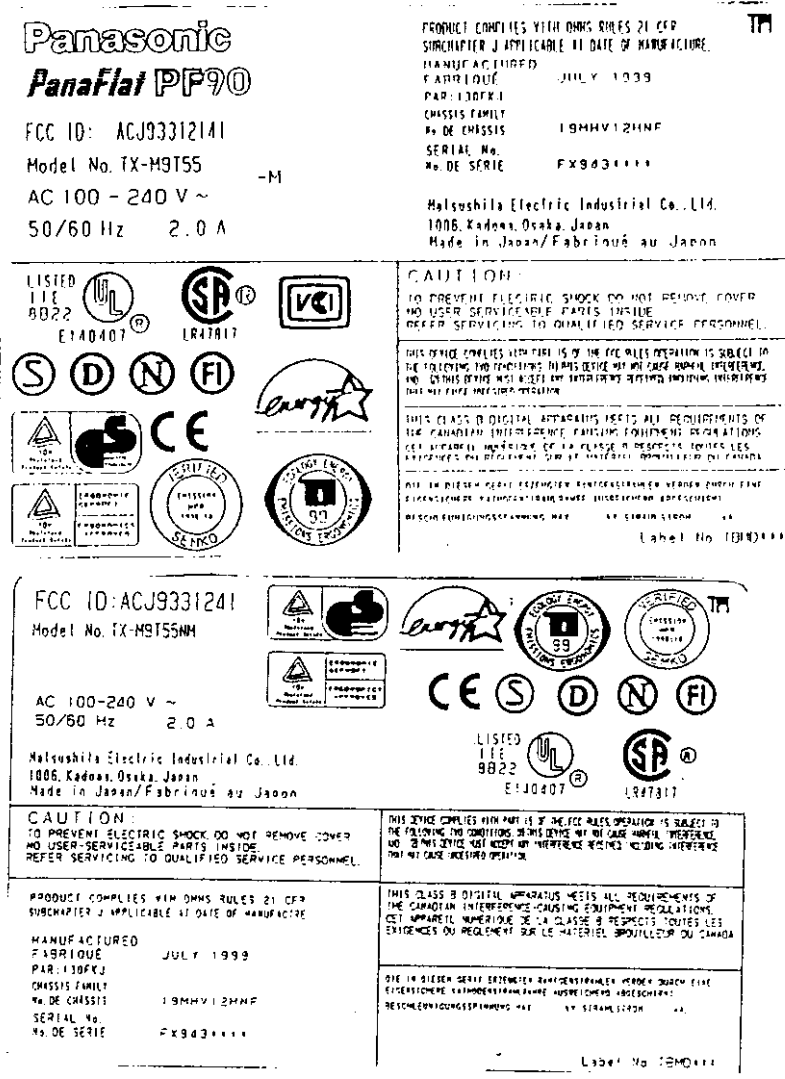
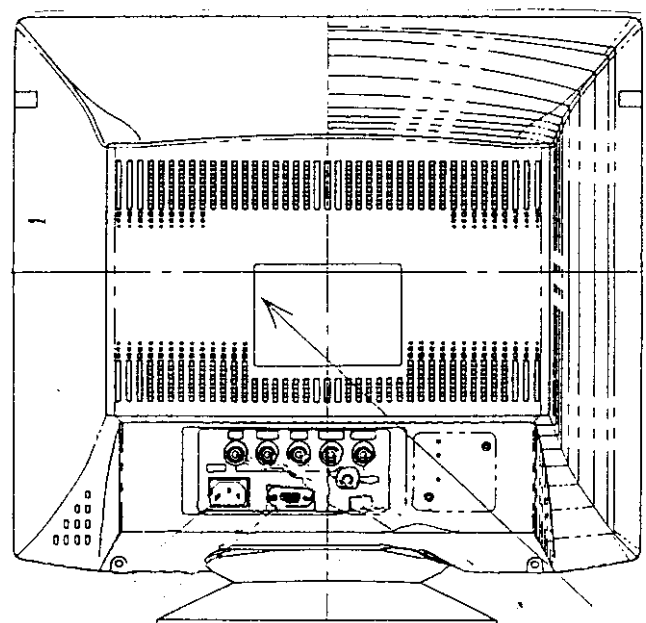


Figure 2.2 Location of label on EUT

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	1600 × 1200	1600 × 1200
<input type="checkbox"/> Default modes		
<input checked="" type="checkbox"/> Resolution modes		
Power Connection	Wall Outlet	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 3.0 m BNC = D-Sub Cable Without Ferrite Core 1.7 m	BNC = D-Sub Cable Without Ferrite Core 1.7 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

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 1600×1200 .

The Monitor Cable was conducted in D-Sub = D-Sub 1.5m length, D-Sub = D-Sub 1.8m length, D-Sub = D-Sub 3.0m length and BNC = D-Sub 1.7m

Following was the worst condition:

A) Continuous Operating (Resolution: 1600×1200 "H" Pattern)

Dot Clock Frequency : 229.5 MHz

Vertical Frequency : 85 Hz

Horizontal Frequency : 106.2kHz

Monitor Cable : BNC = D-Sub Without Ferrite Core 1.7m length

	Frequency (MHz)	Measured * (dB μ V)	Limit (dB μ V)
Neutral Line	0.532	32.2	48.0
Neutral Line	0.637	27.0	48.0
Neutral Line	0.961	16.0	48.0
Neutral Line	0.851	24.5	48.0
Neutral Line	24.398	40.9	48.0
Neutral Line	20.825	26.9	48.0
L Line	24.385	41.6	48.0
L Line	20.841	25.7	48.0
L Line	0.532	33.3	48.0
L Line	0.643	13.4	48.0
L Line	0.865	8.0	48.0
L Line	0.958	24.4	48.0

Uncertainty of measurement result: ± 2.26 dB

Test Personal

Tester Signature: _____

Date: September 4, 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 1600 × 1200.

The Monitor Cable was conducted in D-Sub = D-Sub 1.5m length, D-Sub = D-Sub 1.8m length, D-Sub = D-Sub 3.0m length and BNC = D-Sub 1.7m

Following was the worst condition:

- A) Continuous Operating (Resolution: 1600 × 1200 "H" Pattern)
 - Dot Clock Frequency : 229.5 MHz
 - Vertical Frequency : 85 Hz
 - Horizontal Frequency : 106.2kHz
 - Monitor Cable : BNC = D-Sub Without Ferrite Core 1.7m length

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
165.128	V	44.2	-18.2	26.0	43.5	17.5
229.093	H	51.6	-17.7	33.9	46.0	12.1
291.569	V	41.9	-14.0	27.9	46.0	18.1
354.010	V	48.1	-11.9	36.2	46.0	9.8
374.873	V	46.5	-11.4	35.1	46.0	10.9
393.750	V	40.9	-10.7	30.2	46.0	15.8

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: _____ Date: September 4, 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-M9T55

The followings photos are attached.

Figure 9.1	Front View
Figure 9.2	Rear View
Figure 9.3	Top cover removed
Figure 9.4-1	CRT Board Surface
Figure 9.4-2	CRT Board Back Side
Figure 9.5-1	Interface Board Surface
Figure 9.5-2	Interface Board Back Side
Figure 9.6-1	Power Board Surface
Figure 9.6-2	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 /	May, 1999
			838301/009	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 /	May, 1999
			838301/009	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

Standard : FCC Part 15 Class B
 Model : TX-M9T55
 Serial No. : FX9430009
 Operator : K. Hasegawa
 Power : AC 120 V, 60 Hz
 Temp, Humid : 30 deg, 46 %
 Remarks1 : 1600 X 1200
 Remarks2 : fH: 106.2 kHz, fV: 85 Hz
 Remarks3 :
 Remarks4 :

 Final Result

--- N Phase ---

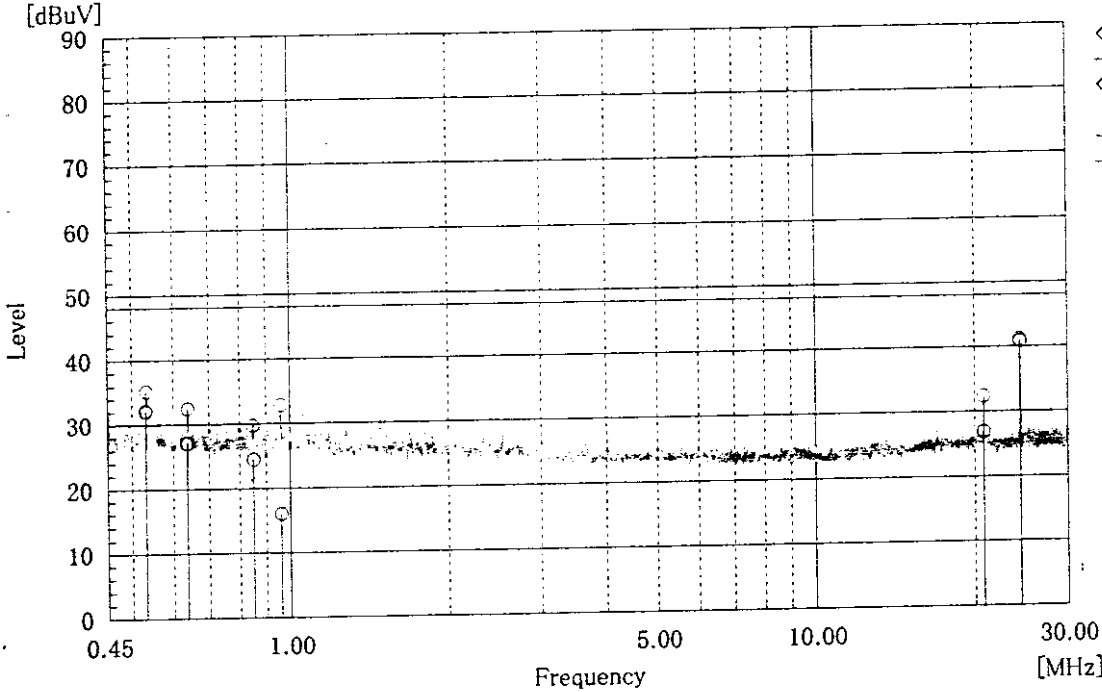
No.	Frequency	Reading	c. f	Result	Limit	Margin
	[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
1	0.532	21.5	10.7	32.2	48.0	15.8
2	0.637	16.2	10.8	27.0	48.0	21.0
3	0.961	5.3	10.7	16.0	48.0	32.0
4	0.851	13.7	10.8	24.5	48.0	23.5
5	24.398	27.9	13.0	40.9	48.0	7.1
6	20.825	14.3	12.6	26.9	48.0	21.1

--- L1 Phase ---

No.	Frequency	Reading	c. f	Result	Limit	Margin
	[MHz]	[dBuV]	[dB]	[dBuV]	[dBuV]	[dB]
1	24.385	28.4	13.2	41.6	48.0	6.4
2	20.841	12.9	12.8	25.7	48.0	22.3
3	0.532	22.6	10.7	33.3	48.0	14.7
4	0.643	2.6	10.8	13.4	48.0	34.6
5	0.865	-2.8	10.8	8.0	48.0	40.0
6	0.958	13.5	10.9	24.4	48.0	23.6

Model : TX-M9T55
Serial No. : FX9430009
Operator : K.Hasegawa
Power : AC 120 V, 60 Hz
Temp, Humid : 30 deg, 46 %

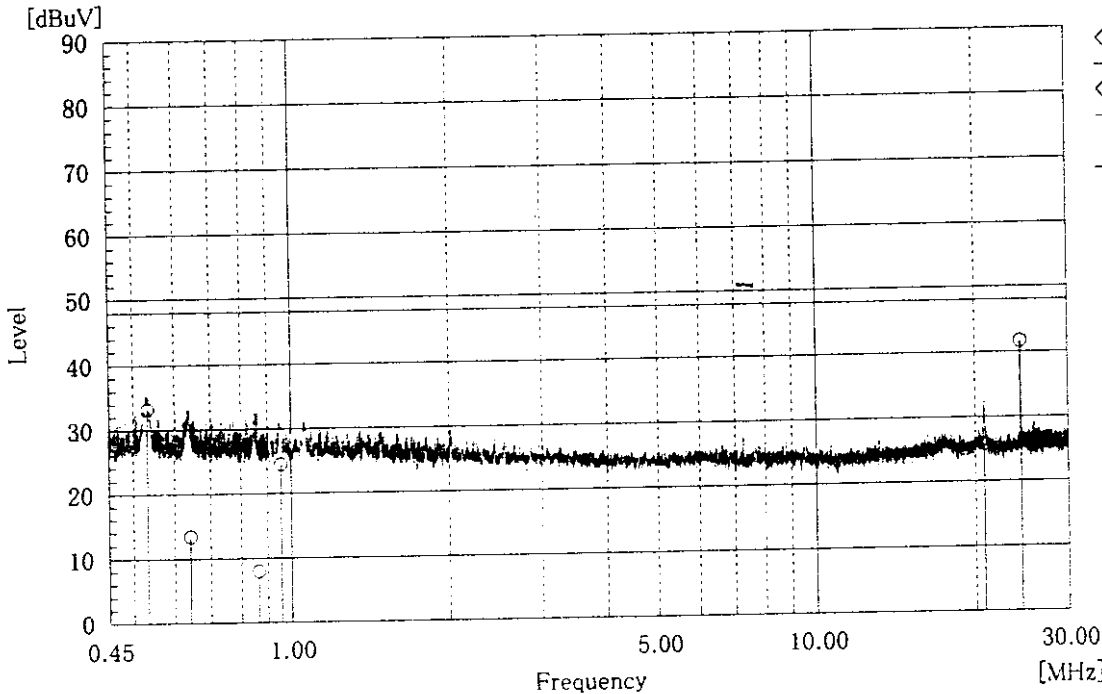
Standard : FCC Part 15 Class B
Remarks1 : 1600 X 1200
Remarks2 : fH: 106.2 kHz, fV: 85 Hz
Remarks3 :
Remarks4 :



<FCCPart15SubpartBClassB>
—— Limit(QP)
<TX-M9T55FCC106>
——○—— LinePhase(N)
——○—— PickUpPoint(N)
——○—— NoiseLevelQP(N)

Model : TX-M9T55
Serial No. : FX9430009
Operator : K.Hasegawa
Power : AC 120 V, 60 Hz
Temp, Humid : 30 deg, 46 %

Standard : FCC Part 15 Class B
Remarks1 : 1600 X 1200
Remarks2 : fH: 106.2 kHz, fV: 85 Hz
Remarks3 :
Remarks4 :



<FCCPart15SubpartBClassB>
—— Limit(QP)
<TX-M9T55FCC106>
——○—— LinePhase(L1)
——○—— PickUpPoint(L1)
——○—— NoiseLevelQP(L1)

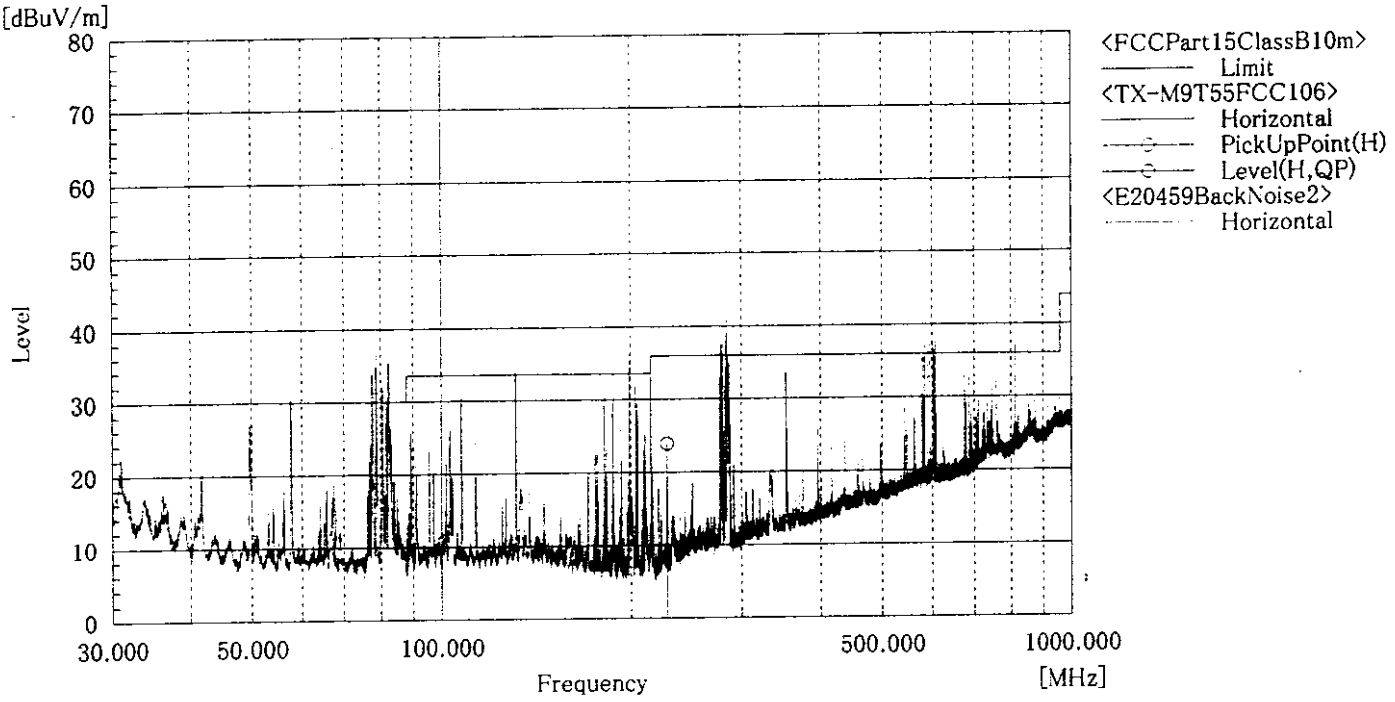
***** Cosmos Corporation *****
 <<Radiated Emission>> 1999. 9. 4
 TX-M9T55FCC106.dat

Standard : FCC Part. 15 Class B 10m
 Model : TX-M9T55
 Serial : FX9430009
 Operator : K. Hasegawa
 Power : AC 120 V, 60 Hz
 Temp, Humid : 32 deg, 40 %
 Remark1 : 1600 X 1200
 Remark2 : fH: 106.2 kHz, fV:85 Hz
 Remark3 :
 Remark4 :

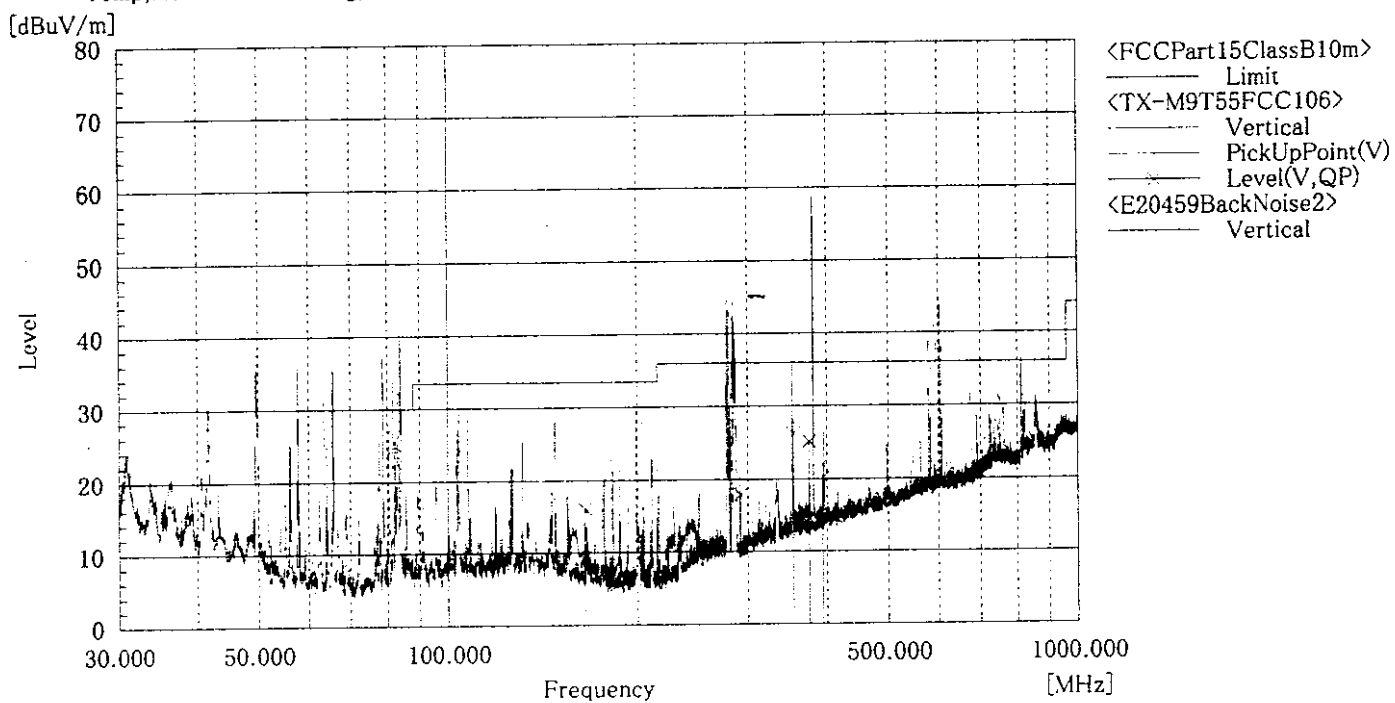
 Final Result

No.	Frequency [MHz]	(P)	Reading QP [dBuV]	c. f [dB]	Result QP [dBuV/m]	Limit [dBuV/m]	Margin QP [dB]	Height [cm]	Angle [deg]
1	165.128	V	34.2	-18.2	16.0	33.5	17.5	100.0	0.0
2	229.093	H	41.6	-17.7	23.9	36.0	12.1	100.0	0.0
3	291.569	V	31.9	-14.0	17.9	36.0	18.1	100.0	0.0
4	354.010	V	38.1	-11.9	26.2	36.0	9.8	100.0	0.0
5	374.873	V	36.5	-11.4	25.1	36.0	10.9	100.0	0.0
6	393.750	V	30.9	-10.7	20.2	36.0	15.8	100.0	0.0

Model	: TX-M9T55	Standard	: FCC Part.15 Class B 10m
Serial	: FX9430009	Remark1	: 1600 X 1200
Operator	: K. Hasegawa	Remark2	: fH: 106.2 kHz, fV:85 Hz
Power	: AC 120 V, 60 Hz	Remark3	:
Temp, Humid	: 32 deg, 40 %	Remark4	:



Model	: TX-M9T55	Standard	: FCC Part.15 Class B 10m
Serial	: FX9430009	Remark1	: 1600 X 1200
Operator	: K. Hasegawa	Remark2	: fH: 106.2 kHz, fV:85 Hz
Power	: AC 120 V, 60 Hz	Remark3	:
Temp, Humid	: 32 deg, 40 %	Remark4	:



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

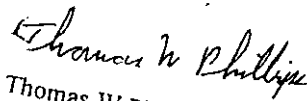
Re: Measurement facility located at Watarai-cho
10 & 30 meter site
Date of Listing: July 02, 1999

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