

MEASUREMENT / TECHNICAL REPORT

COMPANY NAME : Sony Corporation
MODEL : CDL1100-40
FCC ID : AK8CDL110040
DATE OF REPORT : Nov. 18, 1998

This report concerns(check one) : ☒Original grant ☐Class II change

Equipment type: CD-ROM LIBRARY ☐ Class A Digital Devices
☒ Class B Digital Devices
☐ All Other Device

Deferred grant requested per CFR 0.457(d) (1) (ii) ? ☐Yes ☒No

If yes,defer until : N/A
date

Sony Corporation agrees to notify the Commission by N/A
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 unintentional radiators-the new 47 CFR
[10-1-90 Edition]provision.

Measured by :

Mikio Seki Engineer
Product Safety
Quality Assurance Dept.
Home A & V Products Company,
Sony Corporation

Address : 1-7-4, Konan
Minato-ku, Tokyo, 108-0075 Japan

Phone number : 03-3458-7291

FAX number : 03-3458-7966

AF-980651

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FCC ID:AK8CDL110040

1 GENERAL INFORMATION

1.1 Product Description

Trade Name : SONY	Model Name : CDL1100-40	Product Name : SONY	Description : CD-ROM LIBRARY
Type of Processor : N/A		Processor Clock Speed : 33.86 MHz	
Number of Storage : N/A		Interface Ports : Audio OUT : Computer intrface	
Power Supply : AC120V 60 Hz		: : :	
Similar Model (to be covered) : N/A : : : :		Description for Deference(s)	
<u>Accessories</u> (to be sold with the model tested)			
Model Name : PX-85CS : C3KMMP1 : :	Description : CD-ROM UNIT : Computer mouse 2 pieces : :	Model Name : SB-S35S : : :	Description : AU System Selector : : :

Note : See attached user manual for further description.

1.2 Related Submittal(s)/Grant(s)

☒ [X] Original application☐ [] Modification and class II permissive change

If this is a filing for class II permissive change.
List here the FCC's file on the original grant.

Original FCC ID : AK8CDL110040

FCC's file :

Home A & V Products Company, Sony Corp.

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FCC :AK8CDL110040

1.3 Tested System Details

<u>Host Digital Device</u> (Certified or Verified)				
Trade Name	Model Name	FCC ID Number	Description	
:SONY	:CDL1100-40	:AK8CDL110040	:CD-ROM LIBRARY	

<u>Peripheral Device</u> (Certified or Verified)				
Trade Name	Model Name	Serial No.	FCC ID Number	Description
:GATE WAY	:P5-200	: -	:N/A	:Personal Computer
:DELL	:D1726T-LS	: -	:AK8CPD17SF1	:Color computer Display
:HEWLETT PACKARD	:B94C2145X	: -	:B94C2145X	:Color printer
:COMPAQ	:GYUM93SK	: -	:GYUM93SK	:Keyboard
:	:	:	:	:

<u>Accessories</u>		
Trade Name	Model Name	Description
:PLEXTER	:PX-85CS	:CD-ROM UNIT
: SONY	:SB-S35S	:AU System selector
:MICROSOFT	:C3KMPI	:Computer mouse 2 pieces

<u>Power Supply Cord</u>		
☐ 2P	☒ 3P	
☐ Shielded	☒ Unshielded	☐ Equipped with filter

<u>Connection Cables</u>							
Type of Cable	Construction		Length	Type of Cable	Construction		Length
:Audio Cable	<u>S</u>	<u>P</u>	1.2m	:	—	—	—
:Computer Cable	<u>S</u>	<u>P</u>	1.2m	:	—	—	—
:	—	—	—	:	—	—	—
:	—	—	—	:	—	—	—

Notes 1: S: shielded P: plastic hoods F: ferrite beads on cable
 U: unshielded M: metallic hoods

2: For location of cables used, refer to photographs in item 5.

1.4 Test Methodology

Measurement Procedure : [X] C63.4(1992)

Radiation Measurement distance : [X] 3 meters [] 10 meters

1.5 Test Facility

Site for Radiated Emissions

- [] Okada B Site , 2254 Okada, Atsugi-shi, Kanagawa-ken, Japan
- [] Okada C Site , 2254 Okada, Atsugi-shi, Kanagawa-ken, Japan
- [] Hase 3m Site , 1061-3 Hase, Atsugi-shi, Kanagawa-ken, Japan
- [] Sony Anechoic Site , 1-28-13 Nakaikegami, Ohta-ku, Tokyo, Japan
- [X] Tomoe Anechoic Site , 4-5-17 Kachidoki, Chuo-ku, Tokyo, Japan
- [] Ikegami Open Site , 1-28-13 Nakaikegami, Ohta-ku, Tokyo, Japan
- [] EMC Itakura Site , 10-1 Aza Futoi Oaza Okura Itakura-machi
Ora-gun, Gunma, Japan

Site for Conducted Emissions

- [X] Ikegami Anechoic Site, 1-28-13 Nakaikegami, Ohta-ku, Tokyo, Japan
- [] EMC Itakura Site , 10-1 Aza Futoi Oaza Okura Itakura-machi
Ora-gun, Gunma, Japan

FCC Filing for The Sites

The above sites have been fully reported to FCC and accepted as follows.

Site	Date of Report	Date of Acceptance
[] Okada B Site / Kamata Site	: Apr.12,1994	: May.24,1994(31040/SIT)
[] Okada C Site / Kamata Site	: Apr.12,1994	: May.24,1994(31040/SIT)
[] Hase 3m Site / Kamata Site	: Apr.12,1994	: May.24,1994(31040/SIT)
[] Sony Anechoic Site / Kamata Site	: Jun 8,1993	: Aug 5,1993(31040/SIT)
[X] Tomoe Anechoic Site	: Apr 1,1997	: May 29,1997(31040/SIT)
[] Ikegami Open Site / Kamata Site	: Aug 26,1993	: Sep 27,1993(31040/SIT)
[] EMC Itakura Site	: May 12,1995	: May 31,1995(31040/SIT)

3 SYSTEM TEST CONFIGURATION**3.1 Justification**

The system was configured for testing in a typical fashion (as a customer would normally use it). Refer to § 1.3 Tested System Details for details. The tests were conducted with the worst case modes as follows.

	Specification	Worst Case
User accessible speeds:	<u>N/A</u>	: <u>N/A</u>
Baud rates	: <u>N/A</u>	: <u></u>
Interface Ports	: <u>AC IN Port</u>	: <u>All Used</u>
	: <u>RS-232C Port</u>	
	: <u>SCSI-1/2 Port</u>	
	: <u>LINE OUT A/B</u>	
[] Default text modes :	<u></u>	: <u></u>
[] Resolution modes :	<u></u>	
Power connection	: <u>AC Cord</u>	: <u>Inserted AC Cord</u>
I/O Cabd Inserted	: <u>N/A</u>	: <u>N/A</u>
Other	: <u>N/A</u>	: <u>N/A</u>

3.2 EUT Exercise Software

This the adaptor for infrared data transfer by using parallel port of the PC(PC/AT compatible).

3.3 Special Accessories

Special Accessories needed connecting EUT to achieve compliance:

N/A

Notes :

1.Refer to Item 1.3(Connection Cables), for the details.

2.Shielded Cable :The specific type name is described in instruction manual.

3.Cable with Ferrite :The specific cable and/or ferrite is packed with EUT.

3.4 Equipment Modifications

Not Applicable

3.5 Configuration of Tested System

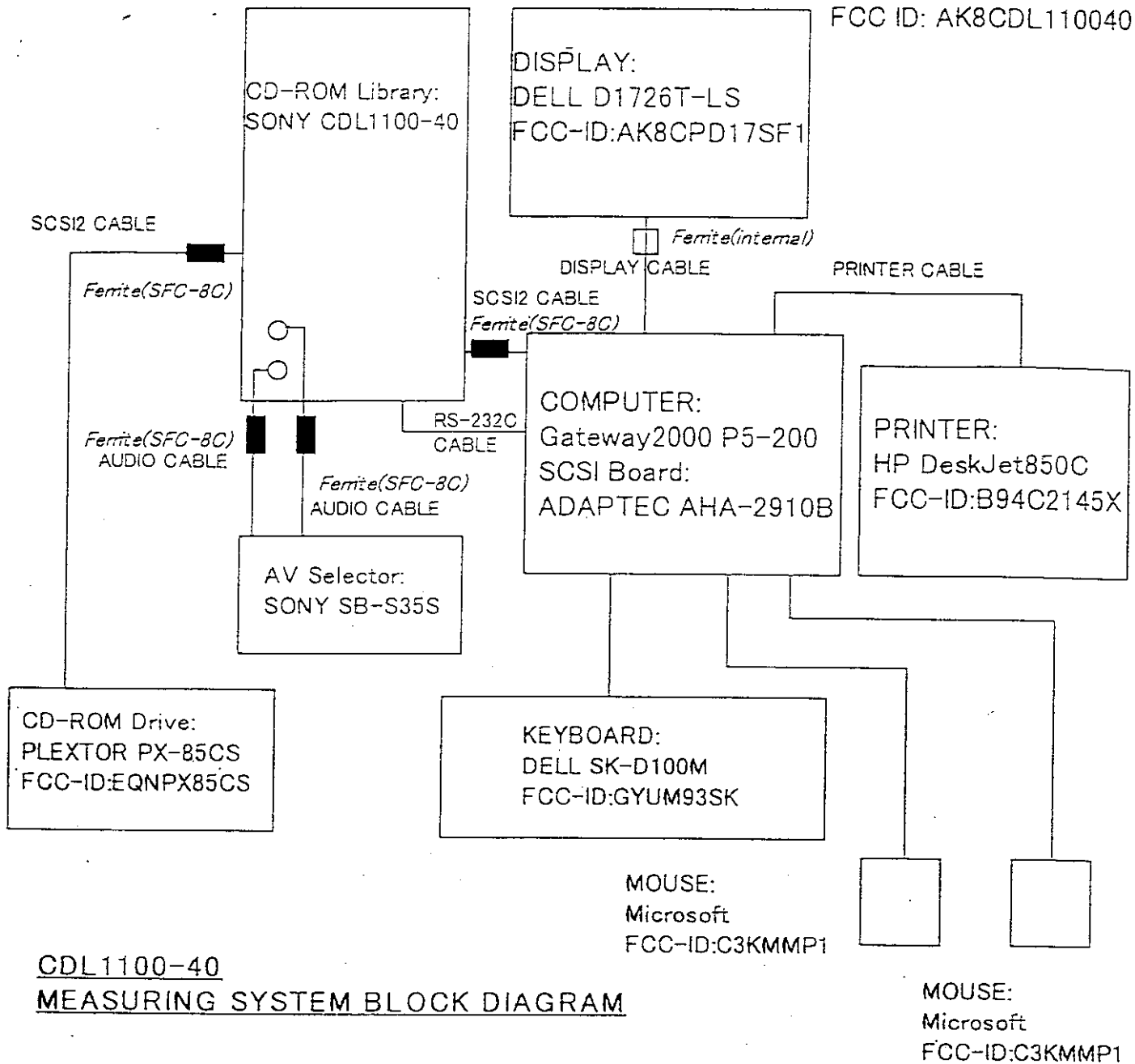
Refer to sheet 9.

4 BLOCK DIAGRAM(S)

4.1 Block Construction

Refer to sheets 10, 11, and 12

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- *1: PRINTER cable (36pin Centronix-25pin D-SUB) shielded,plastic
- *2: RS232C cable (9pin D-SUB-9pin D-SUB) shielded,plastic
- *3: Power Supply Cord unshielded,plastic

Explanation for CDL1100 Main Block Diagram

The Main board is the block where all the function of this model concentrate and controls the robotics, front panel, SCSI interface, RS-232C interface and so on.

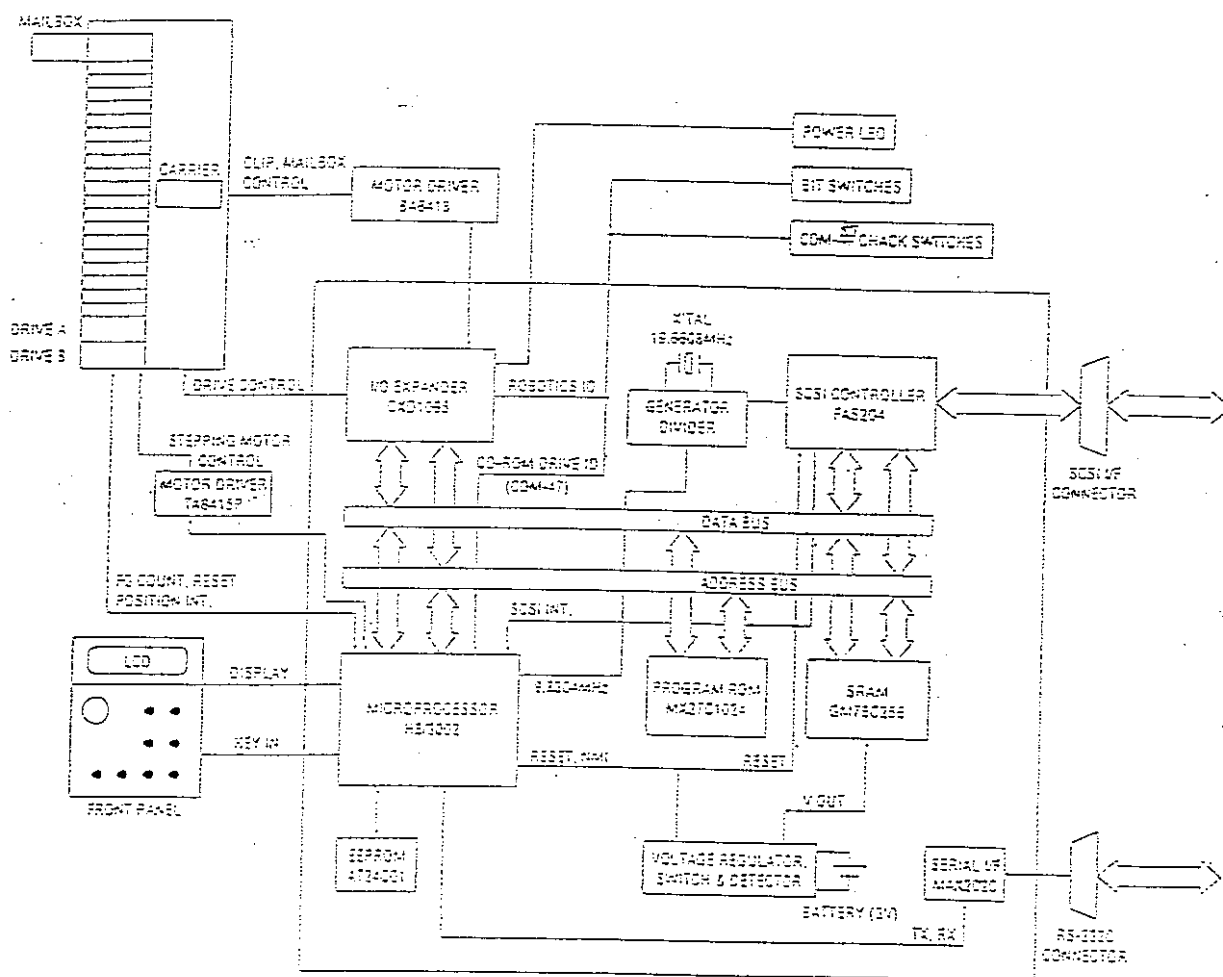
This board consists of mainly Microprocessor, SCSI controller, I/O Expander, Program ROM and SRAM, and these ICs are connected to the data bus and the address bus of the Microprocessor.

The Microprocessor executes pre-defined process according to the program written in the Program ROM using the SRAM as a working R.A.M. And this processor deals with stepping motor control (output stepping pulses, input FG counts), clip in/out control, mailbox open/close control and CD-ROM drive chuck/unchuck control through I/O Expander.

LCD display data are transferred from this processor to the LCD module in the front panel and key pressing is detected by this processor. SCSI ID's for CD-ROM drives (CDM-47) are read directly from the Bit Switches of rear panel but SCSI ID for robotics is read indirectly through the I/O Expander.

The non-volatile data are stored in the EEPROM and battery-backup SRAM.

After the power is on, the Microprocessor executes a mechanical calibration, that is, closes the mailbox, positions the carrier to the reset position and waits for a SCSI command coming from the host computer.



Main Block Diagram

Introduction for CDL1100-40/41

The CDL1100-40/41 CD-ROM Library is a CD-ROM library system that combines high performance "jukebox" robotics with two internal CD-ROM drives to provide access up to 100 CD-ROM discs stored in the system.

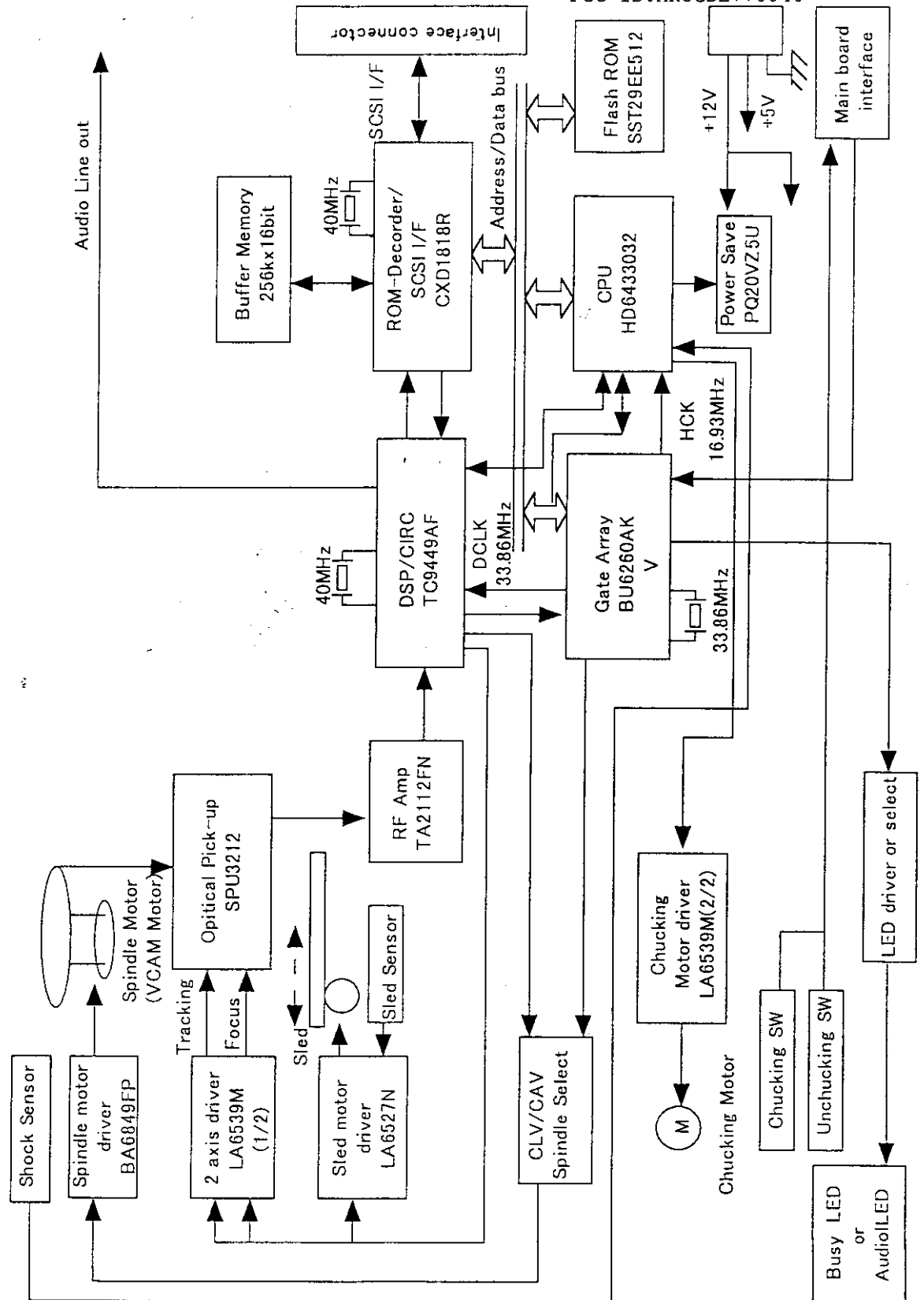
The system consists of the following major components:

- Robotics (The mechanism for storing and moving discs)
- CD-ROM drive A (The 24-speed Partial CAV CD-ROM drives)
- CD-ROM drive B (The 24-speed Partial CAV CD-ROM drives)
- Mailbox (Import/Export CD)

CDL1100-40 is including a application software bundle.
CDL1100-41 is without a application software.

The system supports SCSI-2 jukebox commands. This means that you can control most of the CD-ROM Library function from a host computer via the SISC interface, or alternatively the control panel.

The RS-232C serial port allows for diagnostics while servicing the CD-ROM Library.



6 CONDUCTED EMISSION DATA

- 6.1 The initial step in collecting 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.

Test Personnel : M. Seki

Tester Signature M. Seki Date Oct. 16, 1998

Typed/Printed Name Mikio Seki

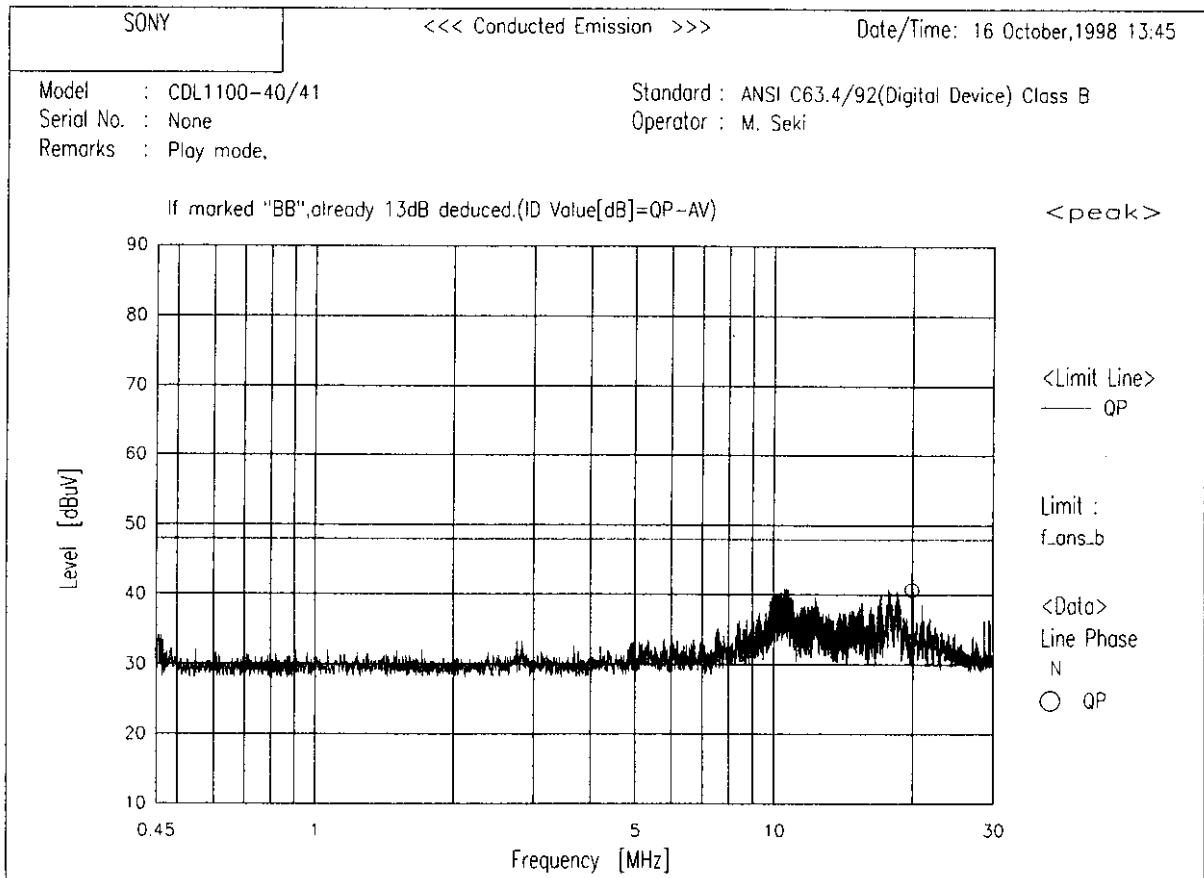
***** SONY Corporation *****
 <<< Conducted Emission >>>

16 October, 1998 13:49
 Page 1

Model : CDL1100-40/41
 Serial No. : None
 Standard : ANSI C63.4/92 (Digital Device) Class B
 Condition File : F_ANS_B
 Remark :
 :
 : Play mode,
 :
 : If marked "BB", already 13dB deduced. (ID Value[dB]=QP-AV)
 AC Power : 120 V 60 Hz
 Temperature : 26 deg.
 Humidity : %
 Operator : M. Seki

***** Results *****

No.	Frequency [MHz]	Reading [dBuV]	c.f. [dB]	ID Value [dB]	ID Result [dBuV]	Limit [dBuV]	Margin [dB]
Phase N							
1	10.58640	26.3	12.2	2.9	38.5	48.0	9.5
2	10.58790	24.4	12.2	2.6	36.6	48.0	11.4
3	19.91020	28.1	12.6	1.5	40.7	48.0	7.3



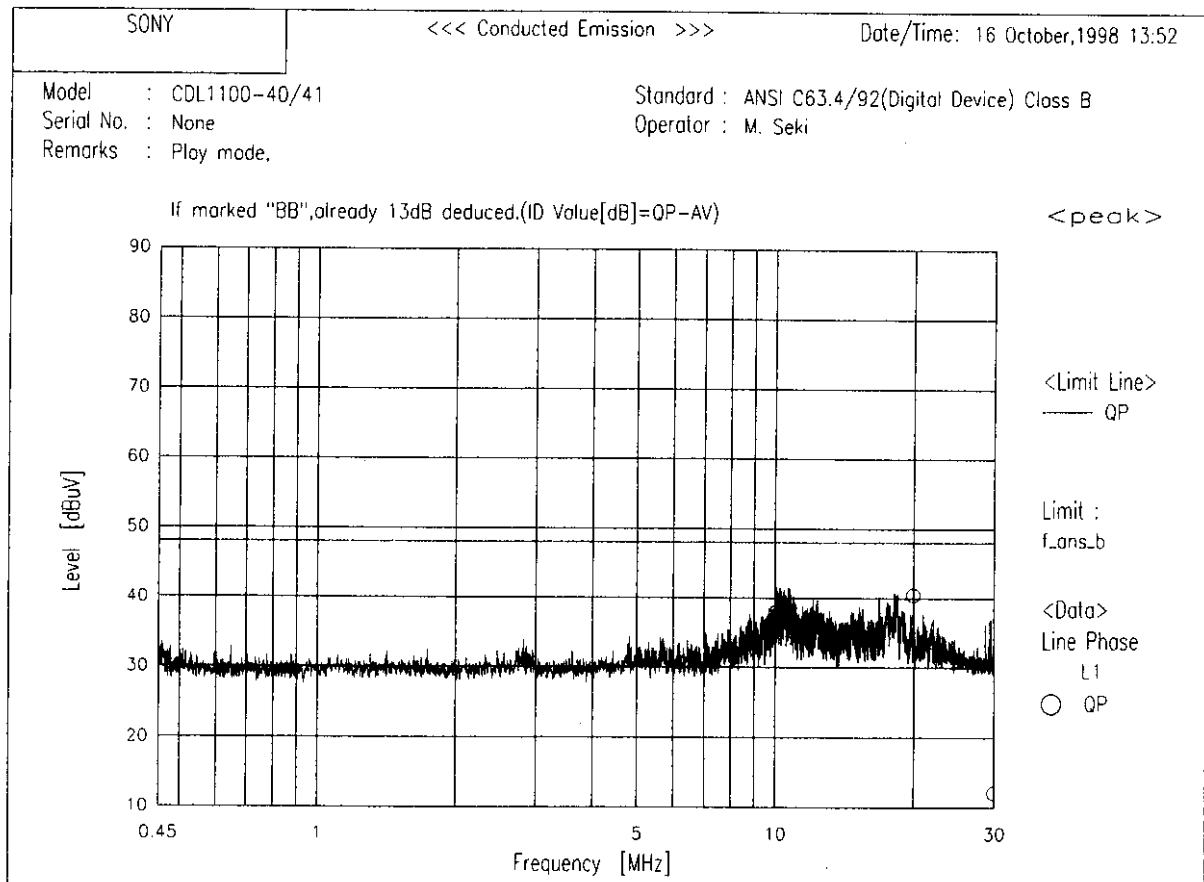
AF- 9806SI

***** SONY Corporation *****
 <<< Conducted Emission >>>

16 October, 1998 13:58
 Page 1

Model : CDL1100-40/41
 Serial No. : None
 Standard : ANSI C63.4/92 (Digital Device) Class B
 Condition File : F_ANS_B
 Remark : Play mode,
 :
 : If marked "BB", already 13dB deduced. (ID Value[dB]=QP-AV)
 AC Power : 120 V 60 Hz
 Temperature : 26 deg.
 Humidity : %
 Operator : M. Seki

----- Results -----								
No.	Frequency	Reading	c.f.	ID	Result	Limit	Margin	
	[MHz]	[dBuV]	[dB]	Value				
				[dB]	[dBuV]	[dBuV]	[dB]	
Phase	L1							
1	10.01850	25.7	12.2	4.3	37.9	48.0	10.1	
2	10.23970	24.9	12.2	2.8	37.1	48.0	10.9	
3	10.65030	25.2	12.2	3.1	37.4	48.0	10.6	
4	19.91130	27.9	12.6	1.6	40.5	48.0	7.5	
5	29.99340	-0.7	12.7	14.5	BB 12.0	48.0	36.0	



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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 , plus the limit. Explanation of the Correction factor is given in paragraph 8 .

The data was shown on the following page.

Test Personnel : M. Seki

Tester Signature M. Seki Date Oct. 15, 1998

Typed/Printed Name Mikio Seki

<<< Radiated Emission >>>

15 October, 1998 11:03

Page 1

Model : CDL1100-40/41
 Serial No. : None
 Standard : FCC New Part15(Digital)B
 Condition File : fcc_n_db
 Condition :
 Remarks : Play mode,
 :
 :
 AC Power : 120 V 60 Hz
 Temperature : 24 deg.
 Humidity : 60 %
 Operator : M. Seki

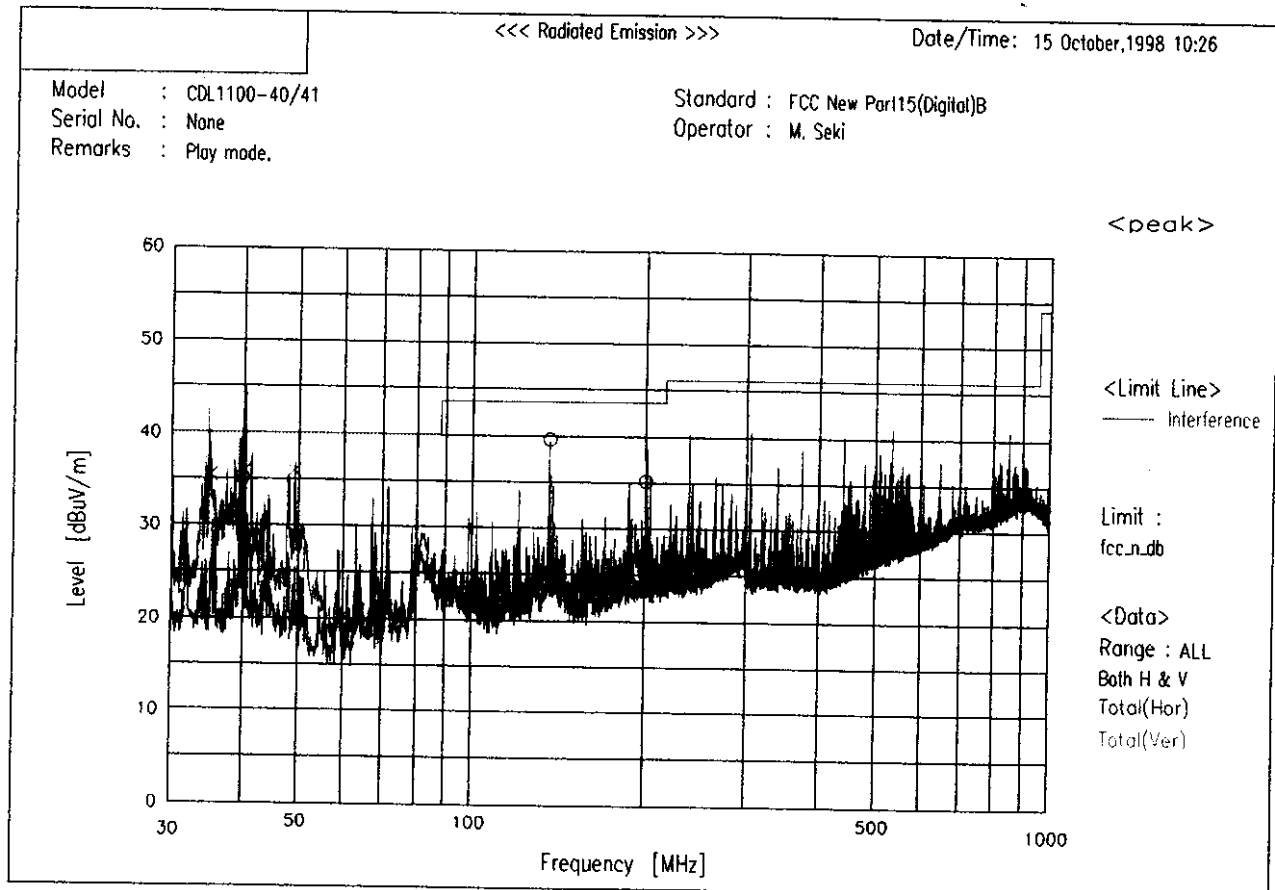
----- Final Result -----

- Horizontal Polarization -

No.	Frequency [MHz]	Reading [dBuV]	c.f. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]
1	39.811	19.8	15.3	35.1	40.0	4.9
2	135.607	23.8	15.8	39.6	43.5	3.9
3	200.187	16.3	18.8	35.1	43.5	8.4

- Vertical Polarization -

No.	Frequency [MHz]	Reading [dBuV]	c.f. [dB]	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]
4	35.063	19.1	16.3	35.4	40.0	4.6
5	40.002	20.5	15.3	35.8	40.0	4.2
6	41.379	13.8	14.9	28.7	40.0	11.3
7	49.152	23.7	12.2	35.9	40.0	4.1
8	535.449	7.0	23.9	30.9	46.0	15.1



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8 METHOD OF CALCULATION

8.1 Radiated Emissions

$$\text{Field Strength (dB[uV/m])} = \text{S.A.Reading (dB[uV])} + \text{C.F.}$$

Notes :

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

(b) C.F. : [] Antenna Factor (including Balun Loss)
+ Cable Loss

[X] Antenna Factor (including Balun Loss)
+ Cable Loss + $20\text{Log}(3\text{m}/10\text{m})$

8.2 Conducted Emissions

$$\text{RF Voltage (dB[uV])} = \text{S.A.Reading (dB[uV])} + \text{C.F.1 (dB)} + \text{C.F.2 (dB)}$$

Notes :

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

(b) C.F.1 : Correction Factor of LISN.

(c) C.F.2 : Correction Factor of Band Pass Filter and
Cable Loss.

9. List of Components

No.	Location	Ref. No.	Component	Manufacturer	Type
1	MAIN	L705	EMI Filter	Murata Mfg. Co., Ltd.	BLM31B601SPT
2	MDLED	L801	EMI Filter	Murata Mfg. Co., Ltd.	BLM31B222SPT
3	MDLED	L802	EMI Filter	Murata Mfg. Co., Ltd.	BLM31B222SPT
4	MDLED	L803	EMI Filter	Murata Mfg. Co., Ltd.	BLM31B222SPT
5	MDLED	R851	EMI Filter	Murata Mfg. Co., Ltd.	BLM31B222SPT
6	MDLED	R852	EMI Filter	Murata Mfg. Co., Ltd.	BLM31B222SPT
<u>CDM-57 Unit</u>					
7	MA-C30	L200	Ferrite bead	Taiyo Yuden Co., Ltd.	BK1608HM102-T
8	MA-C30	L201	Ferrite bead	Taiyo Yuden Co., Ltd.	BK1608HM102-T
9	MA-C30	L202	Ferrite bead	Taiyo Yuden Co., Ltd.	BK1608HM102-T
10	MA-C30	L701	EMI Filter	Murata Mfg. Co., Ltd.	BLM31P500SPT
11	MA-C30	L702	EMI Filter	Murata Mfg. Co., Ltd.	BLM31P500SPT

10. Photos of Tested EUT

The following photos are attached:

Fig. 10.1	Front View (1)
Fig. 10.2	Front View (2)
Fig. 10.3	Front View (3)
Fig. 10.4	Front View (4)
Fig. 10.5	Rear View
Fig. 10.6	Front Panel Removed
Fig. 10.7	Cover Removed, Front (1)
Fig. 10.8	Cover Removed, Front (2)
Fig. 10.9	Cover Removed, Right Side
Fig. 10.10	Cover Removed, Left Side
Fig. 10.11	Cover Removed, Rear Panel Removed (1)
Fig. 10.12	Cover Removed, Rear Panel Removed (2)
Fig. 10.13	Front Panel Reversed
Fig. 10.14	CD-ROM Drive Unit, Whole View
Fig. 10.15	CD-ROM Drive Unit, Bottom Cover Removed
Fig. 10.16	CD-ROM Drive Unit, Main P.C.Board Removed
Fig. 10.17	AC SW P.C.Board, Side A View
Fig. 10.18	AC SW P.C.Board, Side B View
Fig. 10.19	FILTER P.C.Board, Side A View
Fig. 10.20	FILTER P.C.Board, Side B View
Fig. 10.21	VOLSEL P.C.Board, Side A View
Fig. 10.22	VOLSEL P.C.Board, Side B View
Fig. 10.23	POWER SUPPLY P.C.Board, Side A View
Fig. 10.24	POWER SUPPLY P.C.Board, Side B View
Fig. 10.25	DIP SW P.C.Board, Side A View
Fig. 10.26	DIP SW P.C.Board, Side B View
Fig. 10.27	MAIN P.C.Board, Side A View
Fig. 10.28	MAIN P.C.Board, Side B View
Fig. 10.29	CARRIER P.C.Board, Side A View
Fig. 10.30	CARRIER P.C.Board, Side B View
Fig. 10.31	CLIP IN & CLIP OUT P.C.Board, Side A View
Fig. 10.32	CLIP IN & CLIP OUT P.C.Board, Side B View
Fig. 10.33	FG SENSOR & RST SENSOR P.C.Board, Side A View
Fig. 10.34	FG SENSOR & RST SENSOR P.C.Board, Side B View
Fig. 10.35	MBPLED & MBOX P.C.Board, Side A View
Fig. 10.36	MBPLED & MBOX P.C.Board, Side B View
Fig. 10.37	MBMTR & MBOXSW P.C.Board, Side A View
Fig. 10.38	MBMTR & MBOXSW P.C.Board, Side B View
Fig. 10.39	MBDS & MBLD P.C.Board, Side A View
Fig. 10.40	MBDS & MBLD P.C.Board, Side B View
Fig. 10.41	PANEL SW P.C.Board, Side A View
Fig. 10.42	PANEL SW P.C.Board, Side B View
Fig. 10.43	RS-232C P.C.Board, Side A View
Fig. 10.44	RS-232C P.C.Board, Side B View
Fig. 10.45	SERVICE P.C.Board, Side A View
Fig. 10.46	SERVICE P.C.Board, Side B View
Fig. 10.47	MD LED P.C.Board, Side A View
Fig. 10.48	MD LED P.C.Board, Side B View
Fig. 10.49	CDM-57: MA-30 P.C.Board, Side A View
Fig. 10.50	CDM-57: MA-30 P.C.Board, Side B View

// LIST OF TEST EQUIPMENT

<u>Equipment</u>	<u>Model No.</u>	<u>Manufacturer</u>
☒ 1. Spectrum Analyzer EMI Receiver	8568B ESVS10	HEWLETT PACKARD ROHDE & SCHWARZ
☐ 2. Spectrum Analyzer EMI Receiver	8594E ESVS10	HEWLETT PACKARD ROHDE & SCHWARZ
☐ 3. Spectrum Analyzer RF Preselector	TR4172 TR14307	ADVANTEST ADVANTEST
☐ 4. Dipole Antenna	VHA9103	SCHWARZBECK
☒ 5. Biconical Antenna Log-Periodic Antenna	BBA9106 UHALP9107	SCHWARZBECK SCHWARZBECK
☒ 6. LISN	KNW-407	KYORITSU ELE.
☐ 7. LISN	KNW-403C	KYORITSU ELE.
☐ 8. LISN	KNW-242C	KYORITSU ELE.
☐ 9. Spectrum Analyzer	MS2601A	ANRITSU
☐ 10. Spectrum Analyzer	8591A	HEWLETT PACKARD
☒ 11. Spectrum Analyzer Preselector EMI Receiver EMI Receiver	R3361B R3351 ESHS10 ESVS10	ADVANTEST ADVANTEST ROHDE & SCHWARZ ROHDE & SCHWARZ
☐ 12. Spectrum Analyzer EMI Receiver EMI Receiver	8594E ESHS10 ESVS10	HEWLETT PACKARD ROHDE & SCHWARZ ROHDE & SCHWARZ
☐ 13. EMI Clamp	KT-10	KYORITSU ELE.
☐ 14. EMI Clamp	MDS21	ROHDE & SCHWARZ
☐ 15. Min. Loss Pad	11852A	HEWLETT PACKARD
☐ 16. Balun	KBL-603	KYORITSU ELE.
☐ 17. Attenuator	8491A	HEWLETT PACKARD
☐ 18. Amplifier	8447D	HEWLETT PACKARD
☐ 19. FET Analyzer Line Imp. Network AC Power Supply	R9211B 4140 4220A	ADVANTEST NF ELECTRONIC INC. NF ELECTRONIC INC.