



JAPAN QUALITY ASSURANCE ORGANIZATION
21-25, KINUTA 1-CHOME, SETAGAYA-KU, TOKYO 157 JAPAN
PHONE (03) 3416-0111, TELEX 242-2531 JQA I FAX (03) 3416-9691

Exhibit - C

JQA APPLICATION NO. : 80 80457
Issue Date : September 10, 1998
Page 1 of 27

EMI TEST REPORT

JQA APPLICATION NO. : 80-80457
Model No. : XM-6402B
Type of Equipment : CD-ROM Drive
Regulations Applied : CFR 47 FCC Rules and Regulations Part 15
FCC ID : Certification
Applicant : TOSHIBA CORPORATION
Address : 70, Yanagi-cho, Saiwai-ku, Kawasaki 210-8501, Japan
Manufacture : TOSHIBA CORPORATION
Address : 70, Yanagi-cho, Saiwai ku, Kawasaki 210-8501, Japan
Final Judgment : Passed

TEST RESULTS IN THIS REPORT are obtained in use of equipment that is traceable to Electrotechnical Lab. of MITI Japan and Communications Research Lab. of PTT Japan.

The test results only responds to the tested sample. It is not allowed to copy this report even partly without the allowance of the JQA EMC Engineering Dept. Testing Div.

This report must not used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.



TABLE OF CONTENTS

	Page
1 Documentation	
1.1 General Information	<u>3</u>
1.2 Test Regulation	<u>3</u>
1.3 Test Condition	<u>4 - 6</u>
1.4 EUT Modifications	<u>7</u>
1.5 Test results / Uncertainty	<u>8</u>
1.6 Summary	<u>9</u>
1.7 Test Configuration / Operation of EUT	<u>10 - 11</u>
1.8 EUT Arrangement (Drawings)	<u>12</u>
1.9 Preliminary Test and Test setup (Drawings)	<u>13 - 15</u>
1.10 EUT Arrangement (Photographs)	<u>16 23</u>
2 Test Data	
2.1 AC Power Line Conducted Emission 0.45 MHz - 30 MHz	<u>24 - 25</u>
2.2 Radiated Emission (Electric Field) 30 MHz - 1000 MHz	<u>26 27</u>
2.3 Radiated Emission (Electric Field) 1 GHz - 2 GHz	<u>N/A</u>

1 DOCUMENTATION

1.1 GENERAL INFORMATION

1.1.1 Test facility :

- 1) Test Facility located at EMC Engineering Dept. Testing Div. : No.2 and 3 Anechoic Chambers
(3 meters Site)

FCC filing No. : 31040/SIT 1300F2

- 2) EMC Engineering Dept. Testing Div. is recognized under the National Voluntary Laboratory accreditation Program for satisfactory compliance established in title 15, Part 285 Code of Federal Regulations.

NVLAP Lab Code : 200189-0 (Effective through : June 30, 1999)

1.1.2 Description of the Equipment Under Test (EUT) :

- | | |
|---|--------------------------|
| 1) Type of Equipment | : CD ROM Drive |
| 2) Product Type | : Pre Production |
| 3) Category | : Class B Digital Device |
| 4) EUT Authorization | : Certification |
| 5) FCC ID | : CJ6AT98-036 |
| 6) Trade Name | : TOSHIBA |
| 7) Model No. | : XM 6402B |
| 8) Fundamental Frequency Generated/Operated
In the EUT | : 33.86 MHz, 50.00 MHz |
| 9) Highest Frequency Used in the EUT | : 50.00 MHz |
| 10) Serial No. | : 2S2-001 |
| 11) Date of Manufacture | : August 30, 1998 |
| 12) Power Rating | : +5VDC, +12VDC |
| * DC power for the EUT was controlled by the personal computer(Model No. : DSC,
Serial No. : SZ421 by DELL Computer.). | |
| 13) EUT Grounding | : None |

1.1.3 Definitions for symbols used in this test report :

- - Black box indicates that the listed condition, standard or equipment is applicable for this report.
- - Blank box indicates that the listed condition, standard or equipment is not applicable for this report.

1.2 TEST REGULATION

FCC Rules and Regulations Part 15 Subpart A and B (June 23, 1989) Class B Digital Device

Test procedure :

AC power line conducted emission and radiated emission tests were performed according to the procedures in ANSI C63.4-1992.

1.3 TEST CONDITION

1.3.1 The measurement of the AC Power Line Conducted Emission

- - was performed in the following test site.
- - was not applicable.

Test location :

Safety Testing Center Testing Div.
 21 25, Kinuta 1 chome, Setagaya-ku, Tokyo 157, Japan

- - Shielded Enclosure
- - Anechoic Chamber No. 2 (portable Type)

Used test instruments :

	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
○	Field Strength Meter	ESH-2	Rohde & Schwarz	872280/011	June 1998	1 Year
●	Field Strength Meter	ESH-2	Rohde & Schwarz	880370/016	May 1998	1 Year
○	Field Strength Meter	ESH-3	Rohde & Schwarz	881460/016	May 1998	1 Year
○	Field Strength Meter	ESH-3	Rohde & Schwarz	881460/030	May 1998	1 Year
●	LISN	KNW-407	Kyoritsu Electrical	8-833-6	Apr. 1998	1 Year
○	LISN	KNW-407	Kyoritsu Electrical	8-855-2	Apr. 1998	1 Year
○	LISN	KNW-407	Kyoritsu Electrical	8-757-1	Apr. 1998	1 Year
●	RF Cable	3D-2W	Fujikura	155-21-005	May 1998	1 Year
○	RF Cable	3D-2W	Fujikura	155-21-006	May 1998	1 Year

1.3.2 The measurement of the Radiated Emission(30 MHz - 1000 MHz)

- was performed in the following test site.
- - was not applicable.

Test location :

Safety Testing Center Testing Div.
21-25, Kinuta 1 chome, Setagaya ku, Tokyo 157 8573, Japan

- Anechoic Chamber No. 2 (3 meters)
- Anechoic Chamber No. 3 (3 meters)

Validation of Site Attenuation :

- 1) Last Confirmed Date : May, 1998
- 2) Interval : 1 year

Used test instruments :

	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
○ -	Field Strength Meter	ESV	Rohde & Schwarz	872148/039	May 1998	1 Year
○ -	Field Strength Meter	ESVP	Rohde & Schwarz	879783/030	May 1998	1 Year
● -	Field Strength Meter	ESVP	Rohde & Schwarz	881478/004	May 1998	1 Year
○ -	Field Strength Meter	ESVP	Rohde & Schwarz	881478/005	May 1998	1 Year
● -	Antenna	KBA 511A	Kyoritsu Electrical	0 201 13	Nov. 1997	1 Year
○ -	Antenna	KBA 511A	Kyoritsu Electrical	0 170 1	Nov. 1997	1 Year
● -	Antenna	KBA 611	Kyoritsu Electrical	0-210-5	Nov. 1997	1 Year
○ -	Antenna	KBA 611	Kyoritsu Electrical	0-147 14	Nov. 1997	1 Year
○ -	RF Cable	5D-2W	Fujikura	155-21-001	May 1998	1 Year
● -	RF Cable	5D-2W	Fujikura	155-21-002	May 1998	1 Year

1.3.3 The measurement of the Radiated Emission(Above 1000 MHz)

- ☐ - was performed in the following test site.
☒ - was not applicable.

Test location :

Safety Testing Center Testing Div.
21-25, Kinuta 1-chome, Setagaya ku, Tokyo 157-8573, Japan

- ☐ - No. 2 site (3 meters)
☐ - No. 3 site (3 meters)

Validation of Site Attenuation :

- 1) Last Confirmed Date : May, 1998
2) Interval : 1 year

Used test instruments :

	Type	Model No.	Manufacturer	Serial No.	Last Cal.	Interval
☐	Spectrum Analyzer	8560E	Hewlett Packard	3240A00189	Apr. 1998	1 Year
☐	Spectrum Analyzer	8563E	Hewlett Packard	3221A00201	Apr. 1998	1 Year
☐	Spectrum Analyzer	8566B	Hewlett Packard	2140A01091	Apr. 1998	1 Year
☐	Log-Periodic Antenna	HL 025	Rohde & Schwarz	340182/015	Nov. 1997	1 Year
☐	RF Cable	S 04272B	Suhner	155 21 001	May 1998	1 Year

Setting of the spectrum analyzer :

Resolution Bandwidth : 1 MHz
Video Bandwidth : 1 MHz
Sweep Time : 20 msec.
Scale : linear



JQA Application No. : 80-80457
Model No. : XM-6402B
Standard : CFR 47 FCC Rules Part 15

FCC ID : CJ6AT98-036
Issue Date : September 10, 1998
Page 7 of 27

1.4 EUT MODIFICATION

- - No modifications were conducted by JQA to achieve compliance to Class B levels.
- - To achieve compliance to Class B levels, the following changes were made by JQA during the compliance test.

The modifications will be implemented in all production models of this equipment.

Applicant : Date :

Typed Name : Position :

RESPONSIBLE PARTY

Responsible Party of Test Item(Product)

Responsible Party :

Contact Person :

Signatory

1.5 TEST RESULTS / UNCERTAINTY**AC Power Line Conducted Emission**

● - Applicable ○ - NOT Applicable

The requirements are

● - PASSED ○ - NOT PASSED

Min. Limit Margin	6.0 dB	at	12.33 MHz
Max. Limit Exceeding	dB	at	MHz
Uncertainty of Measurement Results	2.3 dB		2.3 dB

Remarks :**Radiated Emission**

● - Applicable ○ - NOT Applicable

The requirements are

● - PASSED ○ - NOT PASSED

Min. Limit Margin	6.5 dB	at	643.4 MHz
Max. Limit Exceeding	dB	at	MHz
Uncertainty of Measurement Results	3.2 dB		3.2 dB

Remarks:

1.6 SUMMARY

General Remarks :

The EUT was tested according to the requirements of FCC Rules and Regulations Part 15 Subpart A and B (June 23, 1989) under the test configuration, as shown in clause 1.7 to 1.10.
The conclusion for the test items of which are required by the applied regulation is indicated under the final judgment.

Final Judgment :

The "as received" sample;

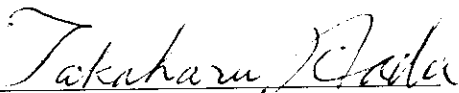
- - fulfill the test requirements of the regulation mentioned on clause 1.2.
- - fulfill the test requirements of the regulation mentioned on clause 1.2, but with certain qualifications.
- - doesn't fulfill the test regulation mentioned on clause 1.2.

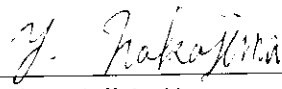
Begin of testing : September 7, 1998

End of testing : September 7, 1998

- JAPAN QUALITY ASSURANCE ORGANIZATION -

Approved Signatories:


Takaharu Hada
Manager
JQA EMC Engineering Dept.


Yoichi Nakajima
Assistant Manager
JQA EMC Engineering Dept.

1.7 TEST CONFIGURATION / OPERATION OF EUT

1.7.1 Test Configuration

The equipment under test (EUT) consists of :

Symbol	Item	Manufacturer	Model No.	FCC ID	Serial No.
A(*1)	CD-ROM Drive	TOSHIBA CORPORATION	XM-6402B	CJ6AT98-036	2S2-001

Note 1. DC power for the EUT was controlled by the personal computer(Model No. : DSC, Serial No. : SZ421 by DELL Computer.).

The measurement was carried out with the following support equipment connected :

Symbol	Item	Manufacturer	Model No.	FCC ID	Serial No.
B	Personal Computer	DELL Computer	DSC	N/A(DoC)	SZ421
C	Color Computer Display	Gateway2000	500-069EV	BEJCS592	1502E013098
D	Keyboard	DELL Computer	SK-1000REW	GYUR36SK	M971217891
E	Mouse	DELL Computer	X03 61001	C3KKP3	124592 00000
F(*2)	Printer(Parallel)	HEWLETT PACKARD	C4608A	B94C2164X	SG77H1F1WX
G	Track Ball	Logitech	T CA1 9F	DZLLBG	LU0890003767
H	Stereo Headphone	Sony Corporation	MDR E838	N/A	
I	Stereo Cassette Player	Sony Corporation	WM-MV1	N/A	33118
J	MIC			N/A	
K	Game PAD	NEC	PK-GP101	N/A	8100552S
L	AC Adaptor	HEWLETT PACKARD	C2178A	N/A	

Note 2. This Printer was operated with the AC adaptor(above symbol "L" Model: C2178A, Input: 100VAC 50/60Hz, Output: 30VDC by HEWLETT PACKARD).

Type of Cable :

Symbol	Description	Identification(Manu. e. l. c)	Shielded YES / NO	Ferrite Core	Length (m)
1	CRT Attachment Cable	SHOWA	YES	YES	1.86
2	Printer Attachment Cable		YES	NO	1.60
3	Network Cable		NO	NO	1.00
4	Track Ball Attachment Cable		YES	NO	2.70
5	Keyboard Attachment Cable		YES	NO	1.90
6	Headphone Attachment Cable		NO	NO	1.70
7	Mouse Attachment Cable		YES	NO	1.95
8	Stereo Attachment Cable		NO	NO	1.65
9	MIC Attachment Cable		YES	NO	2.10
10	Resistor Attachment Cable		NO	NO	1.65
11	PAD Attachment Cable		YES	YES	2.50
12	AC Power Line Cable(for Printer)	HITACHI ELECOM	NO	NO	0.95
13	AC Adaptor Cable(for Printer)		NO	NO	1.85
14	AC Power Cable(for CRT)		NO	NO	2.20
15	AC Power Cable(for PC)		NO	NO	1.87

1.7.2 Operating condition

Power supply Voltage : 120VAC, 60Hz(for Personal Computer).

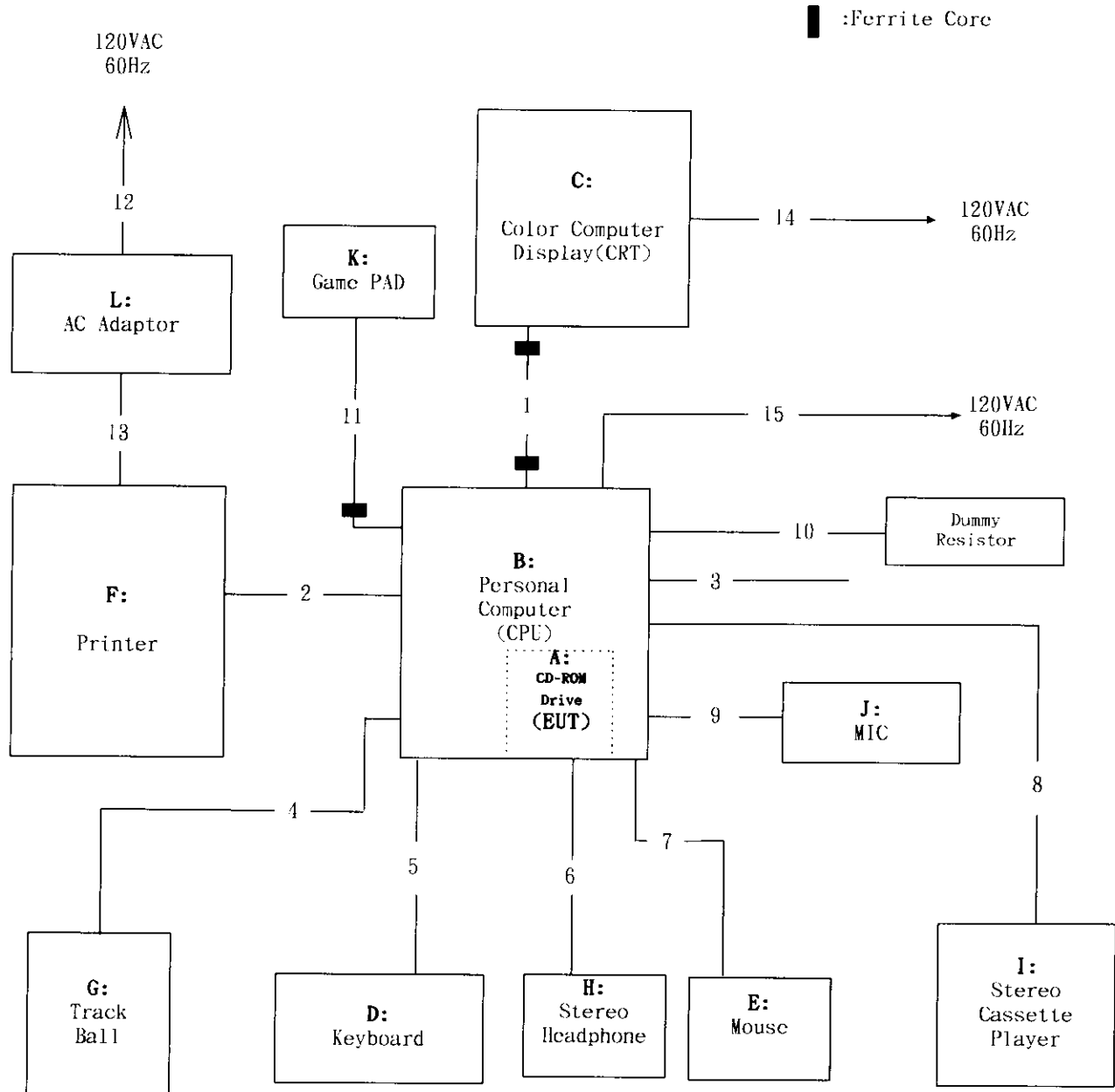
The tests have been carried out the following running mode.

- 1) CD-ROM Drive(EUT) : Random Data Read
 - 2) Color Computer Display : Displayed the "H" Pattern
 - 3) Printer : Printing the "H" Pattern
- Return to step (1)

1.7.3 Generating and Operating frequency of EUT

50.0 MHz, 33.86 MHz

1.8 EUT ARRANGEMENT (DRAWINGS)



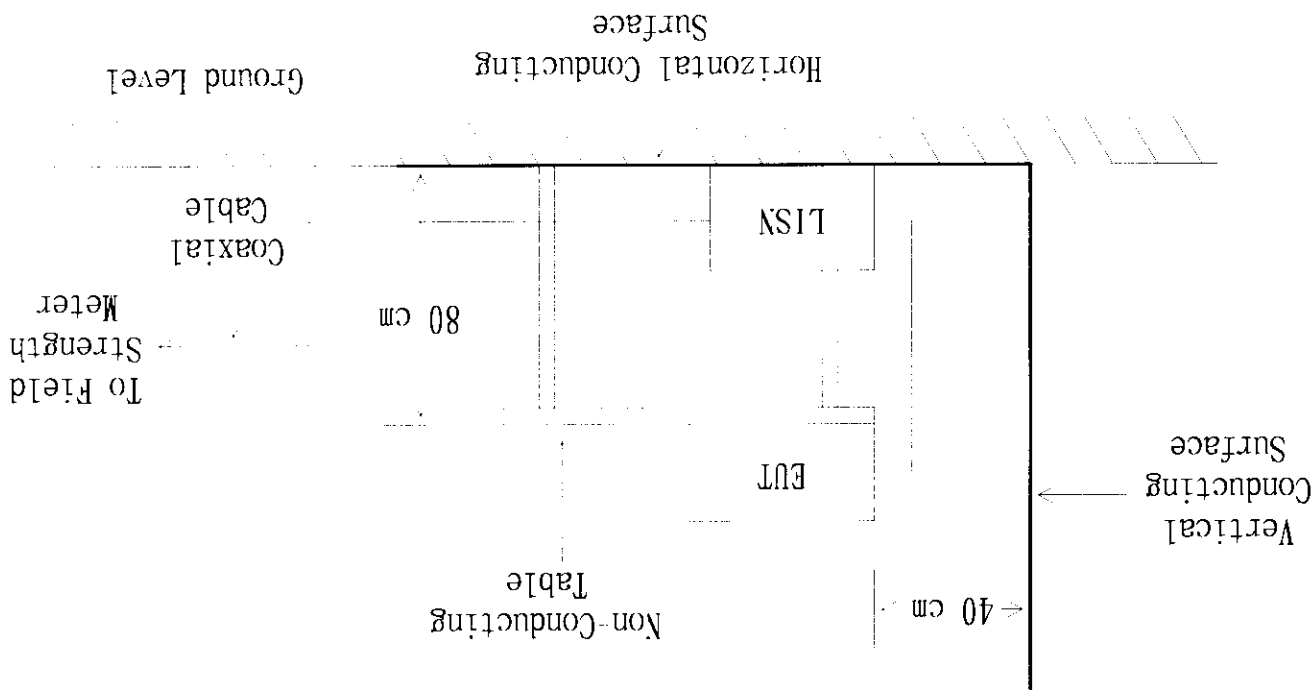
1.9 PRELIMINARY TEST AND TEST-SETUP (DRAWINGS)

1.9.1 AC Power Line Conducted Emission (450 kHz - 30 MHz) :

According to description of ANSI C63.4-1992 sec.7.2.3, the AC power line preliminary conducted emissions measurement were carried out.
 The preliminary conducted measurements were performed using the spectrum analyzer to observe the emission characteristics of the EUT.
 The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions. These configurations were used for final AC power line conducted emissions measurements.

Shielded Enclosure

- Side View -



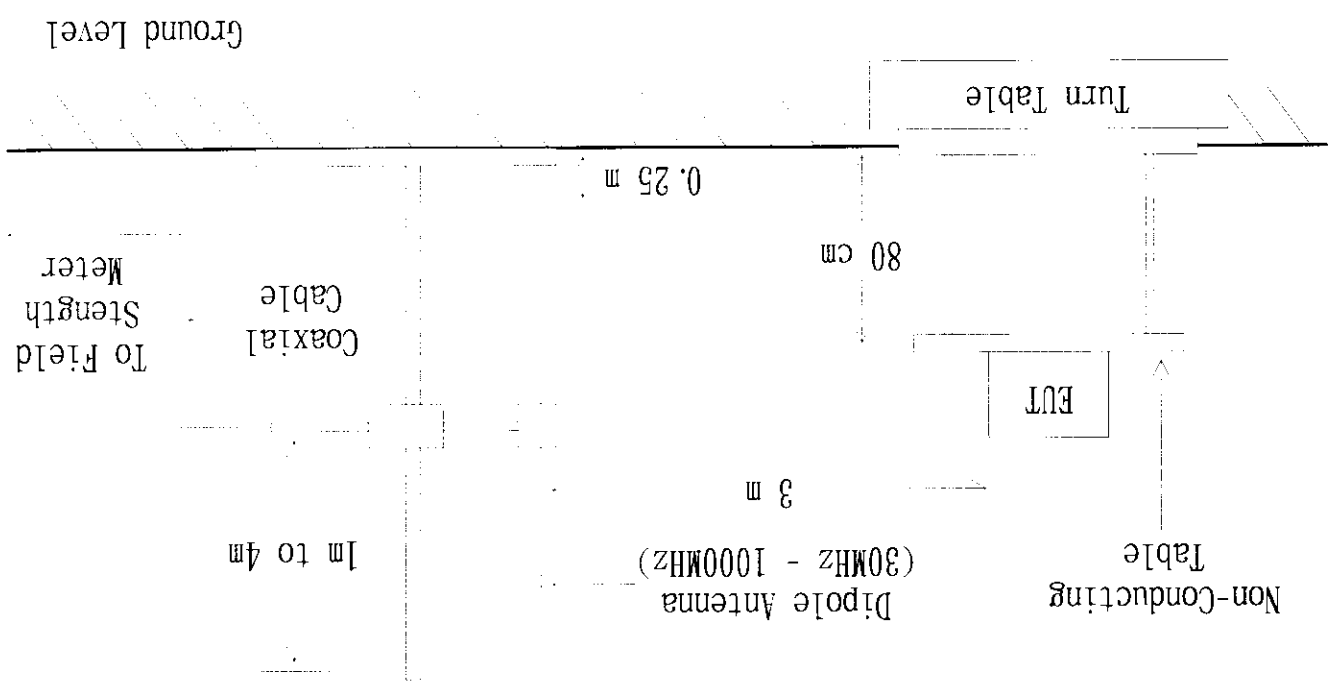
1.9.2 Radiated Emission (30 MHz - 1000 MHz) :

According to description of ANSI C63.4 1992 sec.8.3.1.1, the preliminary radiated emissions measurement were carried out. The preliminary radiated measurements were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT.

The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions. These configurations were used for the final radiated emissions measurements.

Anechoic Chamber

- Side View -

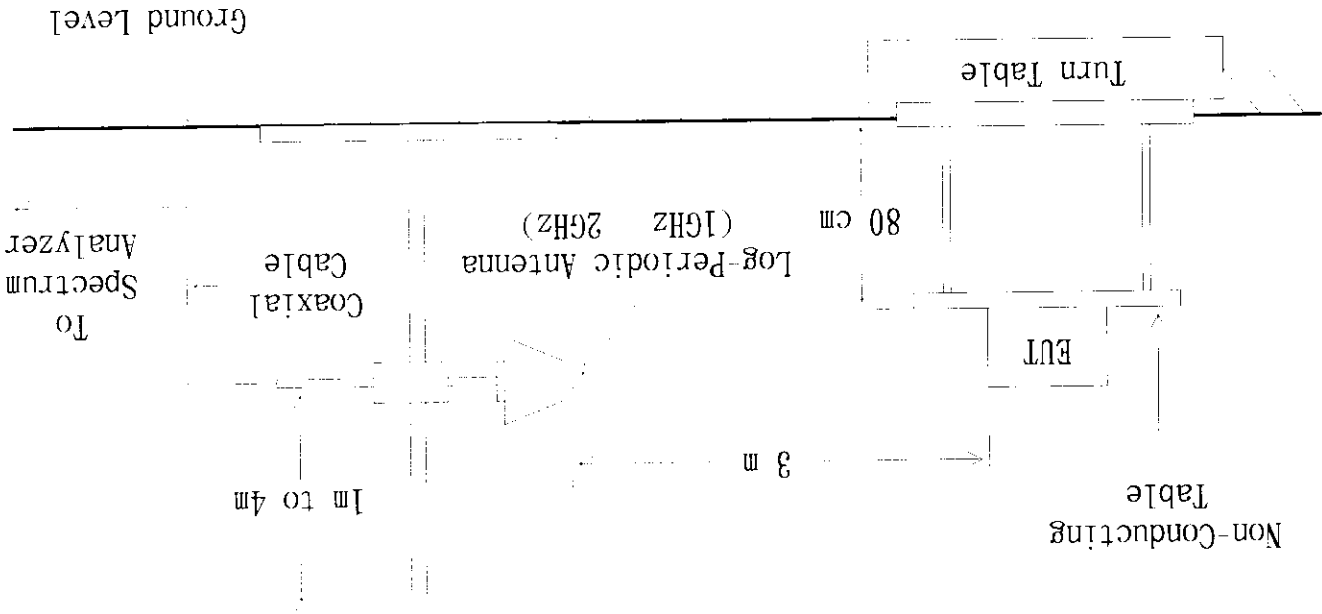


1.9.3 Radiated Emission (Above 1 GHz) :

According to description of ANSI C63.4-1992 sec.8.3.1.1, the preliminary radiated emissions measurement were carried out. The preliminary radiated measurements were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT. The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions. These configurations were used for the final radiated emissions measurements.

Anechoic Chamber

- Side View -



2 TEST DATA

2.1 AC Power Line Conducted Emission Measurement(0.45 MHz - 30 MHz)

Date : September 7, 1998

Temp. : 24°C Humi. : 65%

Frequency (MHz)	LISN Factor (dB)	Meter Reading		Limits (dB/uV)	Emission Levels		Margins	
		V-A (dB/uV)	V-B (dB/uV)		V-A (dB/uV)	V-B (dB/uV)	V-A (dB)	V-B (dB)
0.46	0.2	30.3	30.4	48.0	30.5	30.6	17.5	17.4
0.51	0.2	41.0	41.3	48.0	41.2	41.5	6.8	6.5
0.61	0.2	37.4	37.3	48.0	37.6	37.5	10.4	10.5
0.81	0.2	25.5	31.0	48.0	25.7	31.2	22.3	16.8
1.02	0.2	35.1	37.4	48.0	35.3	37.6	12.7	10.4
1.22	0.2	35.0	37.0	48.0	35.2	37.2	12.8	10.8
1.83	0.2	30.2	36.1	48.0	30.4	36.3	17.6	11.7
2.55	0.2	30.6	38.3	48.0	30.8	38.5	17.2	9.5
3.87	0.2	29.2	33.7	48.0	29.4	33.9	18.6	14.1
4.99	0.2	38.8	40.0	48.0	39.0	40.2	9.0	7.8
5.20	0.2	39.5	40.3	48.0	39.7	40.5	8.3	7.5
7.64	0.2	31.8	33.3	48.0	32.0	33.5	16.0	14.5
8.87	0.2	38.1	38.1	48.0	38.3	38.3	9.7	9.7
11.72	0.2	41.6	41.7	48.0	41.8	41.9	6.2	6.1
12.33	0.2	41.4	41.8	48.0	41.6	42.0	6.4	6.0
13.41	0.3	33.5	35.2	48.0	33.8	35.5	14.2	12.5
14.49	0.3	28.5	31.0	48.0	28.8	31.3	19.2	16.7
16.11	0.3	27.0	28.0	48.0	27.3	28.3	20.7	19.7
20.03	0.4	24.3	22.8	48.0	24.7	23.2	23.3	24.8
24.98	0.5	16.2	21.0	48.0	16.7	21.5	31.3	26.5
29.98	0.6	14.0	18.8	48.0	14.6	19.4	33.4	28.6

- Notes: 1). The spectrum was checked from 0.45 MHz to 30 MHz.
 2). V-A : One end & Ground ; V-B : The other end & Ground
 3). The symbol of '<' means 'or less'.
 4). The symbol of '>' means 'or greater'.
 5). The cable(2.0 m length) loss is included in the LISN factor.
 6). See sec.11.5.2 in ANSI C63.4-1992 for the symbol '*'
 7). A sample calculation was made at 0.46 MHz.

$$Lf + Mr = 0.2 + 30.3 = 30.5 \text{ dB/uV}$$

Where,

Lf : LISN Factor

Mr : Meter Reading

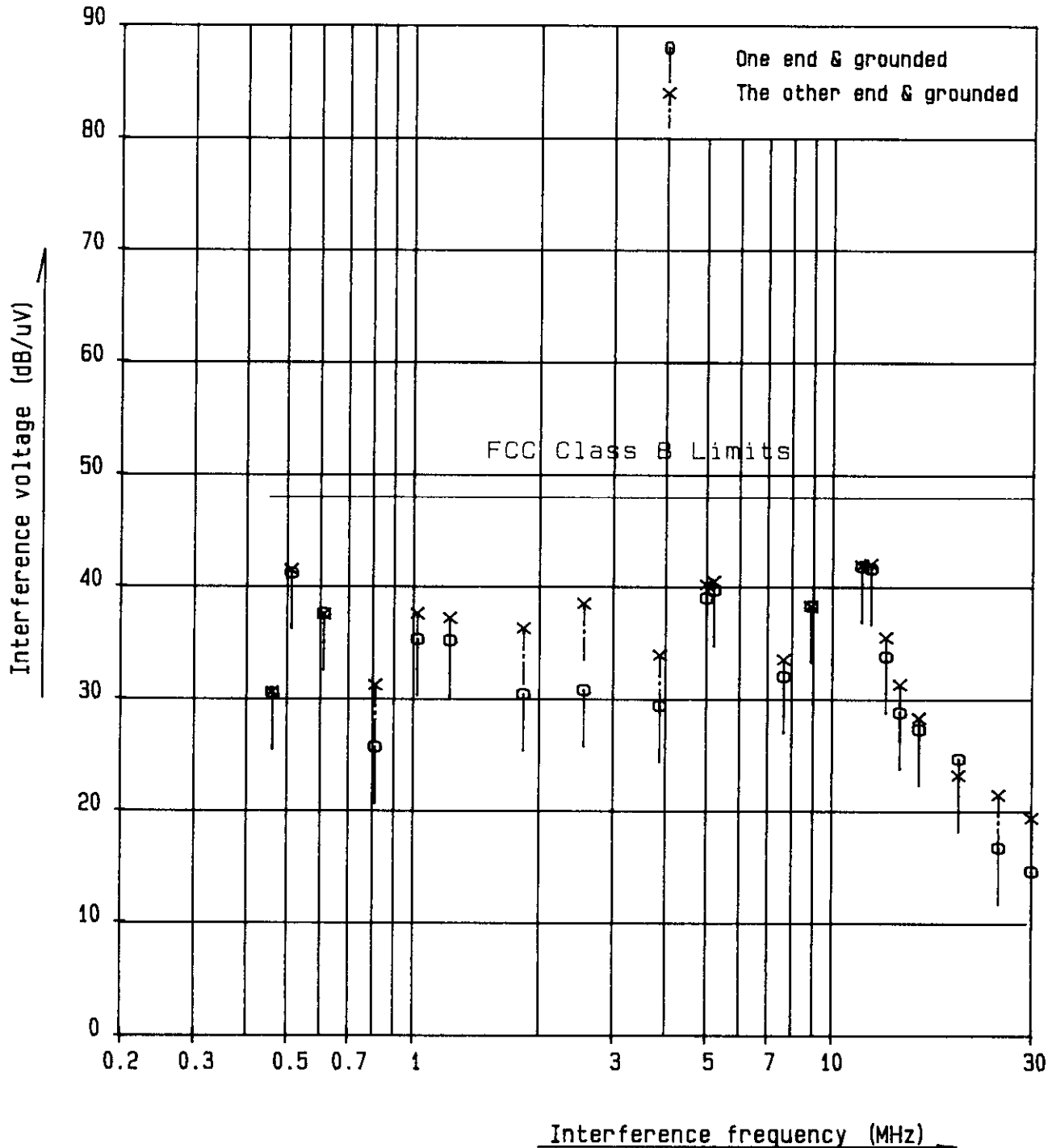
Tested by :

Y. Nakajima

Yoichi Nakajima
 Testing Engineer

AC POWER LINE CONDUCTED EMISSIONS MEASUREMENT

MODEL NO.: XM-6402B



2.2 Radiated Emissions Measurement(30 MHz - 1000 MHz)

Date: September 7 1998
 Temp.: 22°C Humi.: 80%

Frequency (MHz)	Antenna Factor (dB/m)	Meter Reading at 3 m		Limits (dB/uV/m)	Emission Levels at 3 m		Margins	
		Horiz. (dB/uV)	Vert. (dB/uV)		Horiz. (dB/uV/m)	Vert. (dB/uV/m)	Horiz. (dB)	Vert. (dB)
33.9	0.6	21.4	22.4	40.0	22.0	23.0	18.0	17.0
37.7	1.6	10.3	13.3	40.0	11.9	14.9	28.1	25.1
43.1	2.8	7.2	20.0	40.0	10.0	22.8	30.0	17.2
48.0	3.8	12.3	17.4	40.0	16.1	21.2	23.9	18.8
67.7	7.1	15.0	11.4	40.0	22.1	18.5	17.9	21.5
75.0	8.1	17.6	14.7	40.0	25.7	22.8	14.3	17.2
80.0	8.7	17.4	15.1	40.0	26.1	23.8	13.9	16.2
96.0	10.5	14.6	13.8	43.5	25.1	24.3	18.4	19.2
135.5	14.0	12.9	10.6	43.5	26.9	24.6	16.6	18.9
169.4	16.3	14.6	16.5	43.5	30.9	32.8	12.6	10.7
186.3	17.3	9.3	12.0	43.5	26.6	29.3	16.9	14.2
203.2	18.2	11.0	9.5	43.5	29.2	27.7	14.3	15.8
240.1	20.0	13.9	12.0	46.0	33.9	32.0	12.1	14.0
264.6	21.1	3.7	1.5	46.0	24.8	22.6	21.2	23.4
304.8	22.6	5.7	1.0	46.0	28.3	23.6	17.7	22.4
355.6	24.3	1.0	< 0.0	46.0	25.3	< 24.3	20.7	> 21.7
486.8	27.8	< 0.0	1.4	46.0	< 27.8	> 29.2	18.2	16.8
575.6	30.0	< 0.0	1.2	46.0	< 30.0	> 31.2	16.0	14.8
643.4	31.5	0.9	8.0	46.0	32.4	39.5	13.6	6.5
677.2	32.1	< 0.0	4.1	46.0	< 32.1	> 36.2	13.9	9.8
846.5	35.1	< 0.0	2.6	46.0	< 35.1	> 37.7	10.9	8.3
914.2	36.2	< 0.0	1.8	46.0	< 36.2	> 38.0	9.8	8.0

- Notes: 1). The spectrum was checked from 30 MHz to 1000 MHz.
 2). The symbol of '<' means 'or less'.
 3). The symbol of '>' means 'or greater'.
 4). The cable(14.0 m length) loss is included in the antenna factor.
 5). A sample calculation was made at 33.9 MHz.

$$Af + Mr = 0.6 + 21.4 = 22.0 \text{ dB/uV/m}$$

Where,

Af : Antenna Factor

Mr : Meter Reading

Tested by : Y. Nakajima
 Yoichi Nakajima
 Testing Engineer

RADIATED EMISSIONS MEASUREMENT

MODEL NO.: XM-6402B

