



FCC ID : NSVOM7800S

Regulation : FCC Part 15 Sub. B

Model No. : OM-7800S

Issue Date : May 8, 1998

TEST REPORT

85-80005

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EMI TEST REPORT

JQA APPLICATION NO. (TEST REPORT) : 85-80005

Applicant : Nissin Kohki Co., Ltd.
4600 Nakasu, Suwa-shi
Nagano-ken, 392-0015 JAPAN

Description of Equipment : OPTICAL MOUSE

FCC ID : NSVOM7800S

Regulations Applied : FCC Part 15 Subpart B

Place of Measurement : JQA EMC Engineering Dept. Tsuru Branch

NVLAP Lab. Code : 200192-0 (Effective through : June 30, 1998)

TEST FACILITY : This test facility is recognized the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations.

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.

Signed:

Masaaki Takahashi Director

Tsuru Branch

JQA EMC Engineering Dept.

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

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GENERAL EQUIPMENT INFORMATION :**DESCRIPTION OF EQUIPMENT:**

- 1) Type of EUT : Pr-production
- 2) Category : Class B
- 3) Trade Name : OPTWAVE
- 4) Model No. : OM-7800S
- 5) Serial No. : 00261
- 6) Source of Interference
& Internal Frequencies : 4.0 MHz
- 7) Date of Manufacture : -
- 8) Power Rating : 120VAC 60Hz

TEST CONDITION OF DIGITAL DEVICE :

- 1) Configuration of EUT : Refer to Page Nos. 8 to 16.
- 2) Operating Condition : Practice Operation("H" Pattern, "H" Print)
- 3) EUT Grounding : None
- 4) EUT Warm-up Time : 5 minutes

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CONCLUSIONS OF THE TEST RESULTS:

The data shown in this report were made in accordance with the procedures given in FCC Part 15 Sub.B Class B as detailed from page 4 to page 7.

1) Mains Terminal Disturbance Voltage : PASSED

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Min. Margins with respect to the limits : 2.3 dB at 21.26 MHz

Measurement Uncertainty : $\pm$ 2.0 dB

Tested by:


Hideki Kajiware2) Radiated Disturbance : PASSED

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Min. Margins with respect to the limits : 0.9 dB at 63.8 MHz

Measurement Uncertainty : $\pm$ 3.0 dB

Tested by:


Hideki Kajiware

EQUIPMENT(EUT) MODIFICATION:

No modifications were conducted by JQA to achieve compliance to Class B levels.

I HEREBY CERTIFY THAT : The data shown in this report were made in accordance with the procedures given in ANSI C63.4-1992 and the energy emitted by the equipment was found to be within the limits applicable.

I assume full responsibility for accuracy and completeness of these data.

Approved Signatory :


Masaaki Takahashi, Director

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MEASUREMENT OF MAINS TERMINAL DISTURBANCE VOLTAGE

Date : April 13, 1998
 Temp.: 21°C Humi.:62 %

Frequency (MHz)	LISN Factor (dB)	Meter Reading (dB/uV)				Limits (dB/uV)		Emission Level (dB/uV)		Margin (dB)		Comment
		V-A		V-B		Q.P	AVE	Q.P	AVE	Q.P	AVE	
		Q.P	AVE	Q.P	AVE							
0.45	0.1	<10.0	-	<10.0	-	48.0	48.0	<10.1	-	> 37.9	-	
0.49	0.1	14.2	-	14.6	-	48.0	48.0	14.7	-	33.3	-	
0.54	0.1	12.0	-	12.0	-	48.0	48.0	12.1	-	35.9	-	
0.69	0.1	17.9	-	19.8	-	48.0	48.0	19.9	-	28.1	-	
0.79	0.1	20.1	-	19.1	-	48.0	48.0	20.2	-	27.8	-	
1.03	0.1	22.8	-	22.4	-	48.0	48.0	22.9	-	25.1	-	
1.33	0.1	23.8	-	23.2	-	48.0	48.0	23.9	-	24.1	-	
1.82	0.1	24.4	-	25.5	-	48.0	48.0	25.6	-	22.4	-	
2.21	0.1	25.5	-	25.6	-	48.0	48.0	25.7	-	22.3	-	
2.71	0.1	26.1	-	25.2	-	48.0	48.0	26.2	-	21.8	-	
3.10	0.1	25.3	-	25.1	-	48.0	48.0	25.4	-	22.6	-	
3.98	0.1	25.4	-	23.9	-	48.0	48.0	25.5	-	22.5	-	
5.01	0.1	33.1	-	30.7	-	48.0	48.0	33.2	-	14.8	-	
6.79	0.1	22.8	-	19.9	-	48.0	48.0	22.9	-	25.1	-	
9.40	0.1	25.6	-	26.7	-	48.0	48.0	26.8	-	21.2	-	
12.35	0.2	23.4	-	23.8	-	48.0	48.0	24.0	-	24.0	-	
13.97	0.3	29.8	-	30.2	-	48.0	48.0	30.5	-	17.5	-	
16.59	0.3	30.3	-	30.4	-	48.0	48.0	30.7	-	17.3	-	
18.20	0.4	27.0	-	27.0	-	48.0	48.0	27.4	-	20.6	-	
20.34	0.4	23.2	-	23.2	-	48.0	48.0	23.6	-	24.4	-	
21.26	0.4	45.2	-	45.3	-	48.0	48.0	45.7	-	2.3	-	
25.52	0.5	27.4	-	27.6	-	48.0	48.0	28.1	-	19.9	-	
29.77	0.6	40.3	-	40.4	-	48.0	48.0	41.0	-	7.0	-	

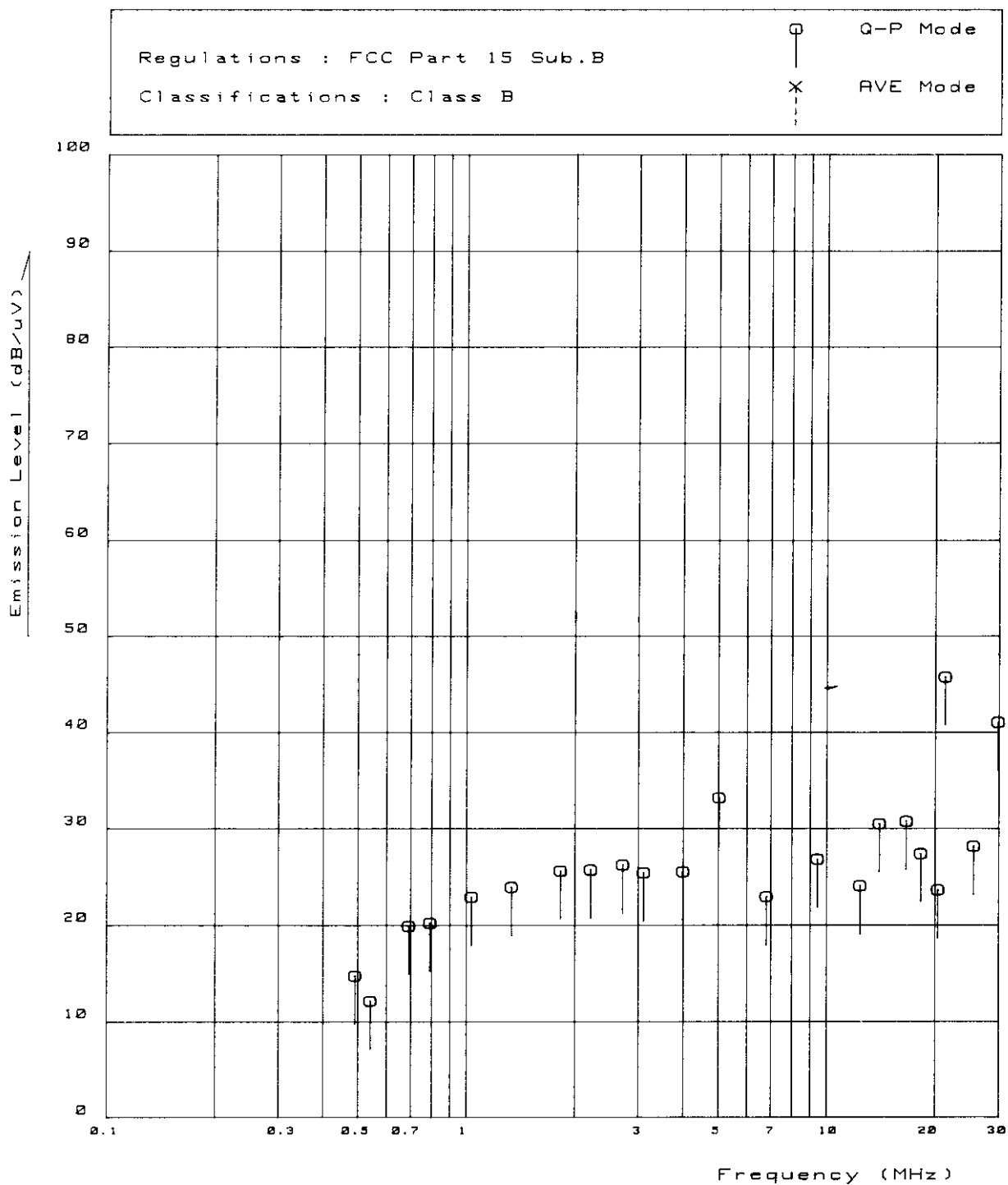
- Notes: 1) Test Location : Shielded Room
 2) The spectrum was checked from 0.45 to 30 MHz.
 3) LISN(Line Impedance Stabilization Network) factor includes the cable loss for 5 meter.
 4) The symbol of "<" means "or less".
 5) The symbol of ">" means "more than".
 6) The symbol of "-" means "Not applicable".
 7) V-A : One end & Ground V-B : The other end & Ground
 8) Q.P : Quasi-Peak Detector AVE : Average Detector
 9) Setting of measuring instrument :
 a). Quasi-Peak
 Detector Function : CISPR Quasi-Peak
 IF Bandwidth : 9 KHz (0.15-30 MHz)
 b). Average
 Detector Function : Average
 IF Bandwidth : 10 KHz (0.15-30 MHz)

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POWER LINE CONDUCTED EMISSION MEASUREMENTS

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MEASUREMENT OF RADIATED DISTURBANCE

Date : April 13, 1998
 Temp.: 23°C Humi.: 67 %

Frequency (MHz)	Antenna Factor (dB)	Meter Reading (dB/uV)		Limits (dB/uV/m)	Emission Level (dB/uV/m)		Margin (dB)		Comment
		Horiz.	Vert.		Horiz.	Vert.	Horiz.	Vert.	
34.0	17.9	2.7	8.1	40.0	20.6	26.0	19.4	14.0	
38.2	16.3	<-2.0	4.1	40.0	<14.3	20.4	>25.7	19.6	
42.5	14.9	9.2	11.6	40.0	24.1	26.5	15.9	13.5	
55.3	11.2	19.8	19.5	40.0	31.0	30.7	9.0	9.3	
63.8	9.0	30.1	28.6	40.0	39.1	37.6	.9	2.4	
72.2	7.6	30.0	30.3	40.0	37.6	37.9	2.4	2.1	
85.0	9.5	25.3	20.3	40.0	34.8	29.8	5.2	10.2	
104.1	12.7	6.6	11.2	43.5	19.3	23.9	24.2	19.6	
114.8	14.3	14.4	12.4	43.5	28.7	26.7	14.8	16.8	
127.6	15.8	10.5	2.6	43.5	26.3	18.4	17.2	25.1	
136.1	16.6	5.6	2.9	43.5	22.2	19.5	21.3	24.0	
153.8	18.2	12.0	11.2	43.5	30.2	29.4	13.3	14.1	
160.3	18.7	5.4	5.4	43.5	24.1	24.1	19.4	19.4	
175.4	19.8	4.4	1.9	43.5	24.2	21.7	19.3	21.8	
199.9	21.2	<-2.0	2.9	43.5	<19.2	24.1	>24.3	19.4	
227.1	22.2	2.6	5.1	46.0	24.8	27.3	21.2	18.7	
250.6	22.2	12.3	7.1	46.0	34.5	29.3	11.5	16.7	
318.5	20.6	8.5	12.2	46.0	29.1	32.8	16.9	13.2	
350.0	21.6	7.8	10.1	46.0	29.4	31.7	16.6	14.3	
400.5	22.7	10.9	12.3	46.0	33.6	35.0	12.4	11.0	
451.0	23.8	12.2	11.7	46.0	36.0	35.5	10.0	10.5	
542.3	25.4	1.4	0.7	46.0	26.8	26.1	19.2	19.9	
700.0	28.4	<-2.0	<-2.0	46.0	<26.4	<26.4	>19.6	>19.6	
850.0	31.2	<-2.0	<-2.0	46.0	<29.2	<29.2	>16.8	>16.8	
1000.0	33.8	<-2.0	<-2.0	54.0	<31.8	<31.8	>22.2	>22.2	

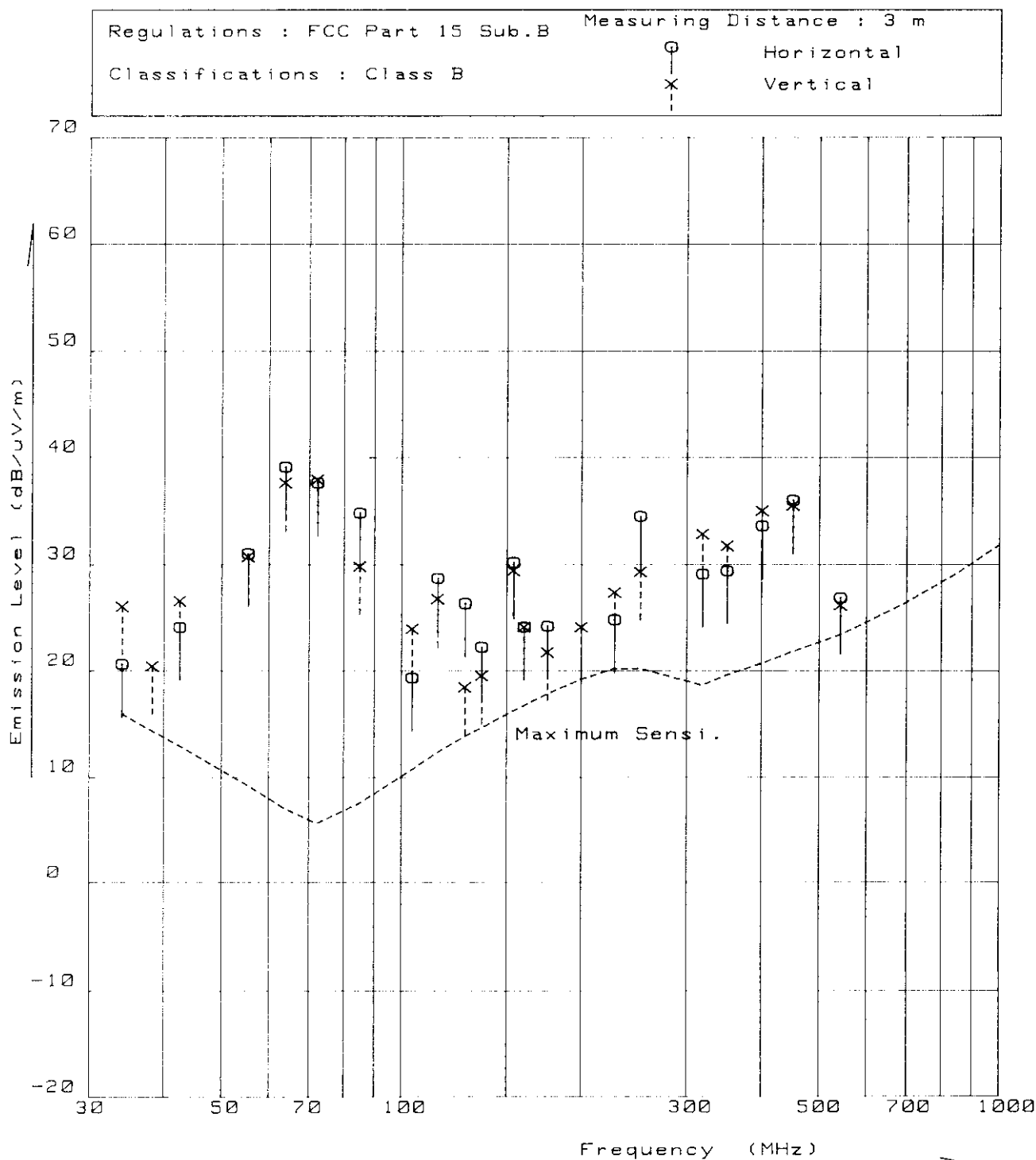
- Notes: 1) Test Location : Open Site No.2
 2) Test Distance : 3 m
 3) The spectrum was checked from 30 to 1000 MHz.
 4) Antenna factor includes the cable loss for 58 meters.
 5) The symbol of "<" means "or less".
 6) The symbol of ">" means "more than".
 7) A sample calculation was made at 34.0 MHz.
 $Af + Mr = 17.9 + 2.7 = 20.6 \text{ dB/uV/m}$
 Af : Antenna Factor
 Mr : Meter Reading
 8) Setting of measuring instrument :
 Detector Function : CISPR Quasi-Peak
 IF Bandwidth : 120 KHz

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RADIATED INTERFERENCE EMISSION MEASUREMENTS

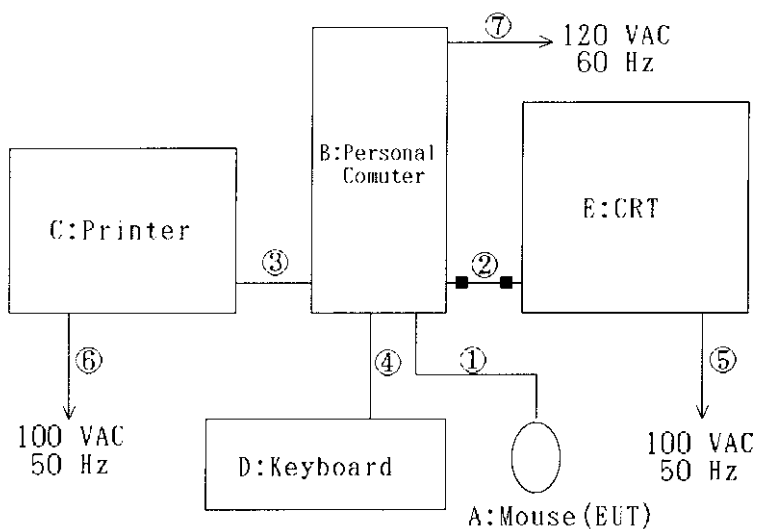
Model No. : OM-7800S



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- TEST CONFIGURATION -



Tested System:

NO.	Description	Manufacturer	Model No.	FCC ID	Serial No.
A:	Mouse	Nissin Kohki Co., Ltd.	OM-7800S	NSVOM7800S	00261
B:	PERSONAL COMPUTER	COMPAQ	3520VS	CNT75MDCZV5	7522HNB50143
C:	PRINTER	EPSON	L220A	None	2AG0102613
D:	KEYBOARD	COMPAQ	AC-5V	AQ6-MTN4C15	9811KP-1
E:	MONITOR	IBM	-	None	97-1R925

Cable List:

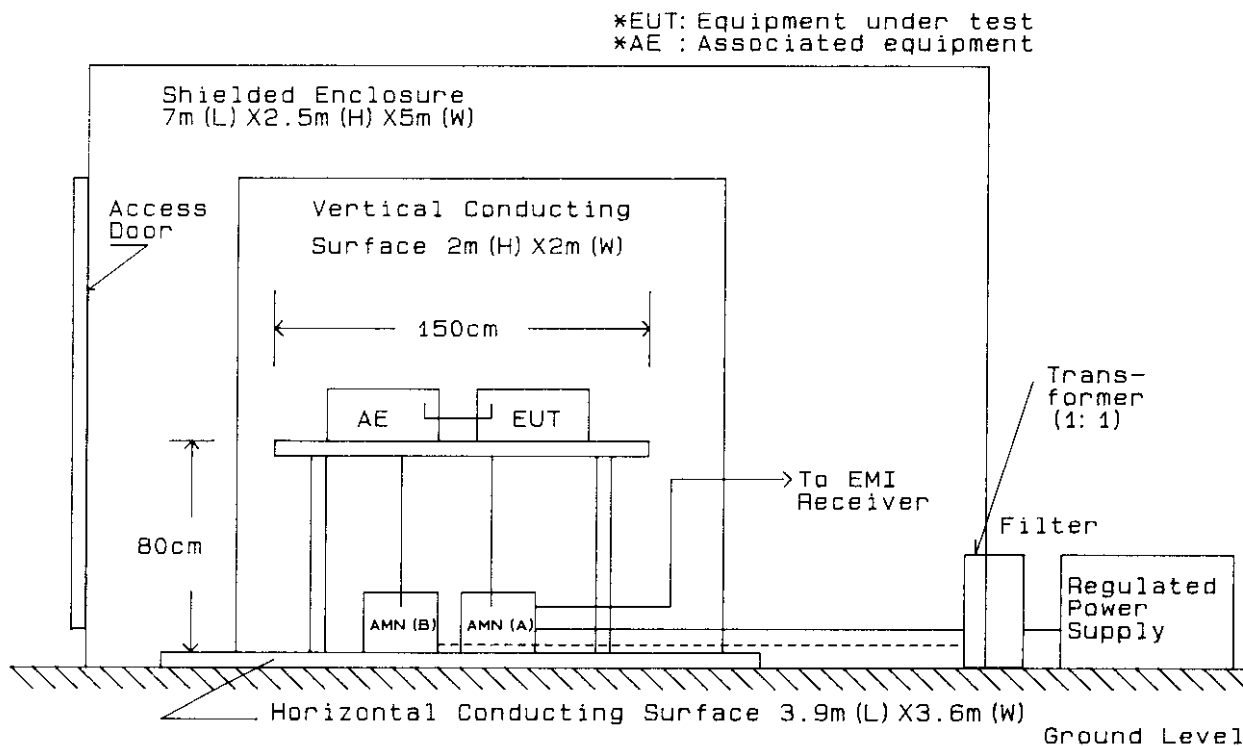
NO.	Description	Shielded	Ferrite Core	Length (m)
①	Mouse Cable	YES	NO	0.8
②	CRT Cable	YES	YES	1.6
③	PRINTER Cable	YES	NO	1.8
④	KEYBOARD Cable	NO	NO	2.2
⑤	AC Cable (CRT)	NO	NO	1.9
⑥	AC Cable (PRT)	NO	NO	1.9
⑦	AC Cable (PC)	NO	NO	1.9

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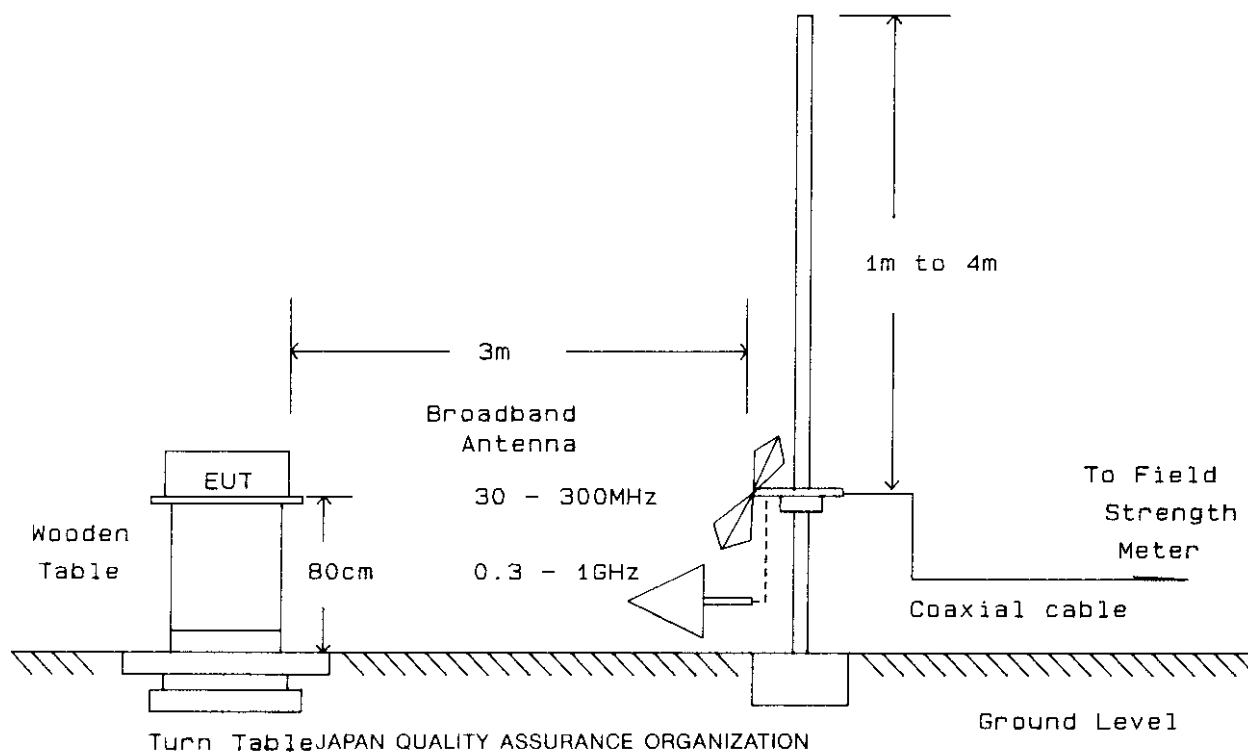
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Test-setup (Drawings) :

Conducted Emissions 450 KHz - 30 MHz :



Radiated Emissions 30 - 1000 MHz :



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Test Instrumentation Used, Conducted Measurement:

Type	Manufacturer Model No. / Serial No.	Last Cal.	Cal. Interval
Receiver(*)	Rohde & Schwarz ESH 3 / 872994/047	May 1997	1 year
LISN (50Ω 50 μH)	Kyoritsu Electrical KNW-407 / 8-833-5	Aug. 1997	1 year
RF CABLE (Length:5m)	Fujikura 3D-2W / S-1	May 1997	1 year

(*) Setting of measuring instrument:

a) Quasi-Peak Mode

Detector Function : CISPR Quasi-Peak

IF Bandwidth : 9 KHz (0.15 - 30 MHz)

b) Average Mode

Detector Function : Average

10 KHz (0.15 - 30 MHz)

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Test Instrumentation Used, Radiated Measurement:

Type	Manufacturer Model No. / Serial No.	Last Cal.	Cal. Interval
Receiver(*)	Rohde & Schwarz ESV / 863796/015	May 1997	1 year
Spectrum Analyzer	Hewlett Packard 8560E	May. 1997	1 year
Bi-Coni Antenna	Schwarzbeck UHALP9106 / 119-05-048-2	Oct. 1996	1 year
Log-Periodic Antenna	Schwarzbeck UHALP9107 / 91071212	Oct. 1996	1 year
Open Site	JQA JQA-NO. 1	Sep 1997	1 year
RF Cable	Fujikura 5D2W / No. 1-2	May 1997	1 year
RF Cable	Fujikura 20D2W / No. 1-1	May 1997	1 year

(*) Setting of measuring instrument:

Detector Function : CISPR Quasi-Peak

IF Bandwidth : 120 KHz (30 - 1000 MHz)