

TEST REPORT

Report number : Z071C-09030

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)	: Dot Matrix Printer
FCC ID	: KHZ0132248
Model number	: 2248

Date of test : October 2, 2008, 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


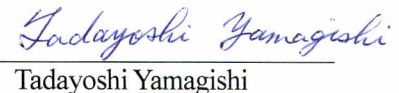
[EUT complies with Canadian Interference-Causing Equipment Standard ICES-003.]

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
Tadayoshi Yamagishi

Authorized by:


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: KHZ0132248, 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 : 2248

Serial number : VX144588, VX147268

EUT condition : Pre-production

Max. used frequency : 33MHz

Oscillator(s)/Crystal(s) : Oscillator 4.0MHz (for Main) /6.0MHz (for USB) /
Operating frequency 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) 415 × (D) 330 × (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

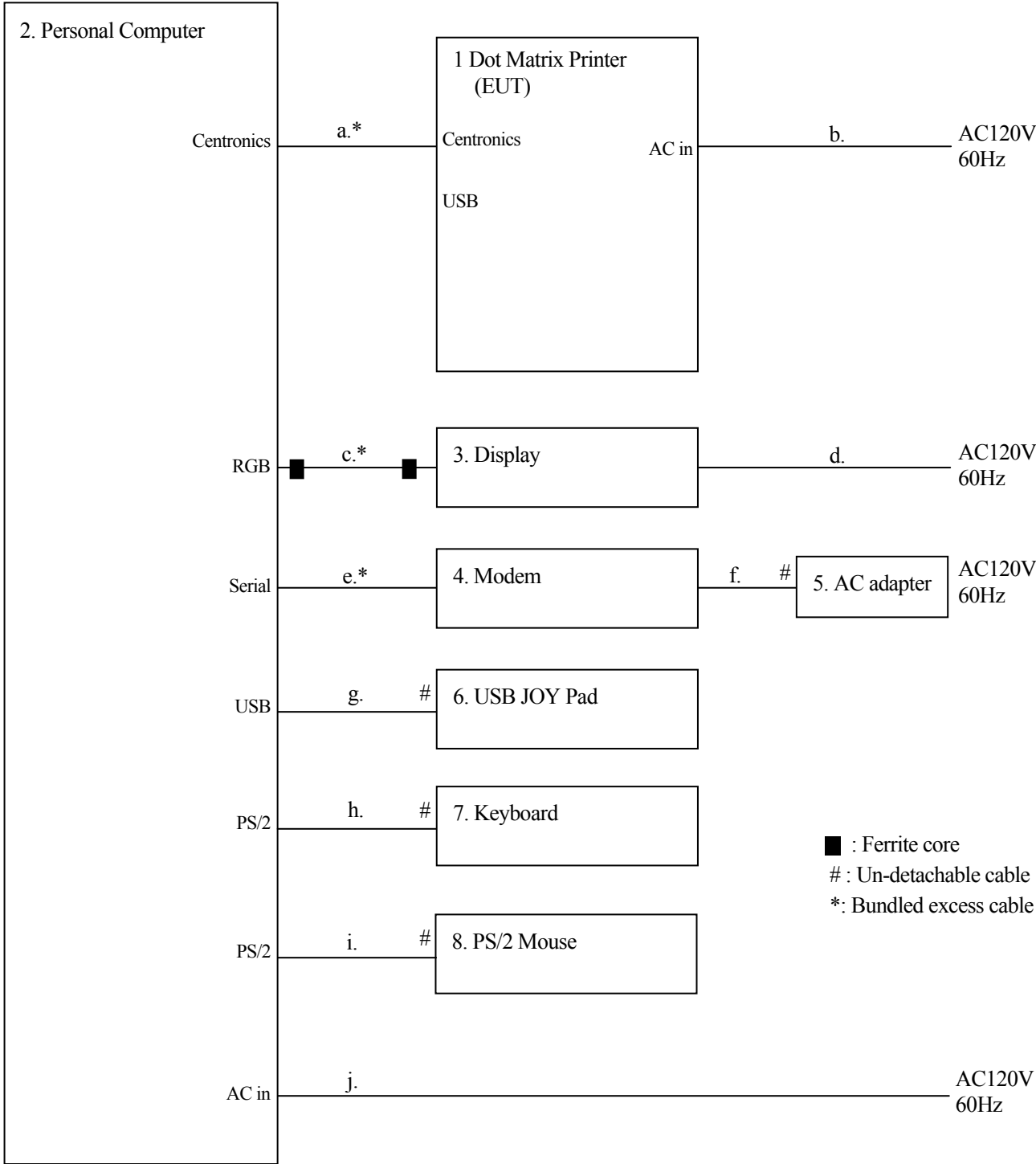
3.1 Equipment(s) used [H print, Centronics I/F mode]

No.	EUT	Company	Model No.	Serial No.	DoC/FCC ID	Comment
1	Dot Matrix Printer	TallyGenicom	2248	VX144588	KHZ0132248	EUT
2	Personal Computer	DELL	MCM	9LX841S	DoC	-
3	Display	MITSUBISHI	L202EV	5Z304093YJ	DoC	-
4	Modem	US. Robotics	Sport_Ster 33.6Kbps	000839032B K6YV4J	DoC	-
5	AC Adaptor for Modem	US. Robotics	N/A	N/A	N/A	-
6	USB JOY Pad	Logitech	G-UF13	N/A	DoC	-
7	Keyboard	DELL	SK-8000	N/A	DoC	-
8	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]



Note1: 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.3).

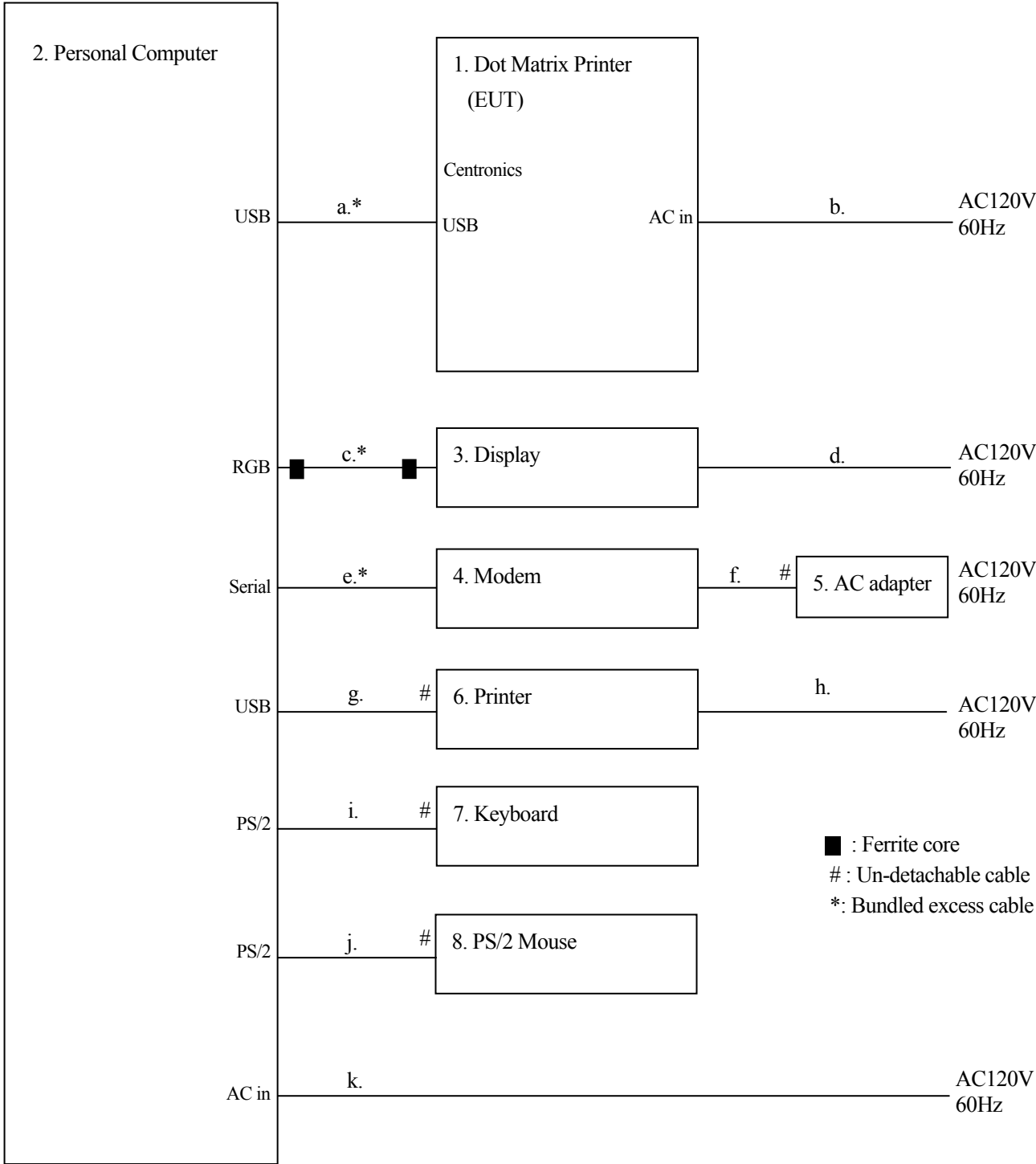
3.4 Equipment(s) used [H print, USB I/F mode]

No.	EUT	Company	Model No.	Serial No.	DoC/FCC ID	Comment
1	Dot Matrix Printer	TallyGenicom	2248	VX147268	KHZ0132248	EUT
2	Personal Computer	DELL	MCM	9LX841S	DoC	-
3	Display	MITSUBISHI	L202EV	5Z304093YJ	DoC	-
4	Modem	US. Robotics	Sport_Ster 33.6Kbps	000839032BK 6YV4J	DoC	-
5	AC Adaptor for Modem	US. Robotics	N/A	N/A	N/A	-
6	USB JOY Pad	Logitech	G-UF13	N/A	DoC	-
7	Keyboard	DELL	SK-8000	N/A	DoC	-
8	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.3).

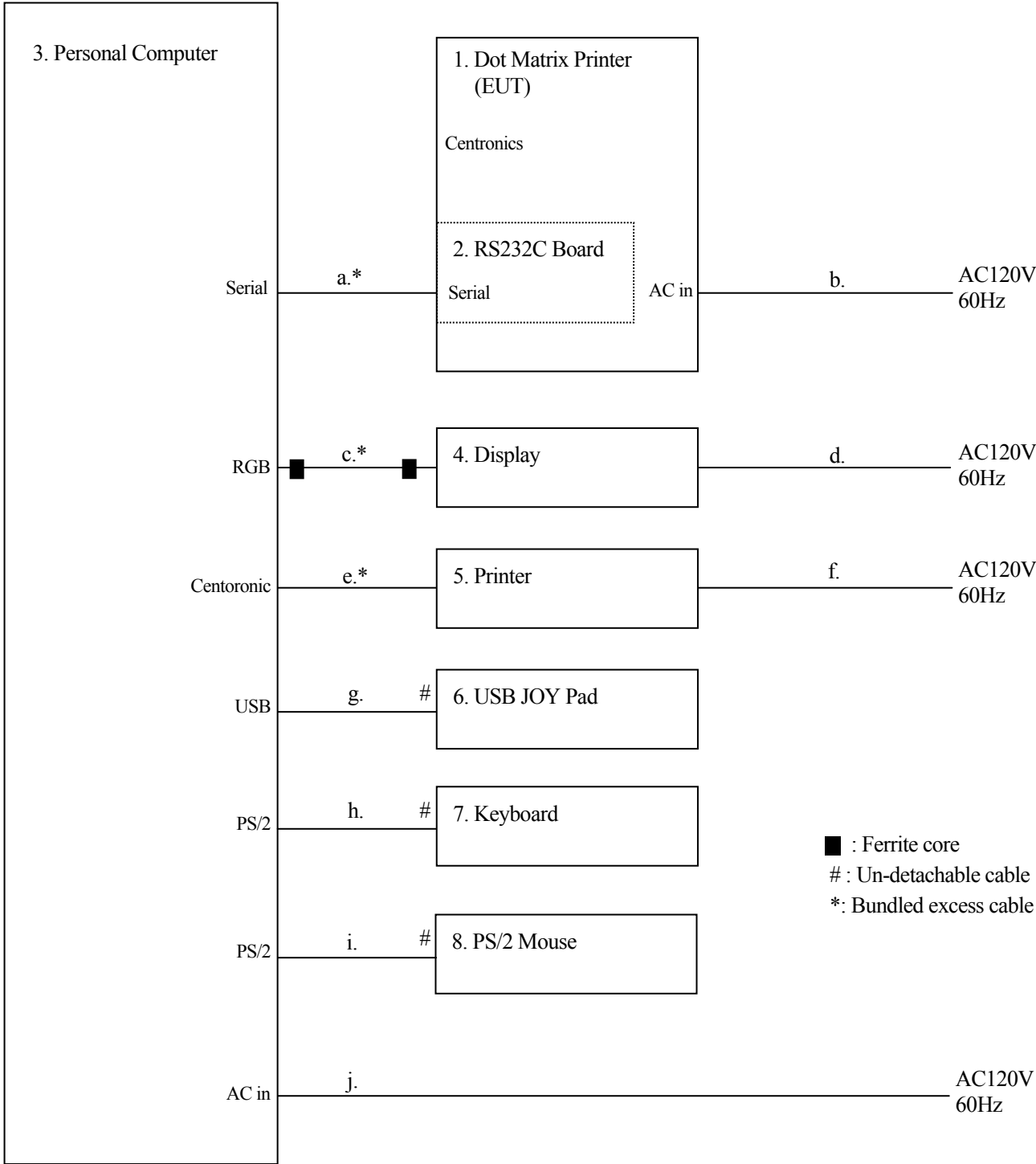
3.7 Equipment(s) used [H print, RS232C I/F mode]

No.	EUT	Company	Model No.	Serial No.	DoC/FCC ID	Comment
1	Dot Matrix Printer	TallyGenicom	2248	VX144588	KHZ0132248	EUT
2	RS232C Board	TallyGenicom	CA20160-B81X	N/A	N/A	Option
3	Personal Computer	DELL	MCM	9LX841S	DoC	-
4	Display	MITSUBISHI	L202EV	5Z304093YJ	DoC	-
5	Printer	HP	C4555A	US6BC212N	B94C4555X	-
6	USB JOY Pad	Logitech	G-UF13	N/A	DoC	-
7	Keyboard	DELL	SK-8000	N/A	DoC	-
8	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.4).

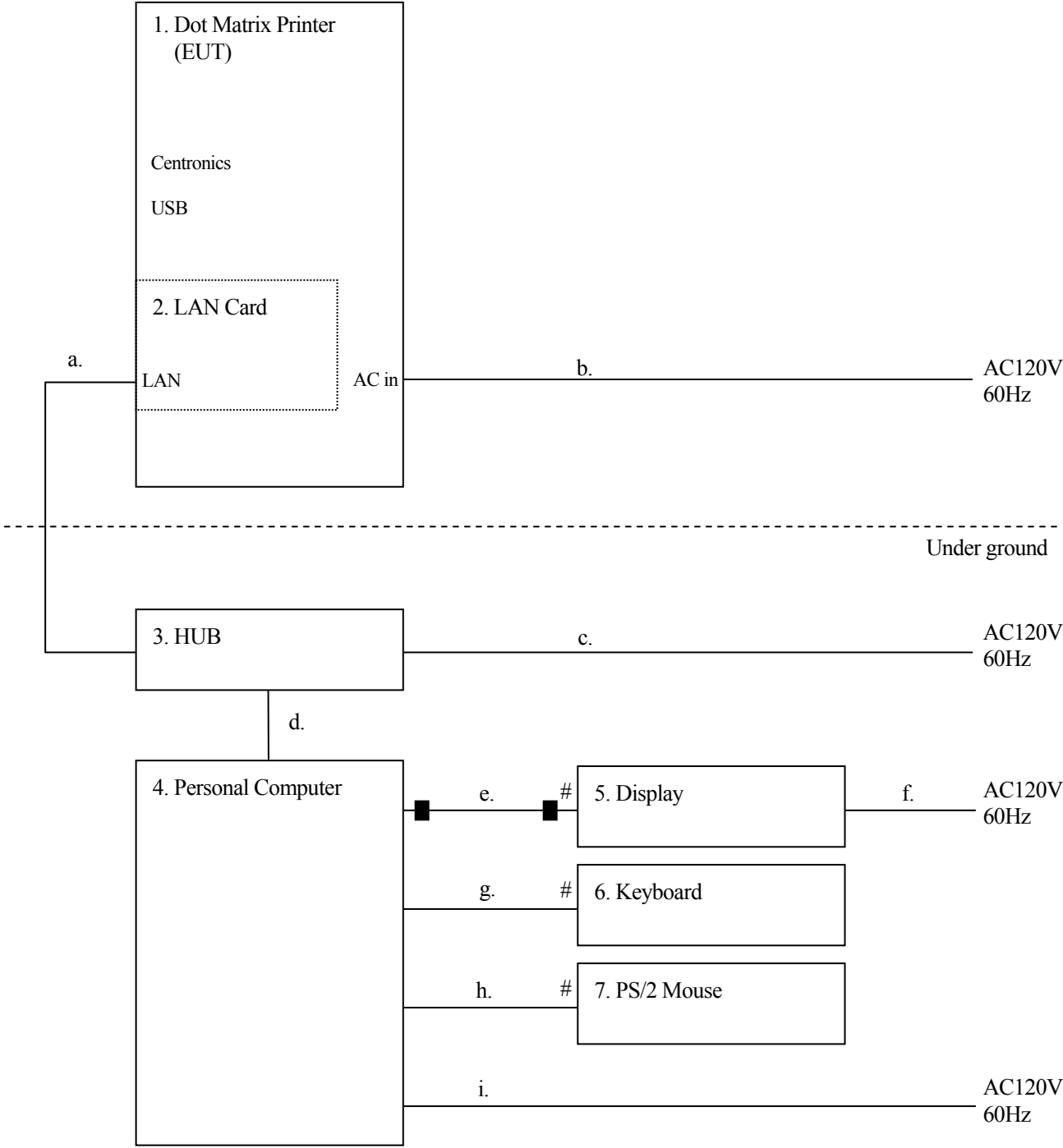
3.10 Equipment(s) used [H print, LAN I/F mode]

No.	EUT	Company	Model No.	Serial No.	DoC/FCC ID	Comment
1	Dot Matrix Printer	TallyGenicom	2248	VX147268	KHZ0132248	EUT
2	LAN Card	TallyGenicom	KA02004-0225	N/A	N/A	Option
3	HUB	corega	CG-SW05GTR	1103750070201017 Rev.A2	N/A	-
4	Personal Computer	DELL	MCM	9LX841S	DoC	-
5	Display	MITSUBISHI	L202EV	5Z304093YJ	DoC	-
6	Keyboard	DELL	SK-8000	N/A	DoC	-
7	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]



■ : Ferrite core
: Un-detachable cable

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.5).

4. Conducted emission at mains port test information

4.1 Measurement procedure

Test was applied by following conditions.

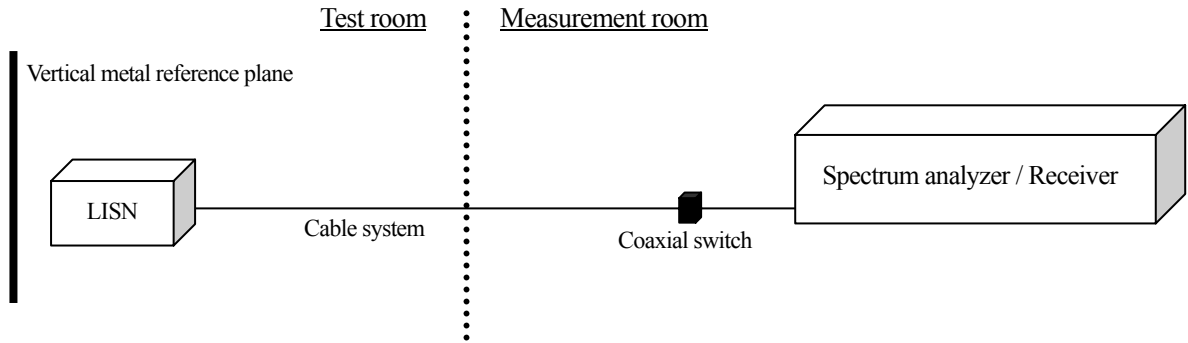
Test method:	ANSI C63.4
Frequency range:	0.15MHz to 30MHz
Test place:	Open area test site
EUT was placed on:	Wooden table / 2.3m(W) × 1.0m(D) × 0.8m(H)
Vertical Metal Reference Plane:	2.4m (W) × 2.7m (H) 0.4m away from EUT
Horizontal Metal Reference Plane:	Site 2 - 25.0m x 7.8m Site 3 - 40.0m x 7.8m

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



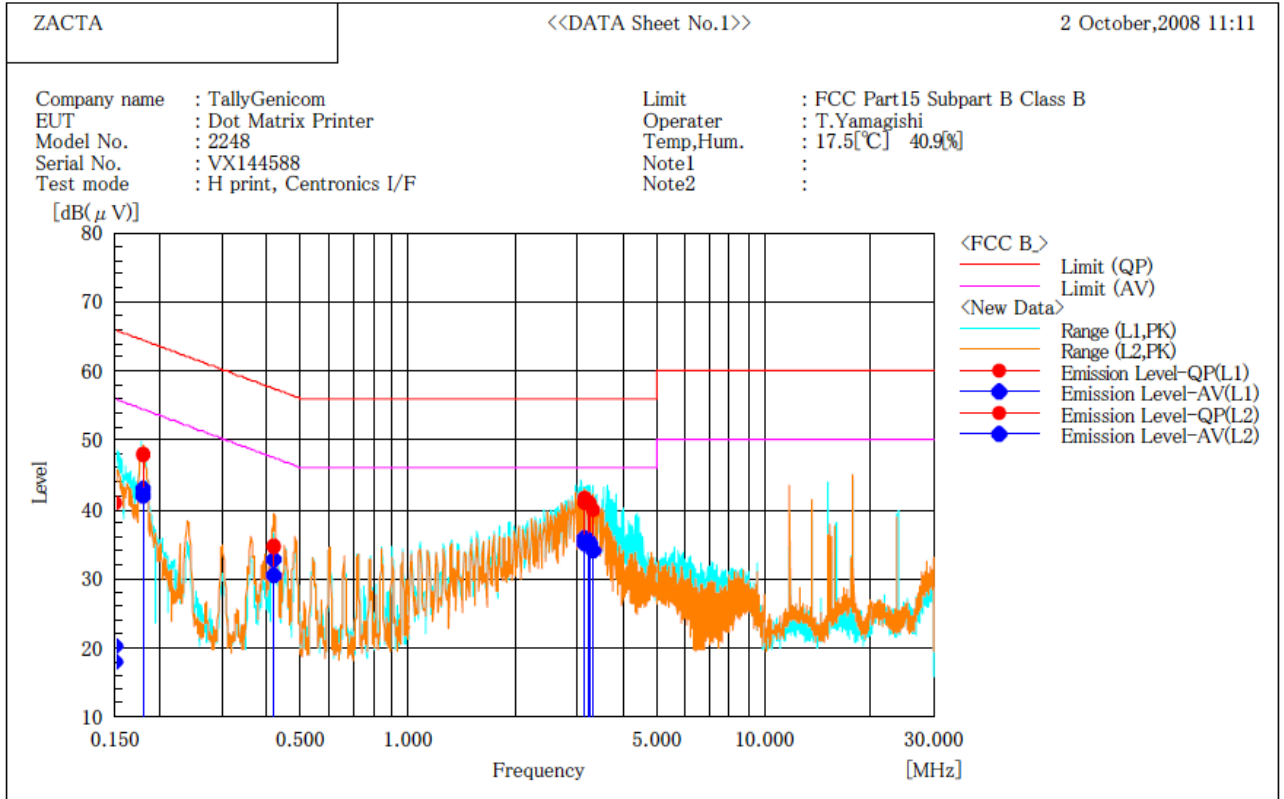
4.2 Calculation method

$$\text{Emission level} = \text{Reading} + (\text{LISN factor} + \text{Cable system loss})$$

$$\text{Margin} = \text{Limit} - \text{Emission level}$$

4.3 Test data

***** CONDUCTED EMISSION at MAINS PORT *****
 << Test site 3 >>



Final Result

--- L1 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c. f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.150	30.0	9.3	11.0	41.0	20.3	66.0	56.0	25.0	35.7
2	0.180	37.2	32.2	10.8	48.0	43.0	64.5	54.5	16.5	11.5
3	0.421	25.2	23.0	9.7	34.9	32.7	57.4	47.4	22.5	14.7
4	3.123	31.9	26.1	9.7	41.6	35.8	56.0	46.0	14.4	10.2
5	3.182	31.4	25.8	9.7	41.1	35.5	56.0	46.0	14.9	10.5
6	3.241	31.1	25.4	9.7	40.8	35.1	56.0	46.0	15.2	10.9

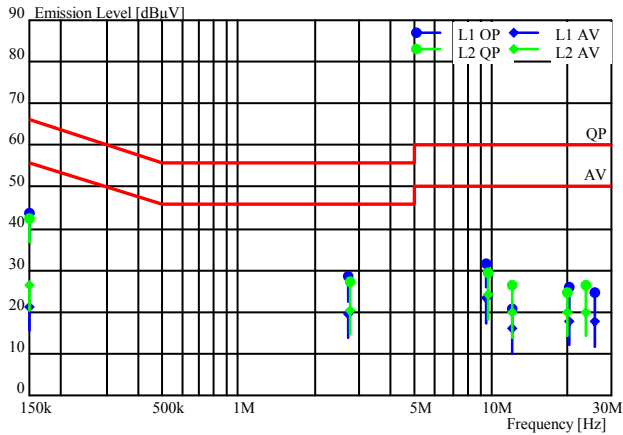
--- L2 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c. f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.150	29.7	6.9	11.1	40.8	18.0	66.0	56.0	25.2	38.0
2	0.180	37.0	31.0	10.9	47.9	41.9	64.5	54.5	16.6	12.6
3	0.420	24.8	20.8	9.7	34.5	30.5	57.4	47.4	22.9	16.9
4	3.124	31.3	25.4	9.7	41.0	35.1	56.0	46.0	15.0	10.9
5	3.182	31.3	25.5	9.7	41.0	35.2	56.0	46.0	15.0	10.8
6	3.304	30.3	24.3	9.7	40.0	34.0	56.0	46.0	16.0	12.0

***** 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 : 2248
 Serial number : VX147268
 Test mode : H print, USB I/F
 Comment :



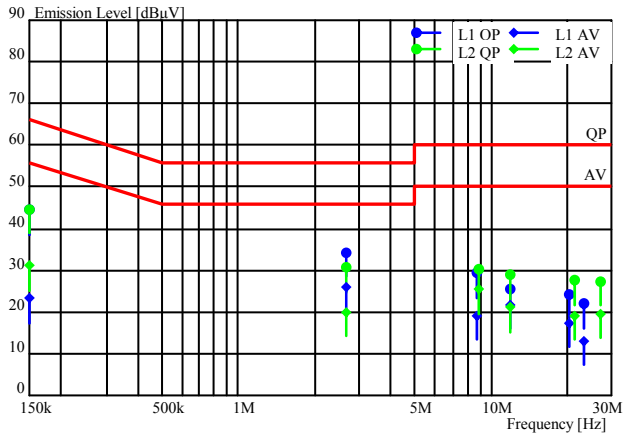
Phase	Frequency [MHz]	Reading		Factor [dB]	Emission level		Limit		Margin		Comment
		QP [dBuV]	AV [dBuV]		QP [dBuV]	AV [dBuV]	QP [dBuV]	AV [dBuV]	QP [dB]	AV [dB]	
L1	0.150	43.4	21.1	0.2	43.6	21.3	66.0	56.0	22.4	34.7	*
L1	2.698	28.2	19.4	0.2	28.4	19.6	56.0	46.0	27.6	26.4	
L1	9.524	31.2	22.7	0.5	31.7	23.2	60.0	50.0	28.3	26.8	
L1	12.047	20.1	15.2	0.7	20.8	15.9	60.0	50.0	39.2	34.1	
L1	20.244	24.7	16.5	1.2	25.9	17.7	60.0	50.0	34.1	32.3	
L1	25.465	23.3	16.2	1.4	24.7	17.6	60.0	50.0	35.3	32.4	
L2	0.150	42.3	26.0	0.2	42.5	26.2	66.0	56.0	23.5	29.8	
L2	2.764	27.0	20.1	0.2	27.2	20.3	56.0	46.0	28.8	25.7	
L2	9.690	28.9	23.6	0.5	29.4	24.1	60.0	50.0	30.6	25.9	
L2	12.051	25.6	19.1	0.7	26.3	19.8	60.0	50.0	33.7	30.2	
L2	20.033	23.4	18.8	1.2	24.6	20.0	60.0	50.0	35.4	30.0	
L2	23.700	25.0	18.6	1.3	26.3	19.9	60.0	50.0	33.7	30.1	

* : 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 : 2248
 Serial number : VX144588
 Test mode : H print, RS232C I/F
 Comment :



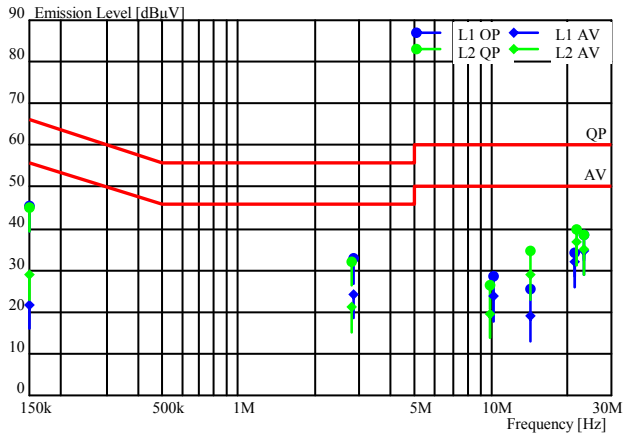
Phase	Frequency [MHz]	Reading		Factor	Emission level		Limit		Margin		Comment
		QP [dBμV]	AV [dBμV]		QP [dBμV]	AV [dBμV]	QP [dBμV]	AV [dBμV]	QP [dB]	AV [dB]	
L1	0.150	44.3	23.0	0.2	44.5	23.2	66.0	56.0	21.5	32.8	
L1	2.665	34.1	25.8	0.2	34.3	26.0	56.0	46.0	21.7	20.0	*
L1	8.839	28.8	18.5	0.5	29.3	19.0	60.0	50.0	30.7	31.0	
L1	11.903	25.1	21.2	0.6	25.7	21.8	60.0	50.0	34.3	28.2	
L1	20.429	23.1	16.2	1.2	24.3	17.4	60.0	50.0	35.7	32.6	
L1	23.047	20.6	11.7	1.3	21.9	13.0	60.0	50.0	38.1	37.0	
L2	0.150	44.4	30.8	0.2	44.6	31.0	66.0	56.0	21.4	25.0	
L2	2.672	30.4	19.9	0.2	30.6	20.1	56.0	46.0	25.4	25.9	
L2	8.959	30.0	24.9	0.5	30.5	25.4	60.0	50.0	29.5	24.6	
L2	11.927	28.2	20.4	0.6	28.8	21.0	60.0	50.0	31.2	29.0	
L2	21.485	26.4	17.8	1.2	27.6	19.0	60.0	50.0	32.4	31.0	
L2	27.007	25.8	18.0	1.5	27.3	19.5	60.0	50.0	32.7	30.5	

* : 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 : 2248
 Serial number : VX147268
 Test mode : H print, LAN I/F
 Comment :



Phase	Frequency [MHz]	Reading		Factor [dB]	Emission level		Limit		Margin		Comment
		QP [dBμV]	AV [dBμV]		QP [dBμV]	AV [dBμV]	QP [dBμV]	AV [dBμV]	QP [dB]	AV [dB]	
L1	0.150	45.1	21.4	0.2	45.3	21.6	66.0	56.0	20.7	34.4	
L1	2.856	32.5	24.1	0.2	32.7	24.3	56.0	46.0	23.3	21.7	
L1	10.255	28.1	23.1	0.6	28.7	23.7	60.0	50.0	31.3	26.3	
L1	14.180	24.6	18.1	0.8	25.4	18.9	60.0	50.0	34.6	31.1	
L1	21.172	33.0	30.7	1.2	34.2	31.9	60.0	50.0	25.8	18.1	
L1	23.128	37.1	33.3	1.3	38.4	34.6	60.0	50.0	21.6	15.4	
L2	0.150	45.0	28.7	0.2	45.2	28.9	66.0	56.0	20.8	27.1	
L2	2.791	31.8	20.8	0.2	32.0	21.0	56.0	46.0	24.0	25.0	
L2	9.883	26.0	19.0	0.5	26.5	19.5	60.0	50.0	33.5	30.5	
L2	14.214	33.7	28.0	0.8	34.5	28.8	60.0	50.0	25.5	21.2	
L2	21.662	38.8	35.7	1.2	40.0	36.9	60.0	50.0	20.0	13.1	*
L2	23.128	37.3	33.6	1.3	38.6	34.9	60.0	50.0	21.4	15.1	

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

5. Radiated emission test information

5.1 Measurement procedure

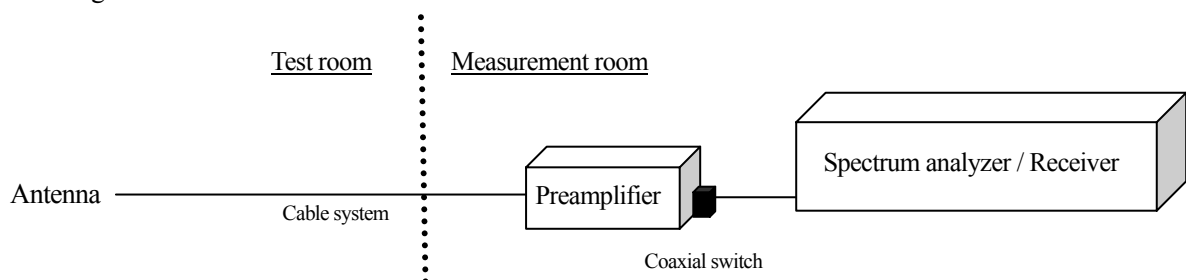
Test was applied by following conditions.

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

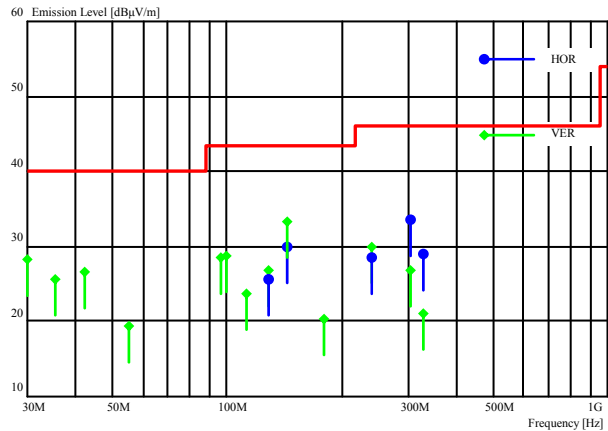
Emission level = Reading + (Ant. factor + Cable system loss – Amp. Gain)
Margin = Limit – Emission level

5.3 Test data

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

Sheet number : 1

Standard : FCC Part 15 Subpart B
 Class : B
 Distance [m] : 3
 Date of test : 2008/10/2
 Test site : 3
 Temperature [] : 17.5
 Humidity [%] : 40.9
 Operator : T.Yamagishi
 Company name : TallyGenicom
 EUT : Dot Matrix Printer
 Model number : 2248
 Serial number : VX144588
 Test mode : H print, Centronics I/F
 Comment :



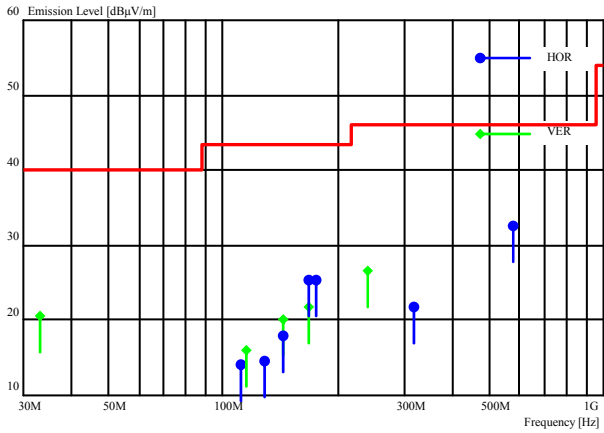
Antenna Pol.	Antenna Height [m]	Table Radian [Deg.]	Reading		Factor [dB/m]	Emission Level [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Comment
			Frequency [MHz]	Level [dBuV]					
VER	1.0	320	30.00	35.9	-7.7	28.2	40.0	11.8	
VER	1.0	10	35.31	35.1	-9.5	25.6	40.0	14.4	
VER	1.0	310	42.00	39.0	-12.3	26.7	40.0	13.3	
VER	1.0	260	55.00	35.5	-16.2	19.3	40.0	20.7	
VER	1.0	120	96.60	44.6	-16.1	28.5	43.5	15.0	
VER	1.0	100	100.00	44.0	-15.2	28.8	43.5	14.7	
VER	1.0	145	112.00	36.8	-13.1	23.7	43.5	19.8	
VER	1.0	200	128.33	38.3	-11.5	26.8	43.5	16.7	
HOR	2.0	230	128.35	37.2	-11.5	25.7	43.5	17.8	
HOR	2.0	55	144.05	40.5	-10.5	30.0	43.5	13.5	
VER	1.0	55	144.05	43.8	-10.5	33.3	43.5	10.2	*
VER	1.0	10	180.00	28.9	-8.6	20.3	43.5	23.2	
VER	1.0	285	240.01	37.4	-7.4	30.0	46.0	16.0	
HOR	1.5	160	240.05	35.9	-7.4	28.5	46.0	17.5	
HOR	1.0	175	304.87	44.0	-10.5	33.5	46.0	12.5	
VER	1.0	50	305.00	37.2	-10.4	26.8	46.0	19.2	
HOR	1.0	110	328.00	39.0	-10.0	29.0	46.0	17.0	
VER	1.0	50	328.00	31.1	-10.0	21.1	46.0	24.9	

* : The worst emission. Factor : Antenna Factor + Attenuator + Cable Loss - Amp Gain Ver.2.81 F3#056

***** 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 : 2248
 Serial number : VX147268
 Test mode : H print, USB I/F
 Comment :



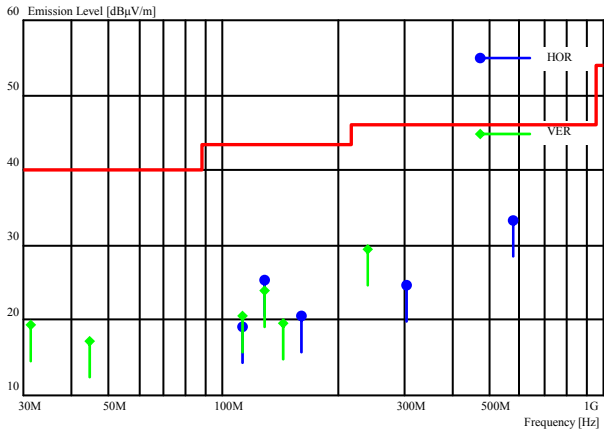
Antenna		Table	Reading		Factor	Emission Level	Limit	Margin	Comment
Pol.	Height	Radian	Frequency	Level					
HOR/VER	[m]	[Deg.]	[MHz]	[dBμV]	[dB/m]	[dBμV/m]	[dBμV/m]	[dB]	
VER	1.0	205	32.88	29.1	-8.6	20.5	40.0	19.5	
HOR	2.3	90	111.86	27.4	-13.3	14.1	43.5	29.4	
VER	1.0	45	115.54	28.7	-12.8	15.9	43.5	27.6	
HOR	2.2	310	128.11	26.2	-11.6	14.6	43.5	28.9	
VER	1.0	275	143.99	30.8	-10.7	20.1	43.5	23.4	
HOR	2.3	315	144.04	28.5	-10.6	17.9	43.5	25.6	
VER	1.0	70	168.19	31.1	-9.3	21.8	43.5	21.7	
HOR	2.1	295	168.25	34.6	-9.3	25.3	43.5	18.2	
HOR	2.0	305	175.86	34.3	-8.9	25.4	43.5	18.1	
VER	1.0	355	240.05	33.8	-7.3	26.5	46.0	19.5	
HOR	1.1	165	315.82	31.8	-10.0	21.8	46.0	24.2	
HOR	1.1	135	576.06	36.6	-4.1	32.5	46.0	13.5	*

* : The worst emission. Factor : Antenna Factor + Attenuator + Cable Loss - Amp Gain Ver.2.81 F2#054

***** 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 : 2248
 Serial number : VX144588
 Test mode : H print, RS232C I/F
 Comment :



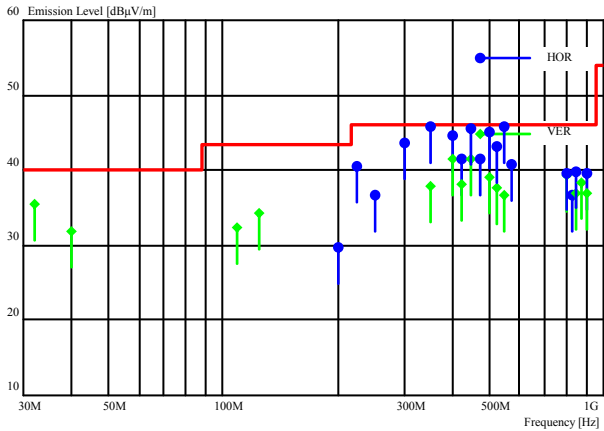
Antenna		Table	Reading		Factor	Emission Level	Limit	Margin	Comment
Pol.	Height	Radian	Frequency	Level					
HOR/VER	[m]	[Deg.]	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	
VER	1.0	315	31.31	27.6	-8.2	19.4	40.0	20.6	
VER	1.0	325	44.59	30.0	-12.9	17.1	40.0	22.9	
HOR	1.7	130	112.12	32.4	-13.2	19.2	43.5	24.3	
VER	1.0	20	112.13	33.7	-13.2	20.5	43.5	23.0	
HOR	2.2	110	128.03	37.0	-11.6	25.4	43.5	18.1	
VER	1.0	65	128.22	35.6	-11.6	24.0	43.5	19.5	
VER	1.0	65	144.01	30.2	-10.6	19.6	43.5	23.9	
HOR	2.3	75	160.20	30.3	-9.8	20.5	43.5	23.0	
VER	1.0	5	240.03	36.8	-7.3	29.5	46.0	16.5	
HOR	1.1	150	304.27	35.1	-10.5	24.6	46.0	21.4	
HOR	1.3	145	576.06	37.3	-4.1	33.2	46.0	12.8	*

* : The worst emission. Factor : Antenna Factor + Attenuator + Cable Loss - Amp Gain Ver.2.81 F2#054

***** 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 : 2248
 Serial number : VX147268
 Test mode : H print, LAN I/F
 Comment :



Antenna		Table	Reading		Factor	Emission Level	Limit	Margin	Comment
Pol.	Height	Radian	Frequency	Level					
HOR/VER	[m]	[Deg.]	[MHz]	[dBuV]	[dB/m]	[dBuV/m]	[dBuV/m]	[dB]	
VER	1.0	205	32.06	44.2	-8.6	35.6	40.0	4.4	
VER	1.0	210	40.06	43.2	-11.4	31.8	40.0	8.2	
VER	1.0	240	108.82	46.2	-13.8	32.4	43.5	11.1	
VER	1.0	255	125.01	46.0	-11.8	34.2	43.5	9.3	
HOR	2.6	15	200.02	37.9	-8.2	29.7	43.5	13.8	
HOR	1.7	160	225.00	47.8	-7.3	40.5	46.0	5.5	
HOR	1.6	135	250.03	43.4	-6.8	36.6	46.0	9.4	
HOR	1.3	155	300.01	54.2	-10.5	43.7	46.0	2.3	
HOR	1.3	140	350.00	55.4	-9.6	45.8	46.0	0.2	*
VER	1.4	185	350.00	47.4	-9.6	37.8	46.0	8.2	
HOR	1.1	295	400.00	52.5	-7.8	44.7	46.0	1.3	
VER	1.1	195	400.01	49.3	-7.8	41.5	46.0	4.5	
HOR	1.1	295	424.99	48.6	-7.0	41.6	46.0	4.4	
VER	1.1	185	425.00	44.8	-6.7	38.1	46.0	7.9	
VER	1.3	280	450.00	47.8	-6.4	41.4	46.0	4.6	
HOR	1.1	195	450.01	51.9	-6.4	45.5	46.0	0.5	
HOR	1.0	190	474.99	47.4	-5.9	41.5	46.0	4.5	
VER	1.3	115	500.02	45.0	-5.8	39.2	46.0	6.8	
HOR	1.0	175	500.03	50.9	-5.8	45.1	46.0	0.9	
VER	1.2	325	525.00	42.9	-5.3	37.6	46.0	8.4	
HOR	1.0	160	525.01	48.4	-5.3	43.1	46.0	2.9	
VER	1.3	100	550.01	41.4	-4.7	36.7	46.0	9.3	
HOR	1.0	155	550.02	50.5	-4.7	45.8	46.0	0.2	*
HOR	1.0	160	575.02	44.8	-4.1	40.7	46.0	5.3	
VER	1.4	45	800.00	40.2	-0.9	39.3	46.0	6.7	
HOR	1.7	175	800.01	40.4	-0.9	39.5	46.0	6.5	
HOR	1.5	240	825.01	36.9	-0.3	36.6	46.0	9.4	
VER	1.1	45	850.00	36.4	0.6	37.0	46.0	9.0	
HOR	2.5	175	850.01	39.1	0.6	39.7	46.0	6.3	
VER	1.7	220	875.03	37.4	0.9	38.3	46.0	7.7	
HOR	1.5	190	900.03	38.2	1.3	39.5	46.0	6.5	
VER	1.7	220	900.03	35.7	1.3	37.0	46.0	9.0	

* : The worst emission. Factor : Antenna Factor + Attenuator + Cable Loss - Amp Gain Ver.2.81 F2#054

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	± 3.7 dB
Radiated emission (30MHz – 1000MHz)	± 5.3 dB
Radiated emission (1000MHz – 26GHz)	± 3.9 dB

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

[Site 2]

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

[Site 3]

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. Date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100451	May.2009	May. 12, 2008
Line impedance stabilization network for EUT	Kyoritsu Electrical Works, Ltd.	KNW-407	8-693-19	Mar.2009	Mar. 13, 2008
Line impedance stabilization network for peripheral	Kyoritsu Electrical Works, Ltd.	KNW-242C	8-1094-5	Mar.2009	Mar. 13, 2008
Highpass filter	ROHDE&SCHWARZ	EZ-25	100007	Jan.2009	Jan. 7, 2008
Coaxial cable	FUJIKURA	8D-2W/15m	YTCRFC#3C	May.2009	May. 31, 2008
Coaxial cable	FUJIKURA	5D-2W/1m	YTCRFC#3R,3C-001	May.2009	May. 31, 2008
Coaxial cable	FUJIKURA	5D-2W/1m	YTCRFC#3R,3C-002	May.2009	May. 31, 2008
Coaxial switch	ANRITSU	MP59B	6200331883	May.2009	May. 31, 2008
Transient limiter	Agilent Technologies	11947A	3107A03923	Jan.2009	Jan. 7, 2008
50Ω terminator	RS	090-0510	N/A	Mar.2009	Mar. 5, 2008
PC	IBM	6892-44J	97-43012	N/A	N/A
Software	ZACTA	EMI Data Sheet	Ver.2.81	N/A	N/A

Radiated emission

[Site 2]

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

[Site 3]

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. Date
Spectrum analyzer	Agilent Technologies	8568B 85662A	2634A03228 2648A14093	Jun. 2009	Jun. 11, 2008
Test receiver	ROHDE&SCHWARZ	ESVS10	827864/004	May. 2009	May. 27, 2008
Biconical antenna	Schwarzbeck	VHA9103/BBA9106	2322	Jun. 2009	Jun. 14, 2008
Log periodic antenna	Schwarzbeck	UHALP9108A	0398	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#3R-001	May. 2009	May. 31, 2008
Coaxial cable	FUJIKURA	8D-SFA/15m	YTCRFC#3R-002	May. 2009	May. 31, 2008
Coaxial cable	FUJIKURA	8D-2W/8m	YTCRFC#3R-003	May. 2009	May. 31, 2008
Coaxial cable	FUJIKURA	5D-2W/1m	YTCRFC#3R,3C-001	May. 2009	May. 31, 2008
Coaxial cable	FUJIKURA	5D-2W/1m	YTCRFC#3R,3C-002	May. 2009	May. 31, 2008
Preamplifier	ANRITSU	MH648A	M96257	May. 2009	May. 31, 2008
Coaxial switch	ANRITSU	MP59B	6200331883	May. 2009	May. 31, 2008
Site attenuation	ZACTA Technology Corp.	N/A	N/A	Jul. 2009	Jul. 5, 2008
PC	IBM	6892-44J	97-43012	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.