MEASUREMENT/TECHNICAL REPORT

SHARP CORPORATION
MODEL : JX-8200
FCC ID : APYPRT0030
DATE : May.13, 1998

This report concerns(check one): Original grant____ Class · change__×__
Equipment type: Color Laser Printer (ex.:computer,printer,modem,etc.)

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.

Report prepared by: Name :

K. Fukushima

Katsuhiro Fukushima
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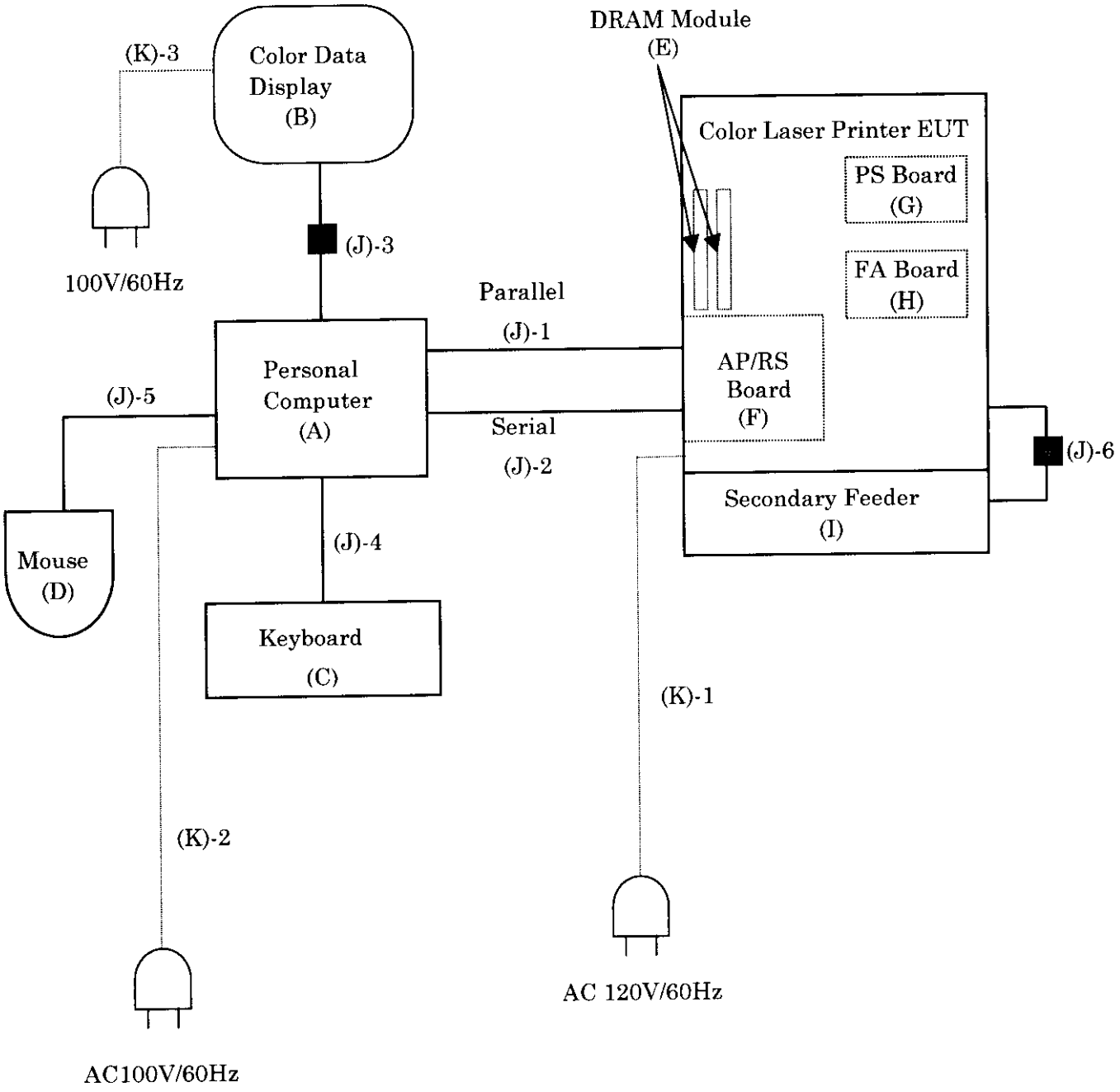
TEST DIAGRAM

* Parallel and Serial Interface Mode



TEST CONFIGURATION (RADIATION AND CONDUCTION MEASUREMENT)

* Parallel and Serial Interface Mode

1. Host & Peripheral Devices

A) Personal Computer

Model No.	:	DESKPRO 4166I
Serial No.	:	8312HEC32582
FCC ID	:	CNT75MCZZ
Brand	:	COMPAQ Computer Corp.

B) Color Data Display

Model No.	:	461-P
Serial No.	:	34145350K609
FCC ID	:	BR8SM-5514CP
Brand	:	COMPAQ Computer Corp.

C) Keyboard

Model No.	:	Enhanced III Keyboard
Serial No.	:	14536-119
FCC ID	:	CIGE035074
Brand	:	COMPAQ Computer Corp.

D) Mouse

Model No.	:	M-SF14
Serial No.	:	N / A
FCC ID	:	DZLMSF14R
Brand	:	COMPAQ Computer Corp.

E) DRAM Module (16MB SIMM) : 2 pcs

Model No.	:	16M72EDO-60
Serial No.	:	N / A
Brand	:	Shinden HIGHTEX Corporation

F) AP/RS Interface Board (Option of the Laser Printer)

Model No.	:	JX-80AP
Serial No.	:	N / A
FCC ID	:	APYPRT0031

G) PS Board (Option of the Color Laser Printer)

Model No.	:	JX-80PS
Serial No.	:	N / A
Brand	:	SHARP Corporation

H) Flash Memory Board (Option of the Color Laser Printer)

Model No.	:	JX-80FA
Serial No.	:	N / A
Brand	:	SHARP Corporation

I) Secondary Feeder (Option of the Color Laser Printer)

Model No.	:	JX80-SU
Serial No.	:	N / A
Brand	:	SHARP Corporation

J) Shielded Cables

1. Parallel Interface Cable	:	Length 1.50m
2. Serial Interface Cable	:	Length 1.50m
3. Video Signal Cable	:	Length 1.50m
(with 1 Ferrite Cores)		
[This Cable is packaged and marketed with the Color Monitor]		
4. Keyboard Cable	:	Length 2.00m
5. Mouse cable	:	Length 1.80m
6. Secondary Feeder Cable	:	Length 0.20m
(with 1 Ferrite Cores)		
[This Cable is packaged and marketed with the Secondary Feeder]		

K) Non-Shielded Cables

1. AC Power Cable for the Laser Printer	:	Length 1.80m
2. AC Power Cable for the Personal Computer:		Length 1.80m
3. AC Power Cable for the Color Data Display :		Length 1.80m

2. Test Operation

* Parallel Interface Mode

(1) PC reads operation system from floppy disc.

(2) Put into psprint tst200.prn.
The print data is transferred from the PC to the Color Laser Printer through the Parallel I/F cable.

(3) Print start. (Max. 200 sheets)

* Serial Interface Mode

(1) PC reads operation system from floppy disc.

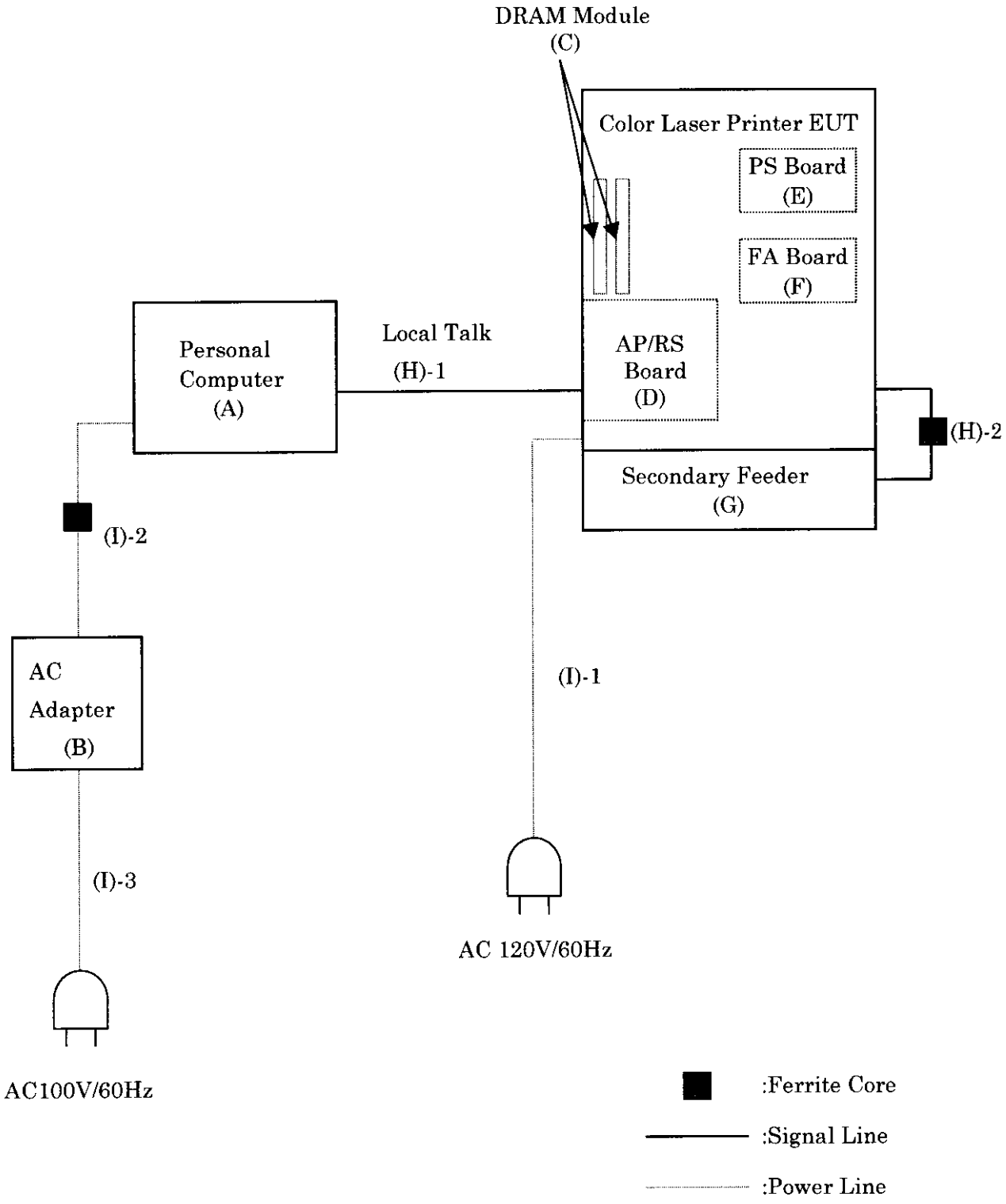
(2) Set up mode of transmission by com1:96,n,8,1,p.

(3) Put into copy tst200.prn com1:
The print data is transferred from the PC to the Color Laser Printer through the Serial I/F cable.

(4) Print start. (Max. 200 sheets)

TEST DIAGRAM

* Local Talk Interface Mode



TEST CONFIGURATION (RADIATION AND CONDUCTION MEASUREMENT)

* Local Talk Interface Mode

1. Host & Peripheral Devices

A) Personal Computer

Model No.	:	Macintosh Power Book 400CS
Serial No.	:	QT6491XJ8JY
FCC ID	:	HFSM3571
Brand	:	Apple Computer. Inc.

B) AC Adapter

Model No.	:	Macintosh Power Book 45W AC Adapter
Serial No.	:	2306004241 R269644 CZ
FCC ID	:	
Brand	:	Apple Computer. Inc.

C) DRAM Module (16MB SIMM) : 2 pcs

Model No.	:	16M72EDO-60
Serial No.	:	N / A
Brand	:	Shinden HIGHTEX Corporation

D) AP/RS Interface Board (Option of the Laser Printer)

Model No.	:	JX-80AP
Serial No.	:	N / A
FCC ID	:	APYPRT0031
Brand	:	SHARP

E) PS Board (Option of the Color Laser Printer)

Model No.	:	JX-80PS
Serial No.	:	N / A
Brand	:	SHARP Corporation

F) Flash Memory Board (Option of the Color Laser Printer)

Model No.	:	JX-80FA
Serial No.	:	N / A
Brand	:	SHARP Corporation

G) Secondary Feeder (Option of the Color Laser Printer)

Model No.	:	JX80-SU
Serial No.	:	N / A
Brand	:	SHARP Corporation

H) Shielded Cables

1. Local Talk Interface Cable : Length 2.00m
2. Secondary Feeder Cable : Length 0.20m
   (with 1 Ferrite Cores)
   [This Cable is packaged and marketed with the Secondary Feeder]

I) Non-Shielded Cables

1. AC Power Cable for the Laser Printer : Length 1.80m
2. DC Power Cable for the Personal Computer: Length 1.60m
3. AC Power Cable for the Personal Computer: Length 1.80m

2. Test Operation

* Local Talk Interface Mode

(1) PC reads operation system.

(2) Set printer offline, input copy number 999 on Print Menu.

(3) Drug test.ps data on Drop PS Icon.

(4) The print data is transferred to the Color Laser Printer through the Local Talk I/F cable.

(5) Print start. (Max. 999 sheets)

Print Sample

Parallel & Serial Interface Mode

This is a test.

This is a test.

Print Sample
Apple Talk Interface Mode

This is a test

This is a test

RADIATION MEASUREMENT (FCC 15.109)

1. Measurement Site

Sharp Corporation Information Systems Group
Shielded Anechoic Chamber
Nara, Japan
(note) This Shielded Anechoic Chamber and Measurement Facilities has been filed with FCC.
(31040/SIT 1300F2, dated March 26, 1998)

2. Date of Measurement

May 11, 1998

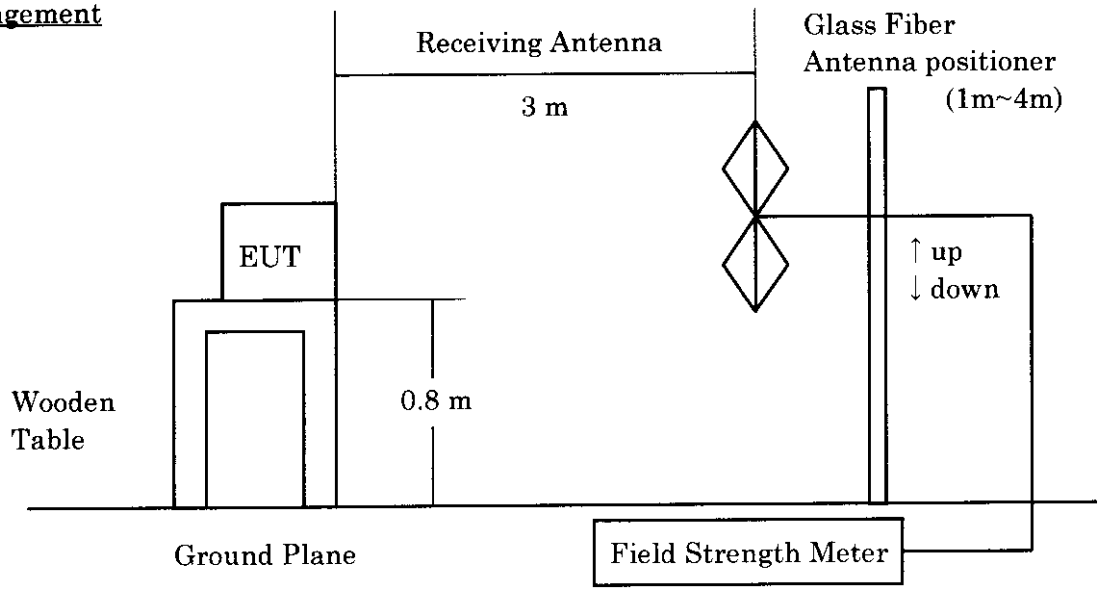
3. Measurement Engineer

Name	M. Otsuki
Section	Quality and Reliability Control Center
	Printing and Reprographic Systems Group

4. Measurement Methods and Test Procedures

FCC Procedure for Measuring RF Emissions from Computing Devices,
FCC/ANSI C63.4-1992 .

5. Test Arrangement



6. Operation Mode of Field Strength Meter

Detector Function	CISPR Quasi-Peak
6dB Bandwidth	120kHz

7. Test Result (JX8200AU)

Spectrum was scanned from 30MHz to 1000MHz.
Followings data are measured when each emission is maximized, and its level is within 10 dB below the Limit.

STAND BY MODE (Parallel Interface Mode)						
Frequency (MHz)	Ant Pol H/V	Correction Factor(dB)	Meter Reading (dBμV)	Field Strength (dBμV/m)	Regulation Limits (dBμV/m)	Margin (dB)
56.37	V	-16.6	40.2	23.6	40.0	16.4
134.61	H	-10.5	45.7	35.2	43.5	8.3
188.44	H	-7.1	38.4	31.3	43.5	12.2
191.70	H	-6.9	41.1	34.2	43.5	9.3
242.29	V	-5.8	39.0	33.2	46.0	12.8
242.29	H	-5.8	43.3	37.5	46.0	8.5
403.81	V	-5.1	46.4	41.3	46.0	4.7
403.81	H	-5.1	45.0	39.9	46.0	6.1
430.72	H	-4.6	45.8	41.2	46.0	4.8
484.56	V	-3.6	45.6	42.0	46.0	4.0
566.12	V	-1.4	30.5	29.1	46.0	16.9
619.17	H	-0.3	36.0	35.7	46.0	10.3

(Note) ・Correction Factor include Antenna Factor, Cable Loss and Pre-amplifier Gain.

Sample Calculation

403.81 MHz Vertical Polarization

46.4 + (-5.1) = 41.3 (dBμV/m)

(46.0) – 41.3 = 4.7 (dB)

Regulation Limits

30 ~ 88MHz 100μV/m (40.0dBμV/m)

88 ~ 216MHz 150μV/m (43.5dBμV/m)

216 ~ 960MHz 200μV/m (46.0dBμV/m)

960MHz ~ 500μV/m (53.9dBμV/m)

(Measuring distance is 3m)

Test Result (JX8200AU)

Spectrum was scanned from 30MHz to 1000MHz.

Followings data are measured when each emission is maximized, and its level is within 10 dB below the Limit.

PRINTING MODE (Parallel Interface Mode)						
Frequency (MHz)	Ant Pol H/V	Correction Factor(dB)	Meter Reading (dBμV)	Field Strength (dBμV/m)	Regulation Limits (dBμV/m)	Margin (dB)
134.58	H	-10.5	38.9	28.4	43.5	15.1
134.59	V	-10.5	37.0	26.5	43.5	17.0
191.69	H	-6.9	38.8	31.9	43.5	11.6
191.69	V	-6.9	37.8	30.9	43.5	12.6
207.67	H	-6.5	37.3	30.8	43.5	12.7
242.28	V	-5.8	38.8	33.0	46.0	13.0
242.28	H	-5.8	45.5	39.7	46.0	6.3
403.80	V	-5.1	43.3	38.2	46.0	7.8
405.64	H	-5.1	34.8	29.7	46.0	16.3
430.73	V	-4.6	44.6	40.0	46.0	6.0
430.73	H	-4.6	41.6	37.0	46.0	9.0
484.57	V	-3.6	41.7	38.1	46.0	7.9
565.33	V	-1.4	37.6	36.2	46.0	9.8
618.41	H	-0.3	31.6	31.3	46.0	14.7
833.78	V	+3.3	29.7	33.0	46.0	13.0
833.01	H	+3.3	28.2	31.5	46.0	14.5

(Note) ・Correction Factor include Antenna Factor, Cable Loss and Pre-amplifier Gain.

Sample Calculation

484.57 MHz Vertical Polarization

41.7 + (-3.6) = 38.1 (dBμV/m)

(46.0) – 38.1 = 7.9 (dB)

Regulation Limits

30 ~ 88MHz 100μV/m (40.0dBμV/m)

88 ~ 216MHz 150μV/m (43.5dBμV/m)

216 ~ 960MHz 200μV/m (46.0dBμV/m)

960MHz ~ 500μV/m (53.9dBμV/m)

(Measuring distance is 3m)

Test Result (JX8200AU)

Spectrum was scanned from 30MHz to 1000MHz.
Followings data are measured when each emission is maximized, and its level is within 10 dB below the Limit.

PRINTING MODE (Serial Interface Mode)						
Frequency (MHz)	Ant Pol H/V	Correction Factor(dB)	Meter Reading (dBμV)	Field Strength (dBμV/m)	Regulation Limits (dBμV/m)	Margin (dB)
55.616	V	-16.4	40.5	24.1	40.0	15.9
191.71	H	-6.9	37.0	30.1	43.5	13.4
242.28	V	-5.8	33.0	27.2	46.0	18.8
242.29	H	-5.8	39.2	33.4	46.0	12.6
403.81	V	-5.1	42.8	37.7	46.0	8.3
403.81	H	-5.1	45.6	40.5	46.0	5.5
430.72	V	-4.6	47.4	42.8	46.0	3.2
430.73	H	-4.6	44.7	40.1	46.0	5.9
484.56	V	-3.6	41.3	37.7	46.0	8.3
538.38	V	-2.0	41.5	39.5	46.0	6.5
807.61	H	+2.3	33.7	36.0	46.0	10.0
807.61	V	+2.3	32.9	35.2	46.0	10.8

(Note) ・Correction Factor include Antenna Factor, Cable Loss and Pre-amplifier Gain.

Sample Calculation

242.28 MHz Vertical Polarization
33.0+ (-5.8) = 27.2 (dBμV/m)
(46.0) – 27.2 = 18.8 (dB)

Regulation Limits

30 ~ 88MHz 100μV/m (40.0dBμV/m)
88 ~ 216MHz 150μV/m (43.5dBμV/m)
216 ~ 960MHz 200μV/m (46.0dBμV/m)
960MHz ~ 500μV/m (53.9dBμV/m)
(Measuring distance is 3m)

Test Result (JX8200AU)

Spectrum was scanned from 30MHz to 1000MHz.
Followings data are measured when each emission is maximized, and its level is within 10 dB below the Limit.

PRINTING MODE (Local Talk Interface Mode)						
Frequency (MHz)	Ant Pol H/V	Correction Factor(dB)	Meter Reading (dBμV)	Field Strength (dBμV/m)	Regulation Limits (dBμV/m)	Margin (dB)
81.30	H	-18.2	45.1	26.9	40.0	13.1
135.56	V	-10.4	42.8	32.4	43.5	11.1
191.70	H	-6.9	37.2	30.3	43.5	13.2
191.70	V	-6.9	36.0	29.1	43.5	14.4
376.80	V	-5.2	45.8	40.6	46.0	5.4
376.88	H	-5.2	44.1	38.9	46.0	7.1
403.80	H	-5.1	39.4	34.3	46.0	11.7
430.70	V	-4.6	43.3	38.7	46.0	7.3
430.70	H	-4.6	41.8	37.2	46.0	8.8
538.41	V	-2.0	43.4	41.4	46.0	4.6
646.09	V	+0.4	40.3	40.7	46.0	5.3

(Note) ・Correction Factor include Antenna Factor, Cable Loss and Pre-amplifier Gain.

Sample Calculation

135.56 MHz Vertical Polarization
42.8 + (-10.4) = 32.4 (dBμV/m)
(43.5) – 32.4 = 11.1 (dB)

Regulation Limits

30 ~ 88MHz 100μV/m (40.0dBμV/m)
88 ~ 216MHz 150μV/m (43.5dBμV/m)
216 ~ 960MHz 200μV/m (46.0dBμV/m)
960MHz ~ 500μV/m (53.9dBμV/m)
(Measuring distance is 3m)

CONDUCTION MEASUREMENT (FCC 15.107)

1. Measurement Site

Sharp Corporation Information Systems Group
Shielded Room
Nara, Japan
(Note) This Measurement Facilities has been filed with FCC
(same as Shielded Anechoic Chamber).
(31040/SIT 1300F2, dated May. 29, 1997)

2. Date of Measurement

OCT 23, 1997

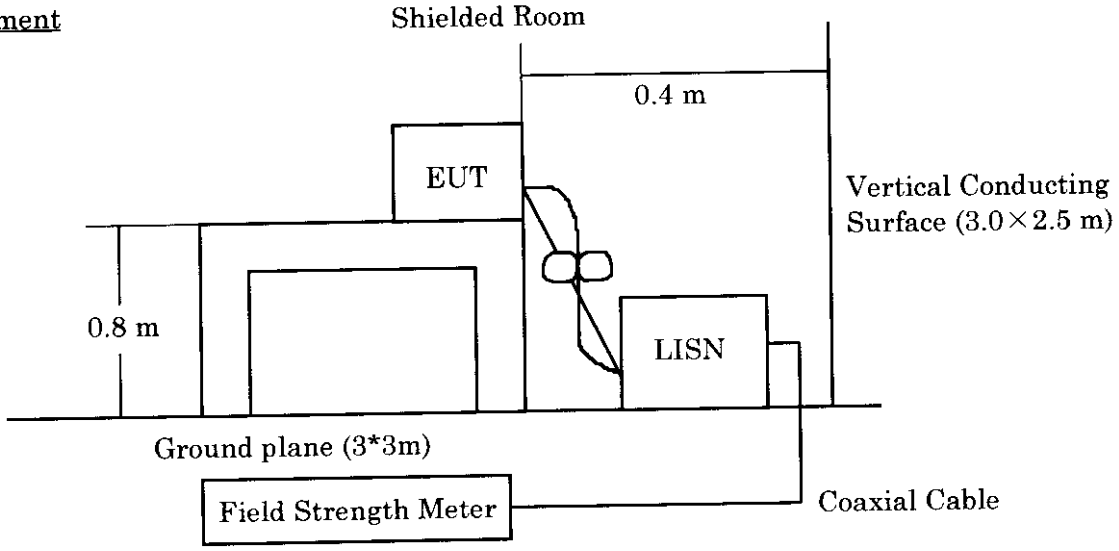
3. Measurement Engineer

Name	M.Kosaka
Section	Quality and Reliability Control Center
	Printing and Reprographic Systems Group

4. Measurement Methods and Test Procedures

FCC Procedure for Measuring RF Emissions from Computing Devices,
FCC/ANSI C63.4-1992.

5. Test Arrangement



6. Operation Mode of Field Strength Meter

Detector Function	CISPR Quasi-Peak/Average
6dB Bandwidth	9kHz

7. Test Result(JX8200AU)

Spectrum was scanned from 450kHz to 30MHz.
Followings data are measured when each emission is maximized, and its level is within 10 dB below the Limit.

STAND BY MODE (Parallel Interface Mode)					
Frequency (MHz)	Correction Factor (dB)	N or L	QP or AV	Meter Reading (dBμV)	RF Voltage (dBμV)
4.1610	1.0	L	QP	31.1	32.1
4.6910	1.0	L	QP	33.6	34.6
4.5880	1.0	L	QP	33.3	34.3
4.7971	1.0	L	QP	31.9	32.9
6.3508	1.3	N	QP	30.4	31.7
6.5533	1.3	L	QP	31.3	32.6
9.7932	1.7	N	QP	29.7	31.4
9.8927	1.7	N	QP	31.0	32.7
9.9987	1.7	N	QP	31.0	32.7
10.1022	1.7	N	QP	31.9	33.6
10.5099	1.7	N	QP	30.4	32.1
18.2470	2.4	L	QP	33.2	35.6

(Note) Correction Factor include LISN Factor and Cable Loss.

Sample Calculation

6.5533 MHz (L)

31.3 + 1.3 = 32.6 (dBμV)

Regulation Limits

0.45MHz ~ 30MHz 250μV (48.0dBμV)

Test Result(JX8200AU)

Spectrum was scanned from 450kHz to 30MHz.
Followings data are measured when each emission is maximized, and its level is within 10 dB below the Limit.

PRINTING MODE (Parallel Interface Mode)					
Frequency (MHz)	Correction Factor (dB)	N or L	QP or AV	Meter Reading (dBμV)	RF Voltage (dBμV)
5.1340	1.2	L	QP	40.2	41.4
5.2412	1.2	L	QP	40.5	41.7
5.4472	1.2	L	QP	41.1	42.3
5.5530	1.2	N	QP	36.5	37.7
5.6576	1.2	L	QP	41.1	42.3
5.8677	1.2	N	QP	36.3	37.5
6.0759	1.3	N	QP	36.8	38.1
9.7462	1.7	N	QP	37.2	38.9
9.9552	1.7	N	QP	37.6	39.3
10.8957	1.7	L	QP	37.2	38.9
18.6510	2.4	L	QP	36.8	39.2
19.0730	2.4	N	QP	36.1	38.5

(Note) Correction Factor include LISN Factor and Cable Loss.

Sample Calculation

5.1340 MHz (L)

40.2 + 1.2 = 41.4 (dBμV)

Regulation Limits

0.45MHz ~ 30MHz 250 V (48.0dBμV)

Test Result(JX8200AU)

Spectrum was scanned from 450kHz to 30MHz.
Followings data are measured when each emission is maximized, and its level is within 10 dB below the Limit.

PRINTING MODE (Serial Interface Mode)					
Frequency (MHz)	Correction Factor (dB)	N or L	QP or AV	Meter Reading (dBμV)	RF Voltage (dBμV)
5.1407	1.2	L	QP	40.9	42.1
5.3500	1.2	L	QP	40.9	42.1
5.6630	1.2	N	QP	36.5	37.7
5.6641	1.2	L	QP	40.9	42.1
5.8725	1.2	N	QP	36.7	37.9
5.9799	1.2	L	QP	40.6	41.8
11.0110	1.7	N	QP	37.6	39.3
11.6400	1.8	N	QP	37.6	39.4
11.8516	1.8	L	QP	38.0	39.8
12.1661	1.8	L	QP	38.0	39.8
19.1920	2.4	N	QP	36.1	38.5
19.7202	2.4	N	QP	36.1	38.5

(Note) Correction Factor include LISN Factor and Cable Loss.

Sample Calculation

11.0110 MHz (N)

37.6 + 1.7 = 39.3 (dBμV)

Regulation Limits

0.45MHz ~ 30MHz 250μV (48.0dBμV)

Test Result(JX8200AU)

Spectrum was scanned from 450kHz to 30MHz.
Followings data are measured when each emission is maximized, and its level is within 10 dB below the Limit.

STAND BY MODE (Local Talk Interface Mode)					
Frequency (MHz)	Correction Factor (dB)	N or L	QP or AV	Meter Reading (dBμV)	RF Voltage (dBμV)
4.1955	1.0	L	QP	27.5	28.5
4.5101	1.0	L	QP	33.6	34.6
4.6149	1.0	L	QP	33.6	34.6
4.7197	1.0	L	QP	35.1	36.1
5.2442	1.1	L	QP	31.2	32.3
6.1889	1.2	N	QP	29.2	30.4
6.2936	1.2	N	QP	31.2	32.4
6.3984	1.2	N	QP	30.6	31.8
9.1256	1.6	N	QP	29.4	31.0
9.2305	1.6	N	QP	29.7	31.3
9.3380	1.7	L	QP	27.8	29.5
10.0691	1.7	N	QP	28.6	30.3

(Note) Correction Factor include LISN Factor and Cable Loss.

Sample Calculation

4.7197 MHz (L)

35.1 + 1.0 = 36.1 (dBμV)

Regulation Limits

0.45MHz ~ 30MHz 250 V (48.0dBμV)

Test Result(JX8200AU)

Spectrum was scanned from 450kHz to 30MHz.
Followings data are measured when each emission is maximized, and its level is within 10 dB below the Limit.

PRINTING MODE (Local Talk Interface Mode)					
Frequency (MHz)	Correction Factor (dB)	N or L	QP or AV	Meter Reading (dBμV)	RF Voltage (dBμV)
2.2049	0.6	N	QP	32.6	33.2
2.3091	0.6	N	QP	35.4	36.0
4.4103	1.0	N	QP	34.7	35.7
4.6206	1.0	N	QP	34.8	35.8
4.9360	1.0	L	QP	39.6	40.6
5.1461	1.1	L	QP	40.1	41.2
5.2514	1.1	L	QP	40.0	41.1
5.3563	1.1	L	QP	40.0	41.1
5.6709	1.1	L	QP	39.7	40.8
5.9856	1.2	L	QP	39.2	40.4
7.6667	1.4	N	QP	34.4	35.8
7.7719	1.4	N	QP	33.9	35.3

(Note) Correction Factor include LISN Factor and Cable Loss.

Sample Calculation

7.7719 MHz (N)

33.9 + 1.4 = 35.3 (dBμV)

Regulation Limits

0.45MHz ~ 30MHz 250μV (48.0dBμV)

LIST OF TEST EQUIPMENT

(a) Field Strength Meter

Model No	ESVP
Manufacturer	Rohde & Schwarz
Serial No	872991/021
Frequency Range	20MHz~1300MHz
Operation Mode	CISPR Pub 16 Band C & D
Max Sensitivity	-3.8dB(μV)

(b) Field Strength Meter

Model No.	ESH3
Manufacturer	Rohde & Schwarz
Serial No.	872742/001
Frequency Range	9kHz~30MHz
Operation Mode	CISPR Pub 16 Band A & B
Max Sensitivity	-9.1dB(μV)

(c) Double Cone Antenna (biconical antenna)

Model No.	VHA9103 + BBA9106
Manufacturer	Schwarzbeck
Frequency Range	30MHz~300MHz

(d) Logarithmic-Periodic Antenna

Model No.	UHALP9107
Manufacturer	Schwarzbeck
Frequency Range	300MHz~1000MHz

(e) Line Impedance Stabilization Network

Model No.	KNW407
Manufacturer	Kyouritsu Electrical Works
Frequency Range	150kHz~30MHz
Specification	50 , 50 μH
Rated Capacity	250V, 15A

TEST CONFIGURATION DRAWING

This section contains the following :

[Picture 1]

Test configuration for measurement of radiated emission of enclosure (Parallel)

[Picture 2]

Test configuration for measurement of radiated emission of enclosure (Serial)

[Picture 3]

Test configuration for measurement of radiated emission of enclosure (Local Talk)

[Picture 4]

Test configuration for measurement of conducted emission on AC mains (Parallel)

[Picture 5]

Test configuration for measurement of conducted emission of AC mains (Serial)

[Picture 6]

Test configuration for measurement of conducted emission of AC mains (Local Talk)