TEST REPORT

Report number : Z071C-09031
Issue date : May 29, 2009

The device, as described herewith, was tested pursuant to applicable test procedure and complies with the requirements of;

FCC Part15 Subpart B
Canada ICES-003
- Class II Permissive Change –

The test results are traceable to the international or national standards.

Applicant	:	FUJITSU ISOTEC LIMITED
Equipment under test (EUT) FCC ID	:	Dot Matrix Printer KHZ0142348
Model number	:	2348

Date of test : January 13,15, 2009
Test place : ZACTA Technology Corporation Yonezawa Testing Center
4149-7 Hachimanpara 5-chome
Yonezawa-shi Yamagata 992-1128 Japan
Phone:+81-238-28-2880 Fax:+81-238-28-2888
Test results : Complied
[EUT complies with Canadian Interference-Causing Equipment Standard ICES-003.]

The results in this report are applicable only to the equipment tested.
This report shall not be re-produced except in full without the written approval of ZACTA Technology Corporation.
This test report must not be used by client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

Tested by: Yoshiyuki Takahashi
Yoshiyuki Takahashi

Authorized by: Jun Shimanuki
Jun Shimanuki
General Manager of EMC Technical Division

NVLAP LAB CODE 200306-0

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1. Summary of Test

1.1 Purpose of test

EUT, FCC ID: KHZ0142348, has been granted on 06/01/2006.
Purpose of test is retest of EUT by changing AC power supply unit.

1.2 Standards

CFR47 FCC Part 15 Subpart B

1.2.1 Test Methods

ANSI C63.4-2003

1.2.2 Deviation from standards

None

1.3 List of applied test to the EUT

Test item	Classification of EUT	Test	Result	Note
Conducted emission at mains port	Class B	Applied	PASS	-
Radiated emission	Class B	Applied	PASS	-

Note : None.

1.4 Modification to the EUT by laboratory

None

2. Equipment Under Test

2.1 General Description of equipment

EUT is Dot Matrix Printer.

2.2 EUT information

Applicant	:	FUJITSU ISOTEC LIMITED 135, Higashinozaki, Hobara-machi, Date-shi, Fukushima, 960-0695, JAPAN Phone: +81-24-574-2214 Fax: +81-24-574-2277	
Equipment under test	:	Dot Matrix Printer	
Trade name	:	TallyGenicom	
Model number	:	2348	
Serial number	:	VX144428, VX142995	
EUT condition	:	Pre-production	
Max. used frequency	:	33MHz	
Oscillator(s)/Crystal(s) Operating frequency	:	Oscillator	4.0MHz (for Main) /6.0MHz (for USB) / 4.125MHz, 25MHz (for LAN)
		Processor clock	16MHz (for Main) /12MHz (for USB) / 33MHz, 25MHz (for LAN)
		Switching Frequencies	67KHz
Power ratings	:	AC 100-120V 50/60Hz [Power supply for EUT in testing was AC 120V 60Hz.]	
Size	:	(W) 570 x (D) 330 x (H) 120 mm	
EUT Installation	:	Table-Top	

2.3 Variation of the family model(s)

Not applicable

2.4 Operating mode

【H print, Centronics I/F mode】
【H print, USB I/F mode】
【H print, RS232C I/F mode】
【H print, LAN I/F mode】

i) Print-data are transferred from personal computer to EUT
ii) Printer feeds a paper from tractor unit
iii) EUT prints ”H” letters on the paper
iv) i) to iii) is repeated.

3. Configuration of equipment

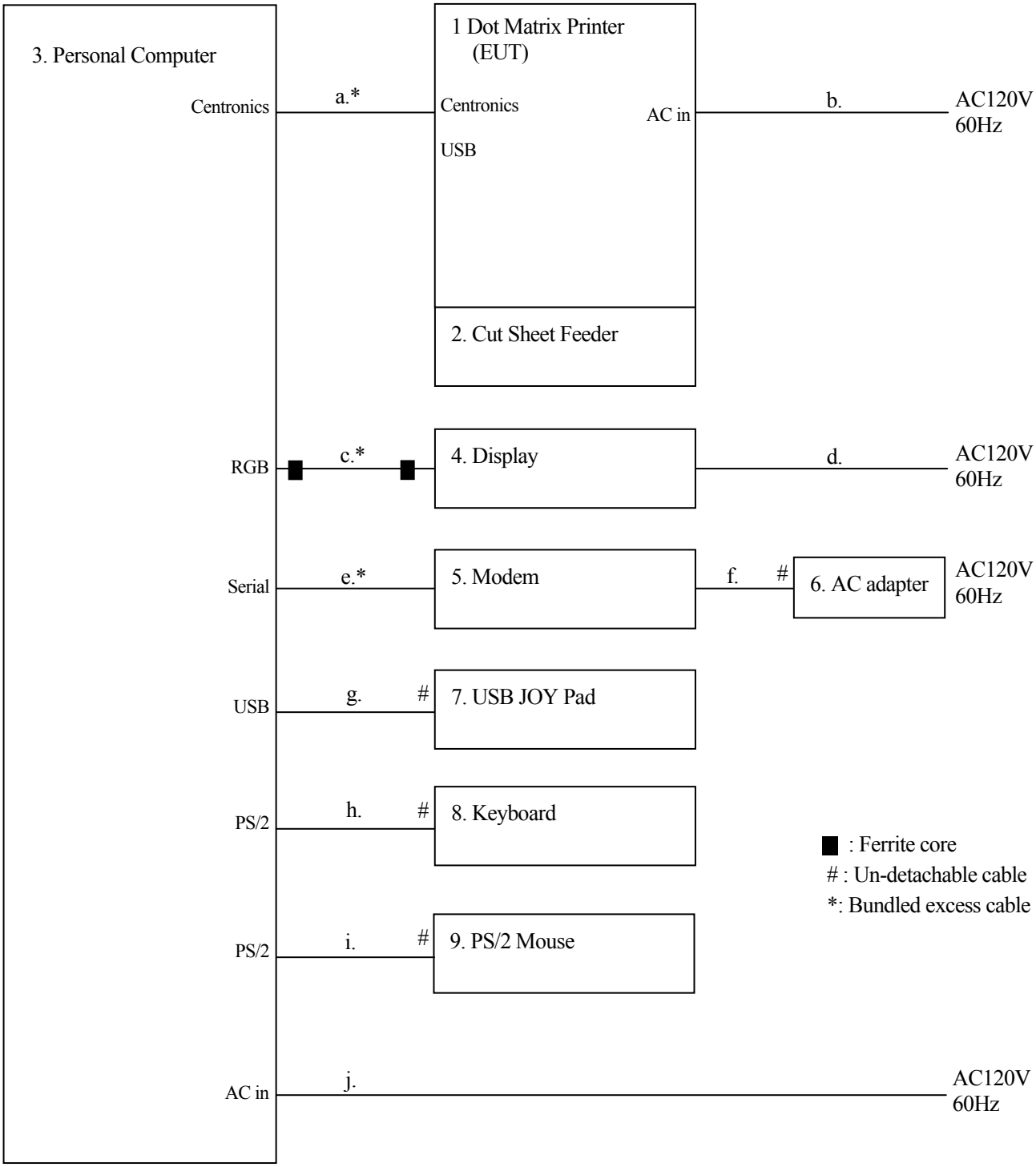
3.1 Equipment(s) used [H print, Centronics I/F mode]

No.	EUT	Company	Model No.	Serial No.	DoC/FCC ID	Comment
1	Dot Matrix Printer	TallyGenicom	2348	VX144428	KHZ0142348	EUT
2	Cut Sheet Feeder	TallyGenicom	ASF100-FJ3801(1bin) ASF100-FJ3811(2bin)	N/A	N/A	Option
3	Personal Computer	DELL	MCM	9LX841S	DoC	-
4	Display	MITSUBISHI	L202EV	5Z304093YJ	DoC	-
5	Modem	US. Robotics	Sport_Ster 33.6Kbps	000839032B K6YV4J	DoC	-
6	AC Adaptor for Modem	US. Robotics	N/A	N/A	N/A	-
7	USB JOY Pad	Logitech	G-UF13	N/A	DoC	-
8	Keyboard	DELL	SK-8000	N/A	DoC	-
9	PS/2 Mouse	Logitech	M-S34	23-279294	N/A	-

3.2 Cable(s) used [H print, Centronics I/F mode]

No.	Cable	Length[m]	Shield	Connector	Comment
a	Centronics cable	1.5	Yes	Metal	-
b	AC power cord for EUT	2.0	No	Plastic	-
c	RGB cable	1.5	Yes	Metal	-
d	AC power cord for Display	1.7	No	Plastic	-
e	Serial cable	3.0	Yes	Metal	-
f	DC cable for Modem AC adaptor	1.7	No	Plastic	-
g	Joy pad cable	1.8	Yes	Metal	-
h	Keyboard cable	2.2	No	Metal	-
i	Mouse cable	1.8	No	Metal	-
j	AC power cord for PC	1.8	No	Plastic	-

3.3 System configuration [H print, Centronics I/F mode]



Note 1: Numbers assigned to equipment or cables on this diagram correspond to the list in "3.1 Equipment(s) used" and "3.2 Cable(s) used".
Note 2: RGB cable (No.c) with two ferrite cores is accessory of Display (No.4).

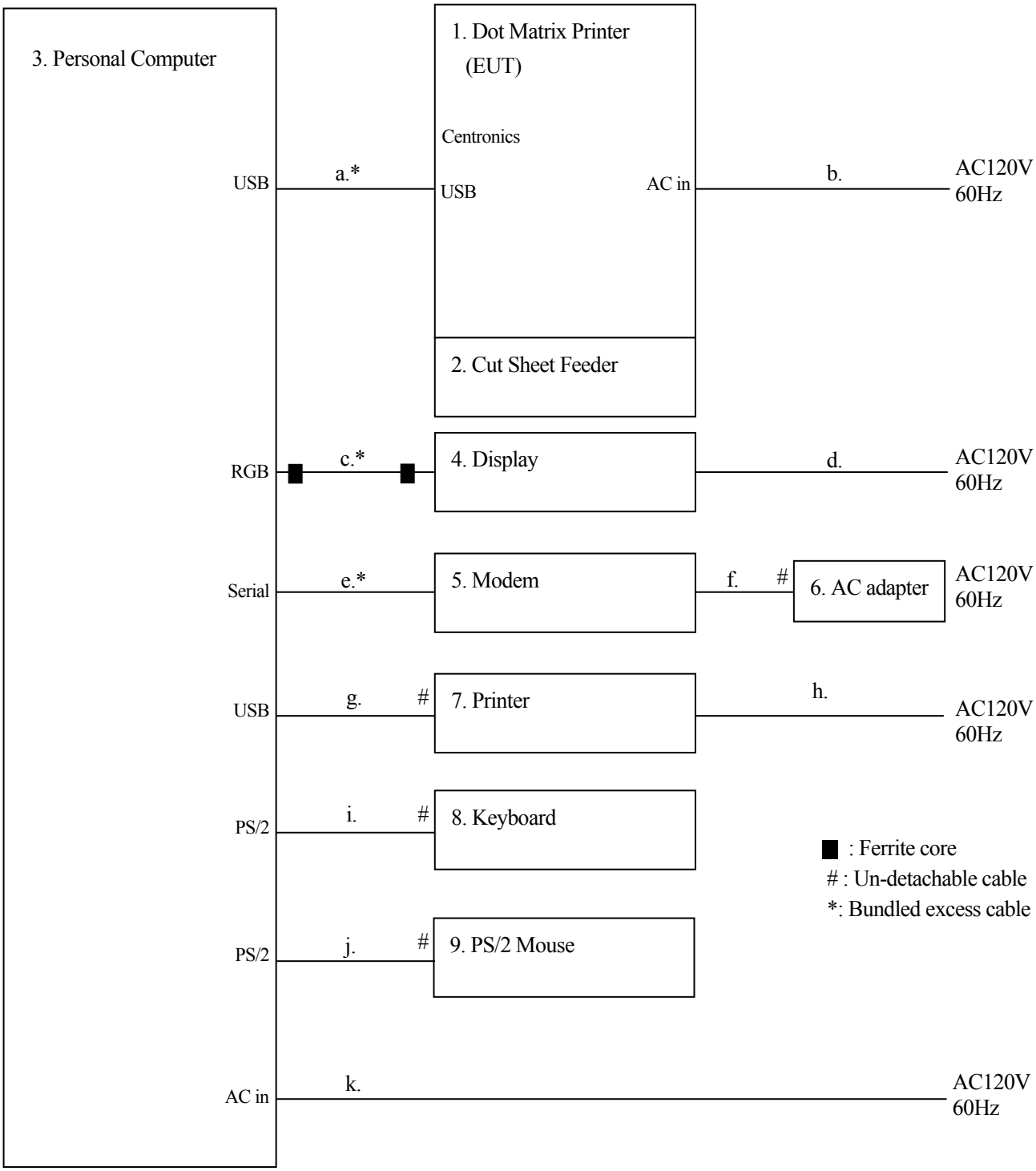
3.4 Equipment(s) used [H print, USB I/F mode]

No.	EUT	Company	Model No.	Serial No.	DoC/FCC ID	Comment
1	Dot Matrix Printer	TallyGenicom	2348	VX144428	KHZ0142348	EUT
2	Cut Sheet Feeder	TallyGenicom	ASF100-FJ3801(1bin) ASF100-FJ3811(2bin)	N/A	N/A	Option
3	Personal Computer	DELL	MCM	9LX841S	DoC	-
4	Display	MITSUBISHI	L202EV	5Z304093YJ	DoC	-
5	Modem	US. Robotics	Sport_Ster 33.6Kbps	000839032B K6YV4J	DoC	-
6	AC Adaptor for Modem	US. Robotics	N/A	N/A	N/A	-
7	Printer	HP	C4555A	US6BC212N	B94C4555X	-
8	Keyboard	DELL	SK-8000	N/A	DoC	-
9	PS/2 Mouse	Logitech	M-S34	23-279294	N/A	-

3.5 Cable(s) used [H print, USB I/F mode]

No.	Cable	Length[m]	Shield	Connector	Comment
a	USB cable	1.4	Yes	Metal	-
b	AC power cord for EUT	2.0	No	Plastic	-
c	RGB cable	1.5	Yes	Metal	-
d	AC power cord for Display	1.7	No	Plastic	-
e	Serial cable	3.0	Yes	Metal	-
f	DC cable for Modem AC adaptor	1.7	No	Plastic	-
g	Parallel cable	3.0	Yes	Metal	-
h	AC power cord for Printer	2.8	No	Plastic	-
i	Keyboard cable	2.2	No	Metal	-
j	Mouse cable	1.8	No	Metal	-
k	AC power cord for PC	1.8	No	Plastic	-

3.6 System configuration [H print, USB I/F mode]



Note 1: Numbers assigned to equipment or cables on this diagram correspond to the list in "3.4 Equipment (s) used" and "3.5 Cable(s) used".
Note 2: RGB cable (No.c) with two ferrite cores is accessory of Display (No.4).

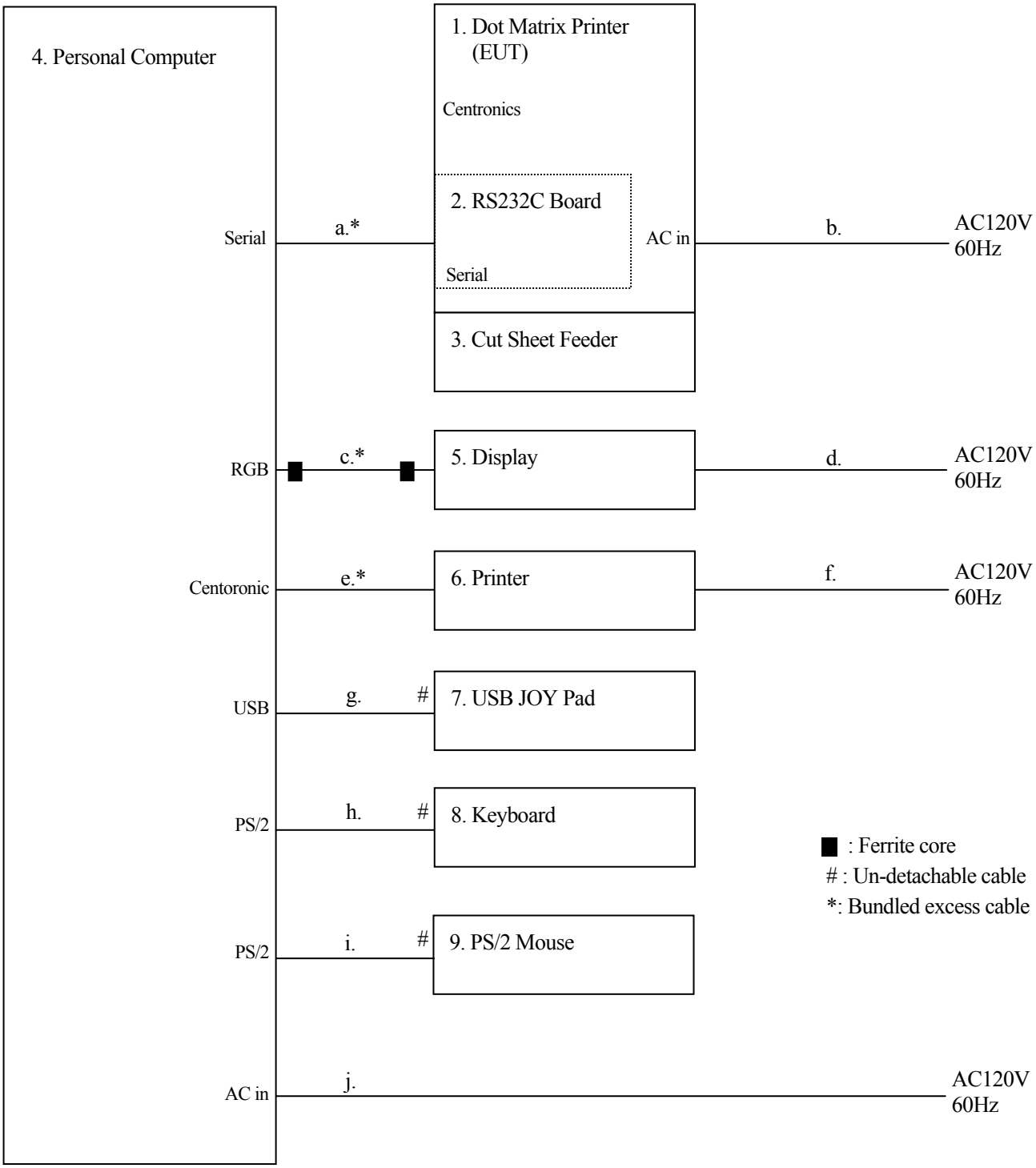
3.7 Equipment(s) used [H print, RS232C I/F mode]

No.	EUT	Company	Model No.	Serial No.	DoC/FCC ID	Comment
1	Dot Matrix Printer	TallyGenicom	2348	VX142995	KHZ0142348	EUT
2	RS232C Board	TallyGenicom	CA20160-B81X	N/A	N/A	Option
3	Cut Sheet Feeder	TallyGenicom	ASF100-FJ3801(1bin) ASF100-FJ3811(2bin)	N/A	N/A	Option
4	Personal Computer	DELL	MCM	9LX841S	DoC	-
5	Display	MITSUBISHI	L202EV	5Z304093YJ	DoC	-
6	Printer	HP	C4555A	US6BC212N	B94C4555X	-
7	USB JOY Pad	Logitech	G-UF13	N/A	DoC	-
8	Keyboard	DELL	SK-8000	N/A	DoC	-
9	PS/2 Mouse	Logitech	M-S34	23-279294	N/A	-

3.8 Cable(s) used [H print, RS232C I/F mode]

No.	Cable	Length[m]	Shield	Connector	Comment
a	RS232C cable	1.5	Yes	Metal	-
b	AC power cord for EUT	2.0	No	Plastic	-
c	RGB cable	1.5	Yes	Metal	-
d	AC power cord for Display	1.7	No	Plastic	-
e	Parallel cable	3.0	Yes	Metal	-
f	AC power cord for Printer	2.8	No	Plastic	-
g	Joy pad cable	1.8	Yes	Metal	-
h	Keyboard cable	2.2	No	Metal	-
i	Mouse cable	1.8	No	Metal	-
j	AC power cord for PC	1.8	No	Plastic	-

3.9 System configuration [H print, RS232C I/F mode]



Note 1: Numbers assigned to equipment or cables on this diagram correspond to the list in "3.7 Equipment(s) used" and "3.8 Cable(s) used".
Note 2: RGB cable (No.c) with two ferrite cores is accessory of Display (No.5).

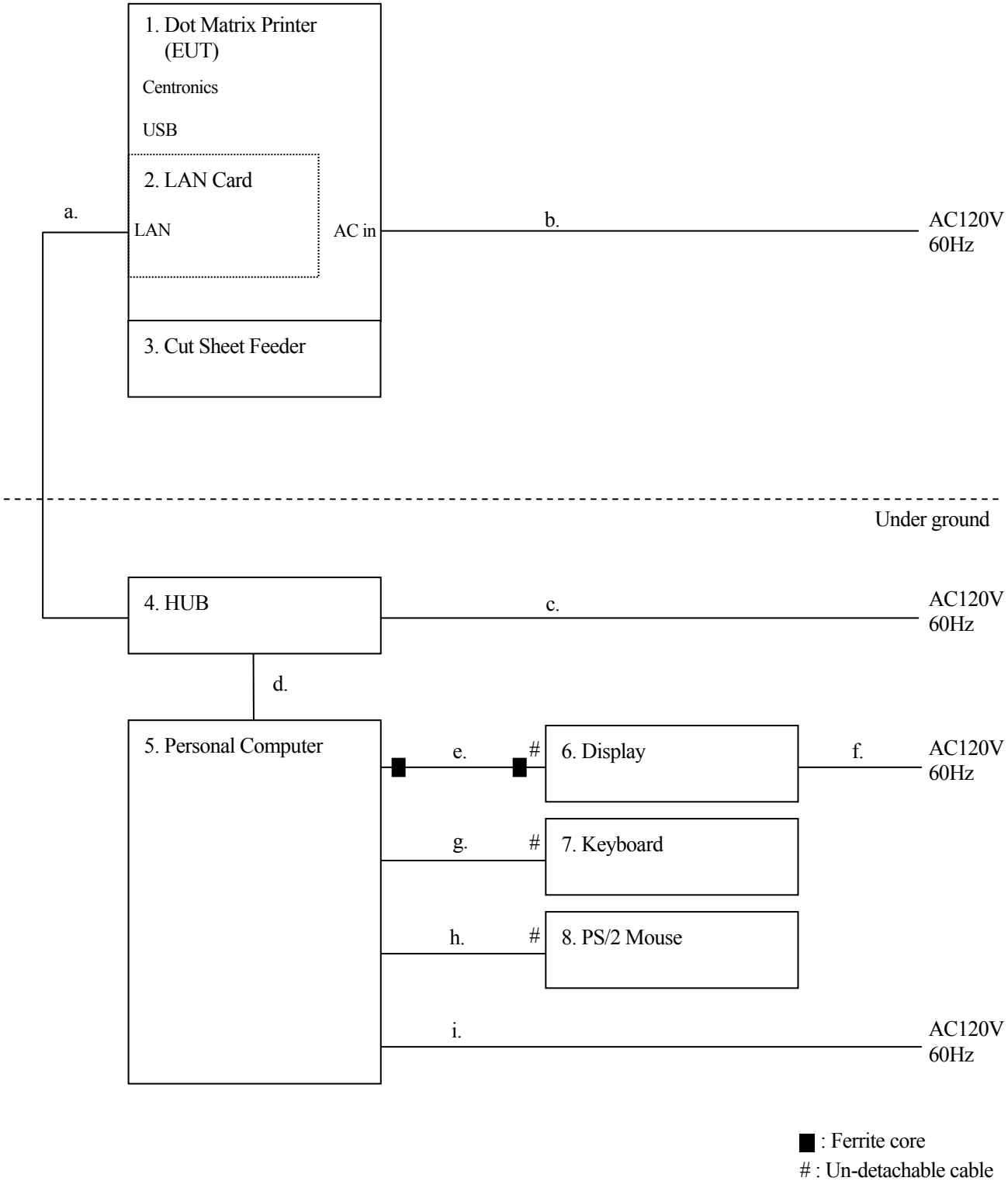
3.10 Equipment(s) used [H print, LAN I/F mode]

No.	EUT	Company	Model No.	Serial No.	DoC/FCC ID	Comment
1	Dot Matrix Printer	TallyGenicom	2348	VX144428	KHZ0142348	EUT
2	LAN Card	TallyGenicom	KA02004-0225	N/A	N/A	Option
3	Cut Sheet Feeder	TallyGenicom	ASF100-FJ3801(1bin) ASF100-FJ3811(2bin)	N/A	N/A	Option
4	HUB	corega	CG-SW05GTR	110375007020 1017 Rev.A2	N/A	-
5	Personal Computer	DELL	MCM	9LX841S	DoC	-
6	Display	MITSUBISHI	L202EV	5Z304093YJ	DoC	-
7	Keyboard	DELL	SK-8000	N/A	DoC	-
8	PS/2 Mouse	Logitech	M-S34	23-279294	N/A	-

3.11 Cable(s) used [H print, LAN I/F mode]

No.	Cable	Length[m]	Shield	Connector	Comment
a	LAN cable	10.0	No	Plastic	-
b	AC power cord for EUT	2.0	Yes	Plastic	-
c	AC power cord for HUB	1.8	No	Plastic	-
d	LAN cable	1.2	No	Plastic	-
e	RGB cable	1.5	Yes	Metal	-
f	AC power cord for Display	1.7	No	Plastic	-
g	Keyboard cable	2.2	No	Metal	-
h	Mouse cable	1.8	No	Metal	-
i	AC power cord for PC	1.8	No	Plastic	-

3.12 System configuration [H print, LAN I/F mode]



Note 1: Numbers assigned to equipment or cables on this diagram correspond to the list in "3.10 Equipment(s) used" and "3.11 Cable(s) used".
Note 2: RGB cable (No.e) with two ferrite cores is accessory of Display (No.6).

4. Conducted emission at mains port test information

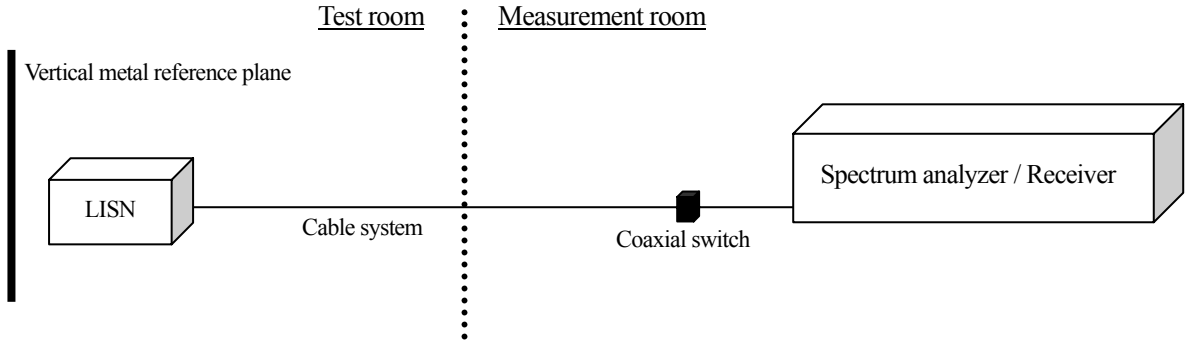
4.1 Measurement procedure

Test was applied by following conditions.

Test method:	ANSI C63.4
Frequency range:	0.15MHz to 30MHz
Test place:	Open area test site
EUT was placed on:	Wooden table / 2.3m(W) × 1.0m(D) × 0.8m(H)
Vertical Metal Reference Plane:	2.4m (W) × 2.7m (H) 0.4m away from EUT
Horizontal Metal Reference Plane:	Site 2 - 25.0m x 7.8m
Test receiver setting	
- Detector:	Quasi-peak, Average
- Bandwidth:	9 kHz

EUT and peripherals are connected to 50Ω/50μH Line Impedance Stabilization Network (LISN) which are connected to reference ground plane, and are placed 80cm away from EUT. Excess of AC power cable is bundled in center.
LISN for peripheral is terminated in 50Ω.
EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Maximum emission configuration is determined by manipulating the EUT, peripherals, interconnecting cables. Then, emission measurements are performed with test receiver in above setting to each current-carrying conductor of the mains port. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits.

- Test configuration



4.2 Calculation method

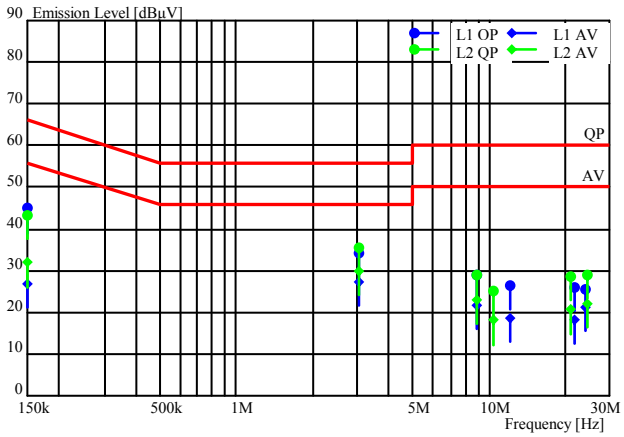
Emission level = Reading + (LISN. factor + Cable system loss)
Margin = Limit – Emission level

4.3 Test data

******* CONDUCTED EMISSION at MAINS PORT *******

Sheet number : 1

Standard	: FCC Part 15 Subpart B
Class	: B
Terminal	: Mains
Date of test	: 2009/1/15
Test site	: 2
Temperature [℃]	: 16.2
Humidity [%]	: 23.1
Operator	: Y.Takahashi
Company name	: TallyGenicom
EUT	: Dot Matrix Printer
Model number	: 2348
Serial number	: VX144428
Test mode	: H print, Centronics I/F
Comment	:



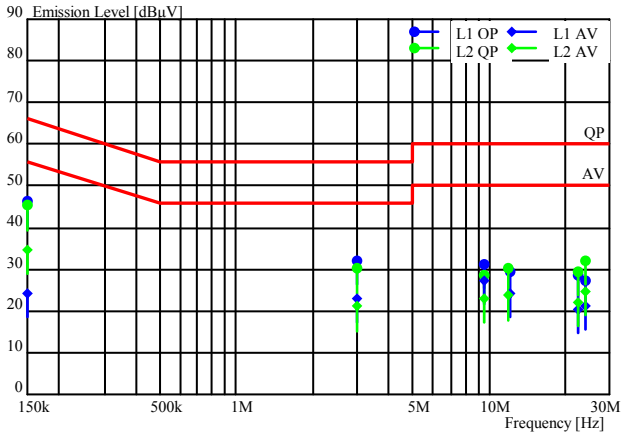
Phase	Frequency [MHz]	Reading QP [dBµV]	Reading AV [dBµV]	Factor [dB]	Emission level QP [dBµV]	Emission level AV [dBµV]	Limit QP [dBµV]	Limit AV [dBµV]	Margin QP [dB]	Margin AV [dB]	Comment
L1	0.150	44.6	26.8	0.2	44.8	27.0	66.0	56.0	21.2	29.0	
L1	3.060	33.8	26.9	0.3	34.1	27.2	56.0	46.0	21.9	18.8	
L1	8.943	28.4	21.1	0.5	28.9	21.6	60.0	50.0	31.1	28.4	
L1	12.134	25.7	18.1	0.7	26.4	18.8	60.0	50.0	33.6	31.2	
L1	21.517	24.9	17.0	1.2	26.1	18.2	60.0	50.0	33.9	31.8	
L1	24.024	24.1	19.9	1.4	25.5	21.3	60.0	50.0	34.5	28.7	
L2	0.150	43.1	31.7	0.2	43.3	31.9	66.0	56.0	22.7	24.1	
L2	3.054	35.3	29.6	0.3	35.6	29.9	56.0	46.0	20.4	16.1	*
L2	8.934	28.3	22.5	0.5	28.8	23.0	60.0	50.0	31.2	27.0	
L2	10.444	24.4	17.4	0.6	25.0	18.0	60.0	50.0	35.0	32.0	
L2	20.855	27.5	19.4	1.2	28.7	20.6	60.0	50.0	31.3	29.4	
L2	24.547	27.8	20.6	1.4	29.2	22.0	60.0	50.0	30.8	28.0	

* : The worst emission. Factor : LISN Factor + Cable Loss Ver.2.81 F2#034

***** CONDUCTED EMISSION at MAINS PORT *****

Sheet number : 2

Standard	: FCC Part 15 Subpart B
Class	: B
Terminal	: Mains
Date of test	: 2009/1/15
Test site	: 2
Temperature [℃]	: 16.2
Humidity [%]	: 23.1
Operator	: Y.Takahashi
Company name	: TallyGenicom
EUT	: Dot Matrix Printer
Model number	: 2348
Serial number	: VX144428
Test mode	: H print, USB I/F
Comment	:



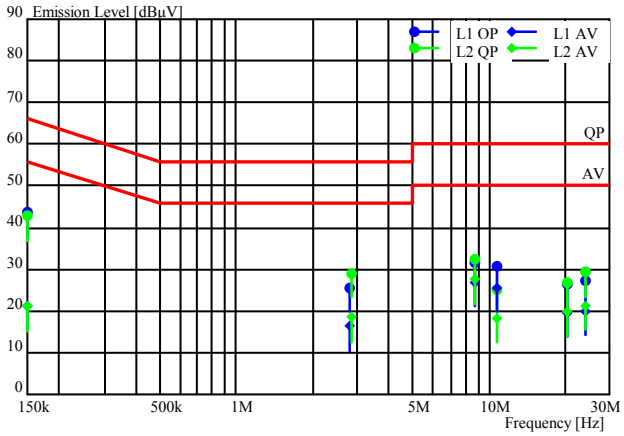
Phase	Frequency [MHz]	Reading QP [dBµV]	Reading AV [dBµV]	Factor [dB]	Emission level QP [dBµV]	Emission level AV [dBµV]	Limit QP [dBµV]	Limit AV [dBµV]	Margin QP [dB]	Margin AV [dB]	Comment
L1	0.150	45.9	24.0	0.2	46.1	24.2	66.0	56.0	19.9	31.8	*
L1	3.005	31.8	22.8	0.3	32.1	23.1	56.0	46.0	23.9	22.9	
L1	9.597	30.7	26.8	0.5	31.2	27.3	60.0	50.0	28.8	22.7	
L1	11.982	29.0	23.7	0.6	29.6	24.3	60.0	50.0	30.4	25.7	
L1	22.350	27.1	19.0	1.3	28.4	20.3	60.0	50.0	31.6	29.7	
L1	23.994	25.9	20.0	1.3	27.2	21.3	60.0	50.0	32.8	28.7	
L2	0.150	45.1	34.6	0.2	45.3	34.8	66.0	56.0	20.7	21.2	
L2	2.993	30.0	20.8	0.2	30.2	21.0	56.0	46.0	25.8	25.0	
L2	9.596	27.9	22.6	0.5	28.4	23.1	60.0	50.0	31.6	26.9	
L2	11.943	29.8	23.1	0.6	30.4	23.7	60.0	50.0	29.6	26.3	
L2	22.341	28.3	20.9	1.3	29.6	22.2	60.0	50.0	30.4	27.8	
L2	24.003	30.6	23.4	1.4	32.0	24.8	60.0	50.0	28.0	25.2	

*：The worst emission. Factor：LISN Factor + Cable Loss Ver.2.81 F2#034

***** CONDUCTED EMISSION at MAINS PORT *****

Sheet number : 3

Standard	: FCC Part 15 Subpart B
Class	: B
Terminal	: Mains
Date of test	: 2009/1/15
Test site	: 2
Temperature [℃]	: 16.2
Humidity [%]	: 23.1
Operator	: Y.Takahashi
Company name	: TallyGenicom
EUT	: Dot Matrix Printer
Model number	: 2348
Serial number	: VX142995
Test mode	: H print, RS232C I/F
Comment	:



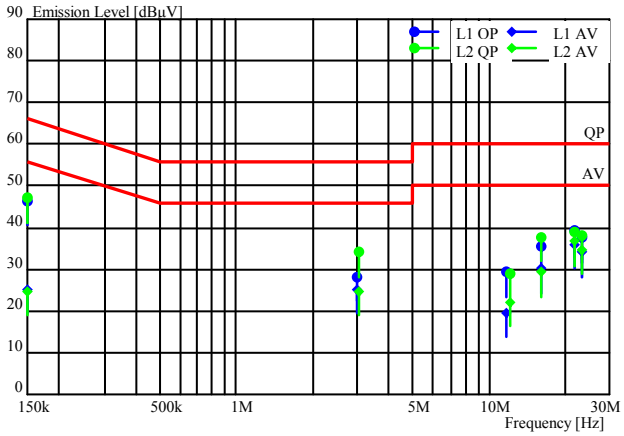
Phase	Frequency [MHz]	Reading QP [dBµV]	Reading AV [dBµV]	Factor [dB]	Emission level QP [dBµV]	Emission level AV [dBµV]	Limit QP [dBµV]	Limit AV [dBµV]	Margin QP [dB]	Margin AV [dB]	Comment
L1	0.150	43.6	21.0	0.2	43.8	21.2	66.0	56.0	22.2	34.8	*
L1	2.826	25.4	16.1	0.2	25.6	16.3	56.0	46.0	30.4	29.7	
L1	8.825	31.2	26.3	0.5	31.7	26.8	60.0	50.0	28.3	23.2	
L1	10.732	30.2	25.1	0.6	30.8	25.7	60.0	50.0	29.2	24.3	
L1	20.413	25.3	18.3	1.2	26.5	19.5	60.0	50.0	33.5	30.5	
L1	23.922	25.9	18.6	1.3	27.2	19.9	60.0	50.0	32.8	30.1	
L2	0.150	42.5	20.8	0.2	42.7	21.0	66.0	56.0	23.3	35.0	
L2	2.831	28.9	18.3	0.2	29.1	18.5	56.0	46.0	26.9	27.5	
L2	8.822	31.8	27.1	0.5	32.3	27.6	60.0	50.0	27.7	22.4	
L2	10.742	24.5	17.6	0.6	25.1	18.2	60.0	50.0	34.9	31.8	
L2	20.418	25.6	18.5	1.2	26.8	19.7	60.0	50.0	33.2	30.3	
L2	23.925	28.0	19.9	1.3	29.3	21.2	60.0	50.0	30.7	28.8	

*：The worst emission. Factor：LISN Factor + Cable Loss Ver.2.81 F2#034

***** CONDUCTED EMISSION at MAINS PORT *****

Sheet number : 4

Standard	: FCC Part 15 Subpart B
Class	: B
Terminal	: Mains
Date of test	: 2009/1/15
Test site	: 2
Temperature [℃]	: 16.2
Humidity [%]	: 23.1
Operator	: Y.Takahashi
Company name	: TallyGenicom
EUT	: Dot Matrix Printer
Model number	: 2348
Serial number	: VX144428
Test mode	: H print, LAN I/F
Comment	:



Phase	Frequency [MHz]	Reading QP [dBµV]	Reading AV [dBµV]	Factor [dB]	Emission level QP [dBµV]	Emission level AV [dBµV]	Limit QP [dBµV]	Limit AV [dBµV]	Margin QP [dB]	Margin AV [dB]	Comment
L1	0.150	46.3	25.0	0.2	46.5	25.2	66.0	56.0	19.5	30.8	
L1	2.995	28.0	25.0	0.2	28.2	25.2	56.0	46.0	27.8	20.8	
L1	11.659	28.7	18.9	0.6	29.3	19.5	60.0	50.0	30.7	30.5	
L1	16.016	34.7	29.2	0.9	35.6	30.1	60.0	50.0	24.4	19.9	
L1	21.661	38.3	34.7	1.2	39.5	35.9	60.0	50.0	20.5	14.1	
L1	23.127	36.2	32.8	1.3	37.5	34.1	60.0	50.0	22.5	15.9	
L2	0.150	46.8	24.6	0.2	47.0	24.8	66.0	56.0	19.0	31.2	
L2	3.065	33.7	24.4	0.3	34.0	24.7	56.0	46.0	22.0	21.3	
L2	12.155	28.1	21.4	0.7	28.8	22.1	60.0	50.0	31.2	27.9	
L2	16.013	36.7	28.4	0.9	37.6	29.3	60.0	50.0	22.4	20.7	
L2	21.665	37.6	35.5	1.2	38.8	36.7	60.0	50.0	21.2	13.3	*
L2	23.130	36.8	33.4	1.3	38.1	34.7	60.0	50.0	21.9	15.3	

*：The worst emission. Factor：LISN Factor + Cable Loss Ver.2.81 F2#034

5. Radiated emission test information

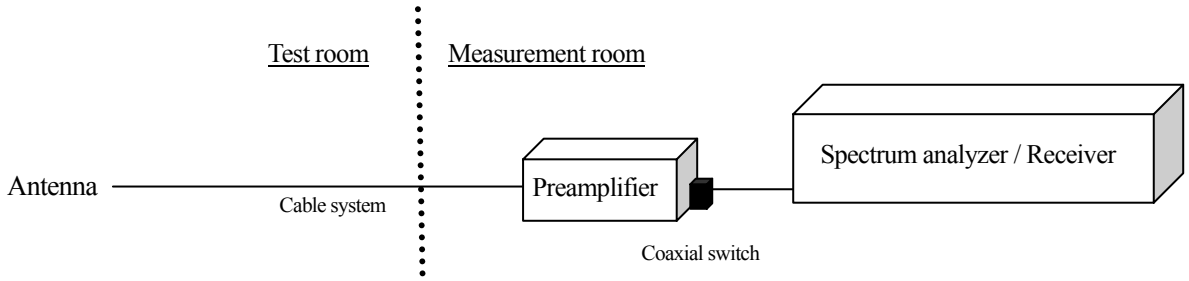
5.1 Measurement procedure

Test was applied by following conditions.

Test method:	ANSI C63.4
Frequency range:	30MHz to 1000MHz
Test place:	Open area test site
EUT was placed on:	Wooden table / 2.3m(W) × 1.0m(D) × 0.8m(H)
Antenna distance:	3m.
Test receiver setting	
- Detector:	Quasi-peak
- Bandwidth:	120kHz

EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Then, emission measurements up to 1000MHz were performed with test receiver in above setting. In order to find the maximum emissions, antenna is adjusted between 1m and 4m in height and varied its polarization (horizontal and vertical), and EUT azimuth was also varied by rotating turntable 0 to 360 degrees. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits.

- Test configuration



5.2 Calculation method

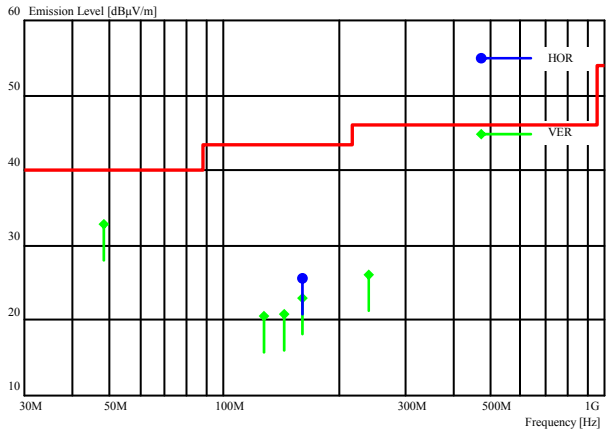
Emission level = Reading + (Ant. factor + Cable system loss – Amp. Gain)
Margin = Limit – Emission level

5.3 Test data

******* RADIATED EMISSION *******

Sheet number : 1

Standard	: FCC Part 15 Subpart B
Class	: B
Distance [m]	: 3
Date of test	: 2009/1/13
Test site	: 2
Temperature [℃]	: 15.3
Humidity [%]	: 32.2
Operator	: Y.Takahashi
Company name	: TallyGenicom
EUT	: Dot Matrix Printer
Model number	: 2348
Serial number	: VX144428
Test mode	: H print, Centronics I/F
Comment	:



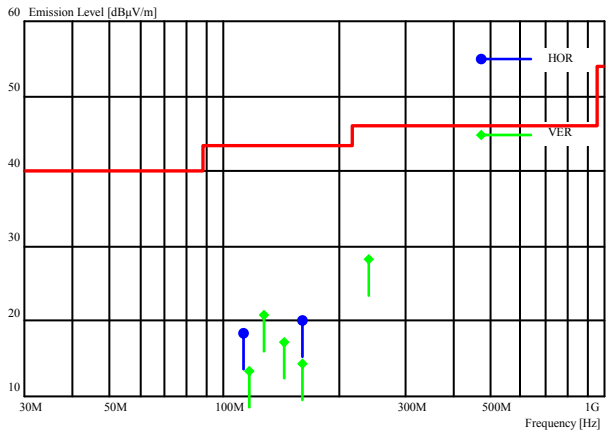
Pol.	Antenna Height	Table Radian	Reading Frequency	Reading Level	Factor	Emission Level	Limit	Margin		Comment
HOR/VER	[m]	[Deg.]	[MHz]	[dBµV]	[dB/m]	[dBµV/m]	[dBµV/m]	[dB]		
VER	1.0	115	48.00	47.1	-14.2	32.9	40.0	7.1	*	
VER	1.0	100	127.79	32.2	-11.6	20.6	43.5	22.9		
VER	1.0	75	144.01	31.3	-10.6	20.7	43.5	22.8		
VER	1.0	270	159.99	32.8	-9.9	22.9	43.5	20.6		
HOR	2.2	335	160.01	35.5	-9.8	25.7	43.5	17.8		
VER	1.0	15	240.02	33.3	-7.3	26.0	46.0	20.0		

* : The worst emission. Factor : Antenna Factor + Attenuator + Cable Loss - Amp Gain Ver.2.81 F2#034

***** RADIATED EMISSION *****

Sheet number : 2

Standard	: FCC Part 15 Subpart B
Class	: B
Distance [m]	: 3
Date of test	: 2009/1/13
Test site	: 2
Temperature [℃]	: 15.3
Humidity [%]	: 32.2
Operator	: Y.Takahashi
Company name	: TallyGenicom
EUT	: Dot Matrix Printer
Model number	: 2348
Serial number	: VX144428
Test mode	: H print, USB I/F
Comment	:



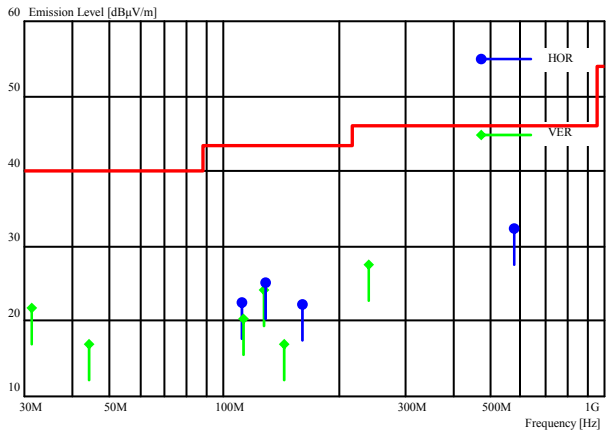
Antenna Pol. HOR/VER	Height [m]	Table Radian [Deg.]	Reading Frequency [MHz]	Reading Level [dBµV]	Factor [dB/m]	Emission Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Comment
HOR	2.3	155	112.14	31.5	-13.2	18.3	43.5	25.2	
VER	1.0	90	116.11	26.1	-12.7	13.4	43.5	30.1	
VER	1.0	295	127.79	32.4	-11.6	20.8	43.5	22.7	
VER	1.0	135	144.04	27.8	-10.6	17.2	43.5	26.3	
VER	1.0	355	160.00	24.2	-9.8	14.4	43.5	29.1	
HOR	2.4	230	160.01	29.8	-9.8	20.0	43.5	23.5	
VER	1.0	355	240.03	35.6	-7.3	28.3	46.0	17.7	*

* : The worst emission. Factor : Antenna Factor + Attenuator + Cable Loss - Amp Gain Ver.2.81 F2#034

***** RADIATED EMISSION *****

Sheet number : 3

Standard	: FCC Part 15 Subpart B
Class	: B
Distance [m]	: 3
Date of test	: 2009/1/13
Test site	: 2
Temperature [℃]	: 15.3
Humidity [%]	: 32.2
Operator	: Y.Takahashi
Company name	: TallyGenicom
EUT	: Dot Matrix Printer
Model number	: 2348
Serial number	: VX142995
Test mode	: H print, RS232C I/F
Comment	:



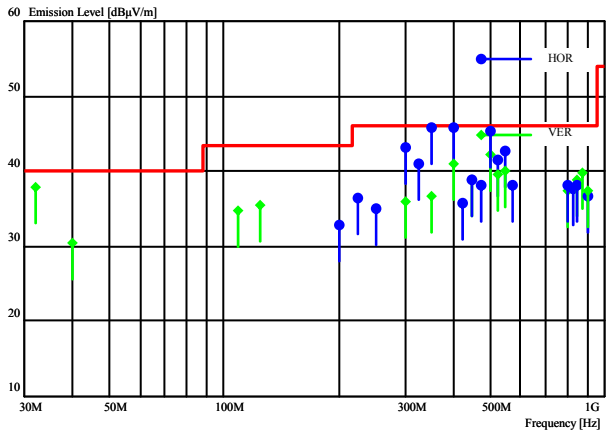
Antenna Pol. HOR/VER	Height [m]	Table Radian [Deg.]	Reading Frequency [MHz]	Reading Level [dBµV]	Factor [dB/m]	Emission Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]		Comment
VER	1.0	335	31.15	30.0	-8.2	21.8	40.0	18.2		
VER	1.0	240	43.94	29.5	-12.6	16.9	40.0	23.1		
HOR	1.7	125	111.66	35.8	-13.3	22.5	43.5	21.0		
VER	1.0	125	111.96	33.6	-13.3	20.3	43.5	23.2		
VER	1.0	55	127.85	35.7	-11.6	24.1	43.5	19.4		
HOR	1.9	190	128.03	36.8	-11.6	25.2	43.5	18.3		
VER	1.0	245	144.05	27.5	-10.6	16.9	43.5	26.6		
HOR	2.1	105	160.01	32.0	-9.8	22.2	43.5	21.3		
VER	1.0	0	240.03	34.8	-7.3	27.5	46.0	18.5		
HOR	1.5	155	576.06	36.4	-4.1	32.3	46.0	13.7	*	

*：The worst emission. Factor：Antenna Factor + Attenuator + Cable Loss - Amp Gain Ver.2.81 F2#034

***** RADIATED EMISSION *****

Sheet number : 4

Standard	: FCC Part 15 Subpart B
Class	: B
Distance [m]	: 3
Date of test	: 2009/1/13
Test site	: 2
Temperature [℃]	: 15.3
Humidity [%]	: 32.2
Operator	: Y.Takahashi
Company name	: TallyGenicom
EUT	: Dot Matrix Printer
Model number	: 2348
Serial number	: VX144428
Test mode	: H print, LAN I/F
Comment	:



Antenna Pol. HOR/VER	Height [m]	Table Radian [Deg.]	Reading Frequency [MHz]	Level [dBµV]	Factor [dB/m]	Emission Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Comment
VER	1.0	215	32.05	46.4	-8.6	37.8	40.0	2.2	
VER	1.0	190	40.02	41.9	-11.4	30.5	40.0	9.5	
VER	1.0	275	108.80	48.6	-13.8	34.8	43.5	8.7	
VER	1.0	190	125.01	47.4	-11.8	35.6	43.5	7.9	
HOR	2.5	125	200.02	41.1	-8.2	32.9	43.5	10.6	
HOR	2.0	35	225.02	43.7	-7.3	36.4	46.0	9.6	
HOR	1.9	65	250.03	41.7	-6.8	34.9	46.0	11.1	
HOR	1.0	65	300.01	53.7	-10.5	43.2	46.0	2.8	
VER	1.7	215	300.01	46.4	-10.5	35.9	46.0	10.1	
HOR	1.0	75	325.02	51.1	-10.0	41.1	46.0	4.9	
VER	1.5	145	350.00	46.3	-9.6	36.7	46.0	9.3	
HOR	1.0	130	350.02	55.3	-9.6	45.7	46.0	0.3	
HOR	1.0	165	400.00	53.6	-7.8	45.8	46.0	0.2	*
VER	1.5	175	400.01	48.7	-7.8	40.9	46.0	5.1	
HOR	1.0	110	424.99	42.7	-7.0	35.7	46.0	10.3	
VER	1.7	240	450.00	45.2	-6.4	38.8	46.0	7.2	
HOR	3.2	110	450.01	45.3	-6.4	38.9	46.0	7.1	
HOR	1.0	250	475.00	43.9	-5.7	38.2	46.0	7.8	
VER	1.8	20	500.00	48.0	-5.8	42.2	46.0	3.8	
HOR	1.0	290	500.03	51.2	-5.8	45.4	46.0	0.6	
HOR	1.0	275	525.00	46.8	-5.3	41.5	46.0	4.5	
VER	2.3	180	525.00	44.9	-5.3	39.6	46.0	6.4	
HOR	1.0	145	550.00	47.4	-4.7	42.7	46.0	3.3	
VER	2.2	180	550.00	44.7	-4.7	40.0	46.0	6.0	
HOR	1.0	245	575.02	42.2	-4.1	38.1	46.0	7.9	
VER	2.4	115	800.00	38.3	-0.9	37.4	46.0	8.6	
HOR	1.5	165	800.03	39.1	-0.9	38.2	46.0	7.8	
HOR	1.6	155	825.01	37.9	-0.3	37.6	46.0	8.4	
VER	2.3	115	850.00	38.2	0.6	38.8	46.0	7.2	
HOR	1.6	305	850.03	37.5	0.6	38.1	46.0	7.9	
VER	2.6	45	875.00	39.0	0.9	39.9	46.0	6.1	
HOR	1.5	75	900.03	35.4	1.3	36.7	46.0	9.3	
VER	2.6	40	900.03	36.1	1.3	37.4	46.0	8.6	

*：The worst emission. Factor：Antenna Factor + Attenuator + Cable Loss - Amp Gain Ver.2.81 F2#034

6. Uncertainty of measurement

Expanded uncertainties stated were calculated with a coverage Factor k=2.
Please note that these results are not taken into account when determining compliance or non-compliance with test result.

Test item	Measurement uncertainty
Conducted emission at mains port	±3.7dB
Radiated emission (30MHz – 1000MHz)	±5.3dB
Radiated emission (1000MHz – 26GHz)	±3.9dB

7. Laboratory description

1. Location: ZACTA Technology Corporation Yonezawa Testing Center
4149-7 Hachimanpara 5-chome Yonezawa-shi Yamagata 992-1128 Japan
Phone: +81-238-28-2880 Fax: +81-238-28-2888

2. Facility filing information:

1) NVLAP accreditation: NVLAP Lab. code: 200306-0

2) FCC filing:

Site name	Registration Number	Expiry Date
Site 2, Site3	91065	November 19, 2011
3m Semi-anechoic chamber 10m Semi-anechoic chamber Shielded room No.1	540072	March 12, 2010

3) Industry Canada Oats site filing:

Site name	Sites on file: Oats 3m/10m	Expiry Date
Site 2	4224A-2	January 24, 2010
Site 3	4224A-3	January 24, 2010
3m Semi-anechoic chamber	4224A-4	January 24, 2010
10m Semi-anechoic chamber	4224A-5	January 24, 2010

4) VCCI site filing:

Site name	Radiated emission	Conducted emission for mains port	Expiry Date	Conducted emission for telecom port	Expiry Date
Site 2	R-137	C-133	Nov. 16, 2011	T-1477	Oct. 8, 2011
Site 3	R-138	C-134	Nov. 16, 2011	T-1478	Oct. 8, 2011
10m Semi-anechoic chamber	R-2480	C-2722	Dec. 19, 2009	T-1474	Oct. 8, 2011
3m Semi-anechoic chamber	R-2481	C-2723	Dec. 19, 2009	T-1475	Oct. 8, 2011
Shielded room No.1	-	C-2724	Dec. 19, 2009	T-1476	Oct. 8, 2011

5) Intertek authorization:
Authorized as an EMC test laboratory.

6) TUV Rheinland authorization:
Authorized as an EMC test laboratory.

7) BUREAU VERITAS certification:
Certified as an EMC test laboratory

Appendix A: Test equipment

Conducted emission at mains port

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. Date
Spectrum analyzer	Agilent Technologies	8568B 85662A	2732A03847 3026A19352	Jul.2009	Jul. 31, 2008
Test receiver	ROHDE&SCHWARZ	ESHS10	842884/009	Feb.2009	Feb. 27, 2008
Line impedance stabilization network for EUT	Kyoritsu Electrical Works, Ltd.	KNW-407	8-663-4	Mar.2009	Mar. 13, 2008
Line impedance stabilization network for peripheral	Kyoritsu Electrical Works, Ltd.	KNW-242C	8-1094-5	Mar.2009	Mar. 31, 2008
Coaxial cable	FUJIKURA	8D-2W/15m	YTCRFC#2C	May.2009	May. 31, 2008
Coaxial cable	FUJIKURA	5D-2W/1m	YTCRFC#2R,2C-001	May.2009	May. 31, 2008
Coaxial cable	FUJIKURA	5D-2W/1m	YTCRFC#2R,2C-002	May.2009	May. 31, 2008
Coaxial switch	ANRITSU	MP59B	6200331882	May.2009	May. 31, 2008
Transient limiter	Agilent Technologies	11947A	3107A03917	Jan.2010	Jan. 7, 2009
50Ω terminator	SUHNER	65-BNC-50-0-7	N/A	Mar.2009	Mar. 5, 2008
PC	IBM	6892-44J	97-42089	N/A	N/A
Software	ZACTA	EMI Data Sheet	Ver.2.81	N/A	N/A

Radiated emission

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. Date
Spectrum analyzer	Agilent Technologies	8568B 85662A	2732A03847 3026A19352	Jul. 2009	Jul. 31, 2008
Test receiver	ROHDE&SCHWARZ	ESVS10	832655/012	Oct. 2009	Oct. 21, 2008
Biconical antenna	Schwarzbeck	VHA9103/BBA9106	1563	Jun. 2009	Jun. 14, 2008
Log periodic antenna	Schwarzbeck	UHALP9108A	0438	Jun. 2009	Jun. 14, 2008
Attenuator	TDC	TAT-43B-03	N/A	Aug. 2009	Aug. 8, 2008
Attenuator	TDC	TAT-43B-03	N/A	Aug. 2009	Aug. 8, 2008
Coaxial cable	FUJIKURA	8D-SFA/15m	YTCRFC#2R-001	May. 2009	May. 31, 2008
Coaxial cable	FUJIKURA	8D-SFA/15m	YTCRFC#2R-002	May. 2009	May. 31, 2008
Coaxial cable	FUJIKURA	8D-2W/8m	YTCRFC#2R-003	May. 2009	May. 31, 2008
Coaxial cable	FUJIKURA	5D-2W/1m	YTCRFC#2R,2C-001	May. 2009	May. 31, 2008
Coaxial cable	FUJIKURA	5D-2W/1m	YTCRFC#2R,2C-002	May. 2009	May. 31, 2008
Preamplifier	ANRITSU	MH648A	M96157	May. 2009	May. 31, 2008
Coaxial switch	ANRITSU	MP59B	6200331882	May. 2009	May. 31, 2008
Site attenuation	ZACTA Technology Corp.	N/A	N/A	Jul. 2009	Jul. 5, 2008
PC	IBM	6892-44J	97-42089	N/A	N/A
Software	ZACTA	EMI Data Sheet	Ver.2.81	N/A	N/A

Appendix B: Configuration photographs

Conducted emission at mains port [H print, Centronics I/F mode]

The photographs show maximized emission configuration.

Radiated emission [H print, Centronics I/F mode]

The photographs show maximized emission configuration.

Conducted emission at mains port [H print, USB I/F mode]


The photographs show maximized emission configuration.

Radiated emission [H print, USB I/F mode]


The photographs show maximized emission configuration.

Conducted emission at mains port [H print, RS232C I/F mode]


The photographs show maximized emission configuration.

Radiated emission [H print, RS232C I/F mode]


The photographs show maximized emission configuration.

Conducted emission at mains port [H print, LAN I/F mode]


The photographs show maximized emission configuration.

Radiated emission [H print, LAN I/F mode]


The photographs show maximized emission configuration.