

TEST REPORT

Report number : Z01C-05507

Issue date : January 27, 2006

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 EUT complies with section 15.37 "Transition provision for compliance with the rules".

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

Applicant	: FUJITSU ISOTEC LIMITED 135, Higashinozaki, Hobara-machi, Date-shi, Fukushima 960-0695 Japan Phone: +81-24-575-2191 Fax: +81-24-574-2277
Equipment under test (EUT)	: Dot Matrix Printer
FCC ID	: KHZ010M3391A
Trade name	: FUJITSU ISOTEC
Model number	: M3391A
Serial number	: N/A
EUT condition	: Pre-production

Date of test : November 17, 18, 2005

Test place : OATS

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.]

Zacta Technology Corporation certifies that no party to the application is subject to a denial of federal benefits, that include FCC benefits, pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21U.S.C. 853(a).

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.

Authorized by: Katsumi Sumiyoshi
Manager of Quality Control Division



NVLAP LAB CODE 200306-0

FCC ID: KHZ010M3391A

Table of contents

	Page
1. Summary of Test.....	3
1.1 Purpose of test.....	3
1.2 Standards.....	3
1.3 Emission measurement	3
1.4 Deviation from the standard.....	3
2. Equipment Under Test	4
2.1 EUT information	4
2.2 Operating mode	4
3. Configuration of equipment.....	5
3.1 Peripheral(s) used [Centronics I/F mode].....	5
3.2 Cable(s) used [Centronics I/F mode].....	5
3.3 System configuration [Centronics I/F mode].....	6
3.4 Peripheral(s) used [RS232C I/F mode]	7
3.5 Cable(s) used [RS232C I/F mode]	7
3.6 System configuration [RS232C I/F mode].....	8
4. Conducted emission at mains port test information.....	9
4.1 Measurement procedure.....	9
4.2 Test equipment for Conducted emission at mains port.....	10
4.3 Sample calculation	10
4.4 Test data	11
5. Radiated emission test information.....	15
5.1 Measurement procedure.....	15
5.2 Test equipment for Radiated emission.....	16
5.3 Sample calculation	16
5.4 Test data	17
6. Uncertainty of measurement	21
7. Laboratory description.....	21
8. Configuration photographs.....	22
Conducted emission at mains port [Centronics I/F mode Front CSF]	22
Radiated emission [Centronics I/F mode Front CSF].....	22
Conducted emission at mains port [Centronics I/F mode Rear CSF]	23
Radiated emission [Centronics I/F mode Rear CSF].....	23
Conducted emission at mains port [RS232C I/F mode Front CSF].....	24
Radiated emission [RS232C I/F mode Front CSF]	24
Conducted emission at mains port [RS232C I/F mode Rear CSF].....	25
Radiated emission [RS232C I/F mode Rear CSF].....	25

1. Summary of Test

1.1 Purpose of test

This is the class II permissive change report due to the change in following board.

NO	Board name	Modification
1	Main board	Printed wiring board pattern changed.
		ROM type change: Mask ROM → Flash ROM
		RAM type change: 4M fast page → 4M EDO
2	Driver board	Non RoHS parts → RoHS parts
3	Connector board	Printed wiring board: single-sided → double-sided
		Non RoHS parts (DIP) → RoHS parts (SMD)
4	Control panel	Non RoHS parts → RoHS parts
5	Interface board	Non RoHS parts → RoHS parts
6	Power supply board	Circuit and parts changed.
		Non RoHS parts → RoHS parts

1.2 Standards

CFR47 FCC Part 15 Subpart B

1.3 Emission measurement

Test item	Test method	Classification of EUT	Test
Conducted emission at mains port	ANSI C63.4-2003	Class B	Applied
Radiated emission	ANSI C63.4-2003	Class B	Applied

Note : None.

1.4 Deviation from the standard

None

2. Equipment Under Test

2.1 EUT information

No.	EUT	Company	Model No.	Serial No.	DoC/FCC ID	Comment	
1	Dot Matrix Printer	FUJITSU ISOTEC LIMITED	M3391A	N/A	KHZ010M3391A	EUT	-
2	Rear Cut Sheet Feeder	FUJITSU ISOTEC LIMITED	KA02029-0005	N/A	N/A	Option	1)
			KA02029-0031	N/A	N/A	Option	2)
3	Front Cut Sheet Feeder	FUJITSU ISOTEC LIMITED	KA02029-0051	N/A	N/A	Option	3)

1): Option(Rear Bin 1)

2): Option(Rear Bin 2)

3): Option(Front)

Max. frequency : Oscillator 20MHz
Processor clock 10MHz

Power ratings : AC 120V 60Hz
[Power supply for EUT in testing was AC 120V 60Hz.]

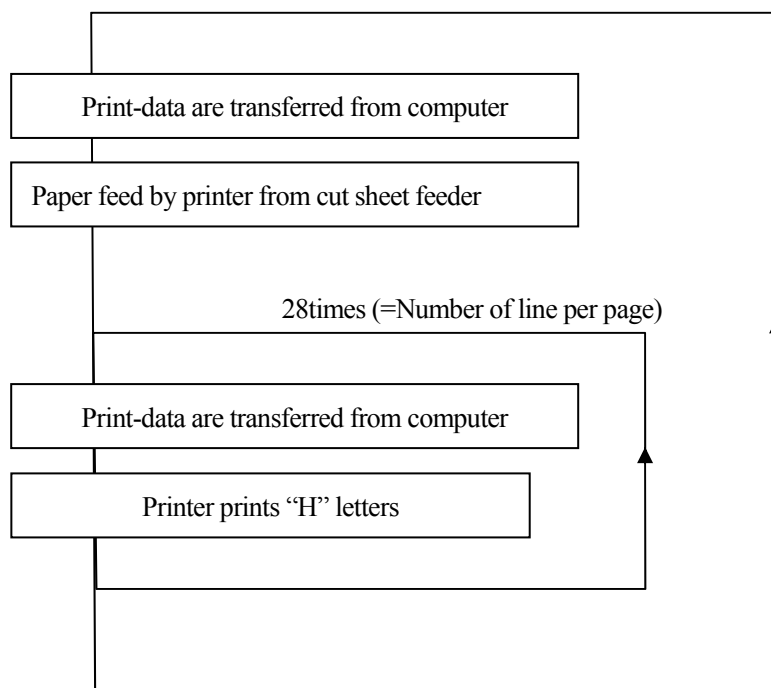
Port(s) : Centronics I/F
RS232C I/F

Size : (W) 600 × (D) 300 × (H) 265 mm

Variation of model(s) : Not applicable

2.2 Operating mode

Centronics I/F mode, RS232C I/F mode



3. Configuration of equipment

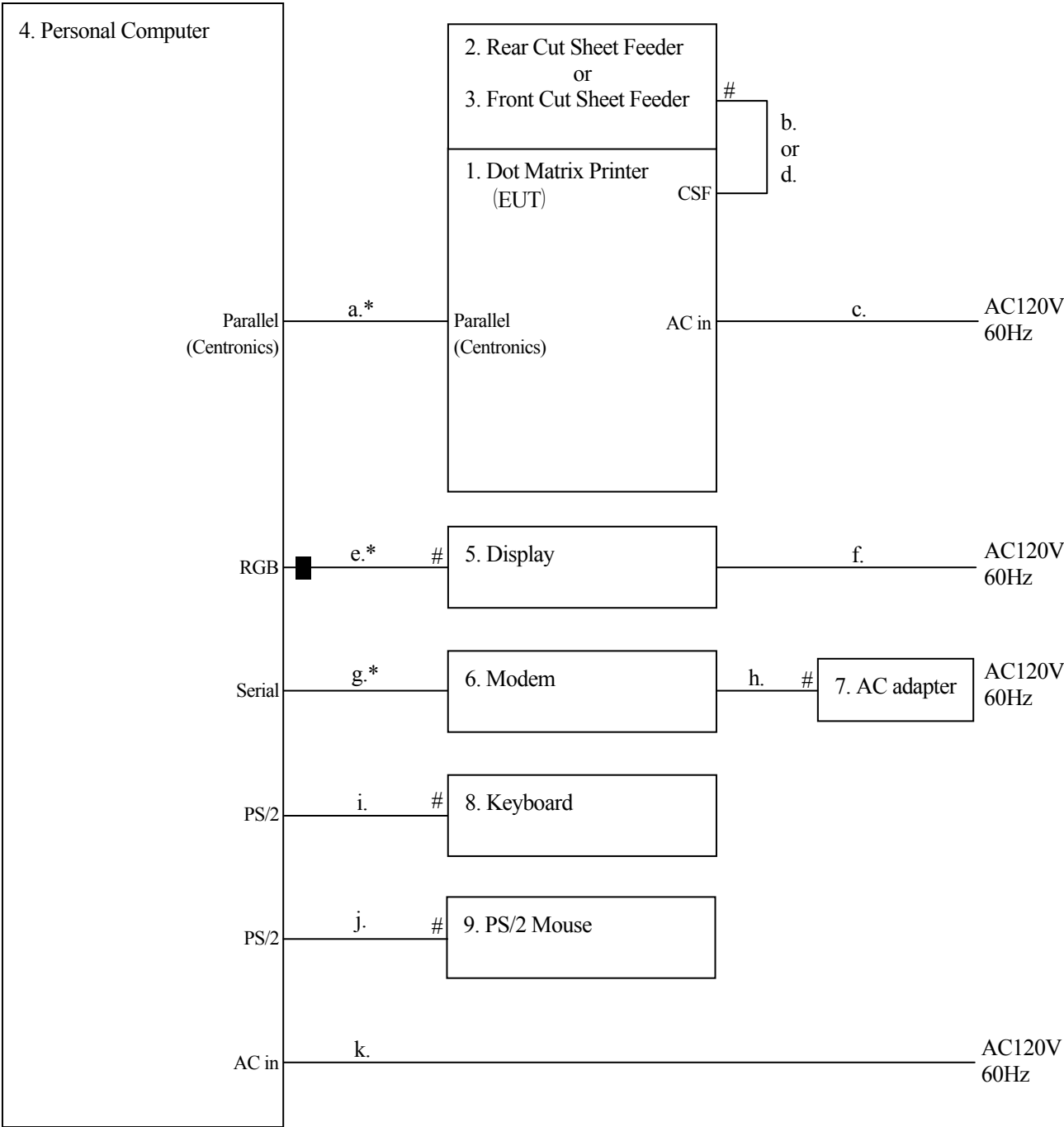
3.1 Peripheral(s) used [Centronics I/F mode]

No.	Equipment	Company	Model No.	Serial No.	DoC / FCC ID	Comment
4	Personal Computer	DELL	MCM	FLXB41S	DoC	-
5	Display	ACER	AC915	ES.C0608.00742 000039PK00	DoC	-
6	Modem	US. Robotics	Sport_Ster 33.6Kbps	000839032BK6YV4J	DoC	-
7	AC adapter for Modem	US. Robotics	N/A	N/A	N/A	-
8	Keyboard	IBM	5576-B01	97GT263	DoC	-
9	PS/2 Mouse	KYE Systems Corp	P803	CD0500801880	FSUGMZFN	-

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

No.	Cable	Length[m]	Shield	Connector	From	To	Comment
a	Centronics cable	3.0	Shielded	Metal	EUT	PC	-
b	Cut Sheet Feeder cable	0.3	Shielded	Metal	EUT	Rear Cut Sheet Feeder	-
c	AC power cord for EUT	2.0	Unshielded	Plastic	EUT	AC outlet	Accessory
d	Cut Sheet Feeder cable	0.1	Shielded	Metal	EUT	Front Cut Sheet Feeder	-
e	RGB cable	1.5	Shielded	Metal	PC	Display	-
f	AC power cord for Display	1.5	Unshielded	Plastic	Display	AC outlet	-
g	Serial cable	1.5	Shielded	Metal	PC	Modem	-
h	DC cable for Modem AC adaptor	1.7	Unshielded	Plastic	Modem	AC adapter	-
i	Keyboard cable	2.2	Unshielded	Metal	PC	Keyboard	-
j	Mouse cable	1.8	Unshielded	Metal	PC	PS/2 Mouse	-
k	AC power cord for PC	1.8	Unshielded	Plastic	PC	AC outlet	-

3.3 System configuration [Centronics I/F mode]



Note1: Numbers assigned to equipment or cables on this diagram correspond to the list in “2.1 EUT information”, “3.1 Peripheral(s) used” and “3.2 Cable(s) used”.

Note2: RGB cable(No.e) with one ferrite core is accessory for Display(No.5)

Note3: Front Cut Sheet Feeder cable and Rear Cut Sheet Feeder cable are not connected at the same time.

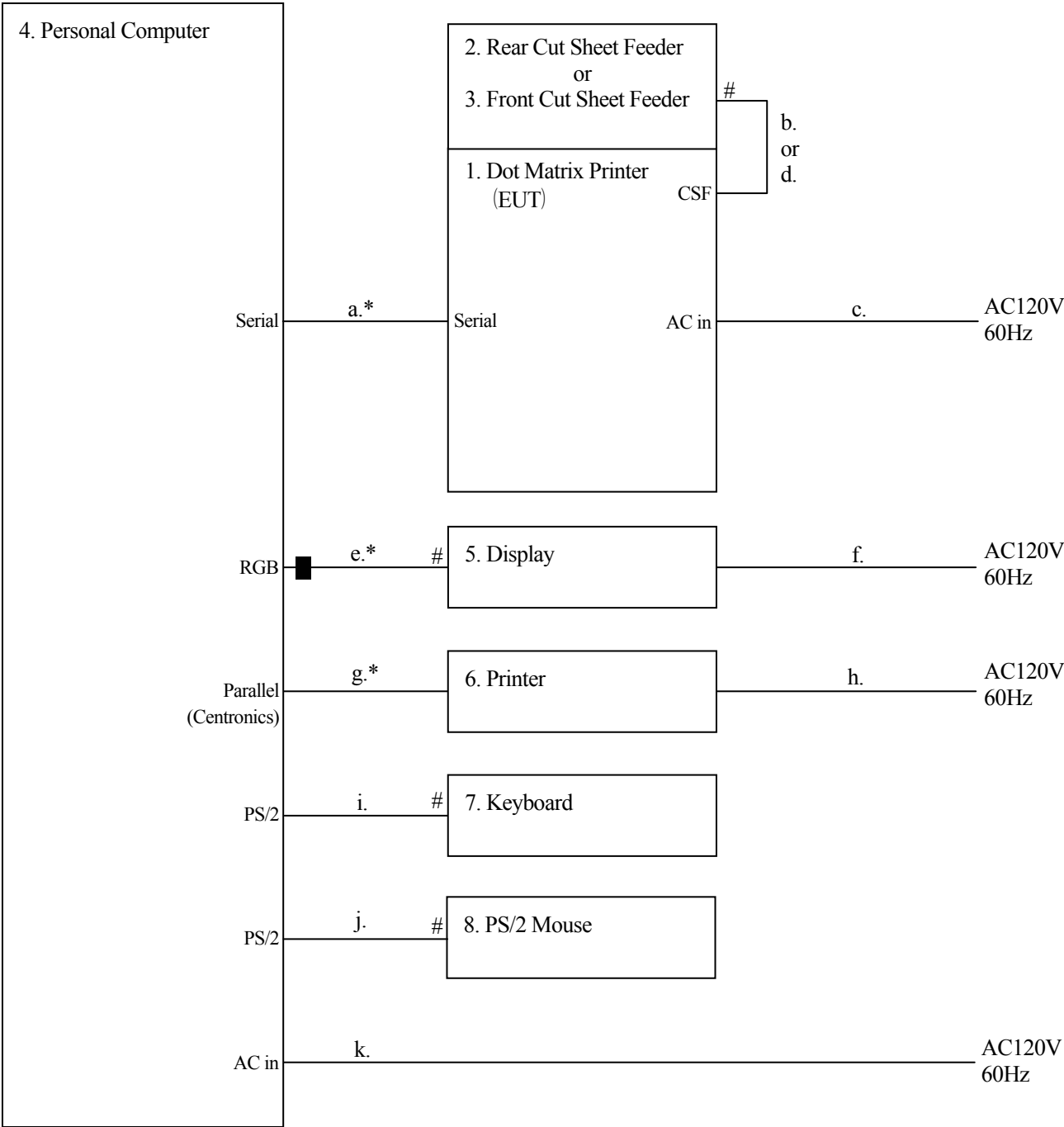
3.4 Peripheral(s) used [RS232C I/F mode]

No.	Equipment	Company	Model No.	Serial No.	DoC / FCC ID	Comment
4	Personal Computer	DELL	MCM	FLXB41S	DoC	-
5	Display	ACER	AC915	ES.C0608.00742 000039PK00	DoC	-
6	Printer	HP	C4555A	US6BC212N	B94C4555X	-
7	Keyboard	IBM	5576-B01	97GT263	DoC	-
8	PS/2 Mouse	KYE Systems Corp	P803	CD0500801880	FSUGMZFN	-

3.5 Cable(s) used [RS232C I/F mode]

No.	Cable	Length[m]	Shield	Connector	From	To	Comment
a	Serial cable	15.0	Shielded	Metal	EUT	PC	-
b	Cut Sheet Feeder cable	0.3	Shielded	Metal	EUT	Rear Cut Sheet Feeder	-
c	AC power cord for EUT	2.0	Unshielded	Plastic	EUT	AC outlet	Accessory
d	Cut Sheet Feeder cable	0.1	Shielded	Metal	EUT	Front Cut Sheet Feeder	-
e	RGB cable	1.5	Shielded	Metal	PC	Display	-
f	AC power cord for Display	1.5	Unshielded	Plastic	Display	AC outlet	-
g	Parallel cable	1.5	Shielded	Metal	PC	Printer	-
h	AC power cord for Printer	2.7	Unshielded	Plastic	Printer	AC outlet	-
i	Keyboard cable	2.2	Unshielded	Metal	PC	Keyboard	-
j	Mouse cable	1.8	Unshielded	Metal	PC	PS/2 Mouse	-
k	AC power cord for PC	1.8	Unshielded	Plastic	PC	AC outlet	-

3.6 System configuration [RS232C I/F mode]



■ : Ferrite core
: Un-detachable cable
* : Bundled excess cable

Note1: Numbers assigned to equipment or cables on this diagram correspond to the list in “2.1 EUT information”, “3.4 Peripheral(s) used” and “3.5 Cable(s) used”.

Note2: RGB cable(No.e) with one ferrite core is accessory for Display(No.5)

Note3: Front Cut Sheet Feeder cable and Rear Cut Sheet Feeder cable are not connected at the same time.

4. Conducted emission at mains port test information

4.1 Measurement procedure

- Frequency range: 0.15MHz to 30MHz
- Test receiver setting
 - Detector: Quasi-peak, Average
 - Bandwidth: 9 kHz

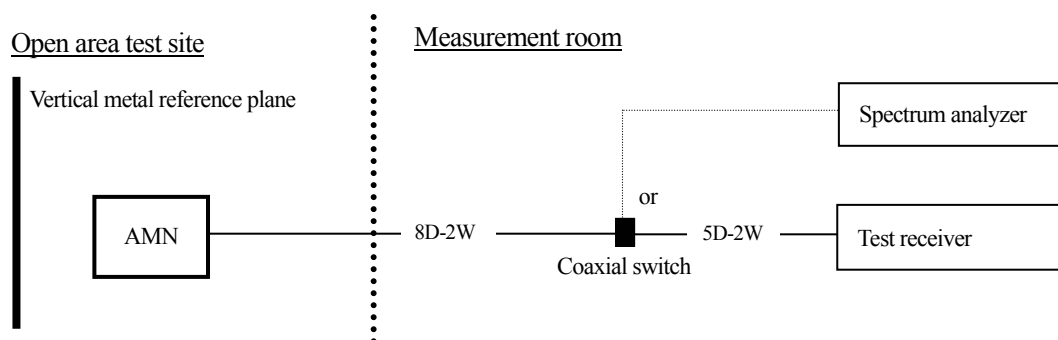
- Test procedure

Conducted emission at AC mains port measurements are performed at open area test site according to ANSI C63.4 section 7.

EUT is placed on wooden table of 2.3m(W) × 1.0m(D) × 0.8m(H) in size. EUT is connected to 50Ω/50μH Artificial Mains Network (AMN) which is placed on reference ground plane, and was placed 80cm away from EUT. Excess of AC power cable is bundled in center. Vertical Metal Reference Plane 2.4m (W) × 2.7m (H) in size is placed 0.4m away from EUT. AMN 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, support equipment, 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, support equipment and test equipment are provided in order for them to warm up to their normal operating condition.

- Test configuration for Conducted emission at mains port



4.2 Test equipment for Conducted emission at mains port

Equipment	Company	Model No.	Serial No.	Cal. due
Spectrum analyzer	Agilent Technologies	8568B 85662A	2732A03847 2648A13585	Mar.2006
Test receiver	ROHDE&SCHWARZ	ESHS10	100018	Apr.2006
Line impedance stabilization network for EUT	Kyoritsu Electrical Works, Ltd.	KNW-407	8-663-4	Mar.2006
Line impedance stabilization network for peripheral	Kyoritsu Electrical Works, Ltd.	KNW-242C	8-1094-5	Mar.2006
50Ω terminator	SUHNER	65-BNC-50-0-7	N/A	Mar.2006
Coaxial cable	FUJIKURA	5D-2W/1m	YTCRFC#3R,3C-004	Sep.2006
Coaxial cable	FUJIKURA	8D-2W/8m	YTCRFC#3R-003	Sep.2006
Coaxial switch	ANRITSU	MP59B	6100097264	Aug.2006

4.3 Sample calculation

Conducted emission at mains port [Sample calculation]

Frequency	Class B limit		Sample of field strength calculation
	QP(dBμV)	AV(dBμV)	
0.15MHz to 0.5MHz	66 to 56*	56 to 46*	$\text{dB}\mu\text{V} = 20\log_{10}(\mu\text{V})$ Limit @ 6.770MHz : 60.0dBμV(Quasi-peak) : 50.0dBμV(Average)
0.5MHz to 5MHz	56	46	(Quasi peak) Reading = 51.2dBμV Cable loss + AMN factor = 0.3dB Total = 51.2 + 0.3 = 51.5dBμV Margin = 60.0 – 51.5 = 8.5dB
5MHz to 30MHz	60	50	(Average) Reading = 45.0dBμV Cable loss + AMN factor = 0.3dB Total = 45.0 + 0.3 = 45.3dBμV Margin = 50.0 – 45.3 = 4.7dB

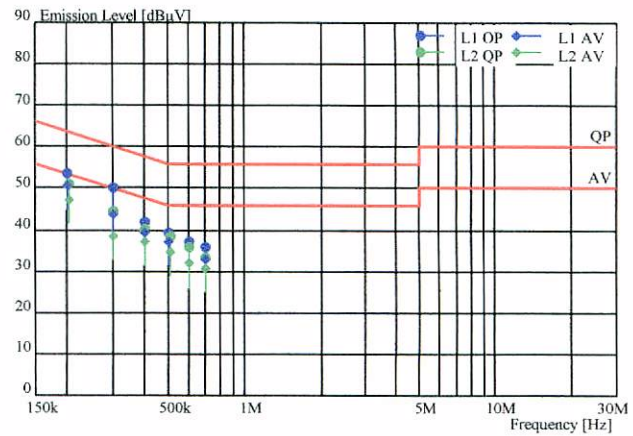
*: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

4.4 Test data

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

Sheet number : 1

Standard : FCC Part 15 Subpart B
 Class : B
 Terminal : Mains
 Date of test : 2005/11/18
 Test site : 3
 Temperature [°C] : 17.1
 Humidity [%] : 33.6
 Operator : Y. Takahashi
 Signature : *Yoshiaki Takahashi*
 Company name : FUJITSU ISOTEC LIMITED
 EUT : Dot Matrix Printer
 Model number : M3391A
 Serial number : N/A
 Test mode : Centronics I/F mode
 Comment : Front CSF



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	0.199	52.5	49.3	1.3	53.8	50.6	63.7	53.7	9.9	3.1	*
L1	0.302	49.5	43.4	0.5	50.0	43.9	60.2	50.2	10.2	6.3	
L1	0.399	41.5	38.7	0.5	42.0	39.2	57.9	47.9	15.9	8.7	
L1	0.499	39.1	36.9	0.4	39.5	37.3	56.0	46.0	16.5	8.7	
L1	0.599	37.0	31.6	0.4	37.4	32.0	56.0	46.0	18.6	14.0	
L1	0.701	35.6	32.6	0.4	36.0	33.0	56.0	46.0	20.0	13.0	
L2	0.201	50.3	46.4	0.8	51.1	47.2	63.6	53.6	12.5	6.4	
L2	0.301	44.2	38.1	0.5	44.7	38.6	60.2	50.2	15.5	11.6	
L2	0.403	39.8	37.0	0.4	40.2	37.4	57.8	47.8	17.6	10.4	
L2	0.504	38.1	34.3	0.4	38.5	34.7	56.0	46.0	17.5	11.3	
L2	0.603	35.5	31.5	0.4	35.9	31.9	56.0	46.0	20.1	14.1	
L2	0.701	32.9	30.5	0.4	33.3	30.9	56.0	46.0	22.7	15.1	

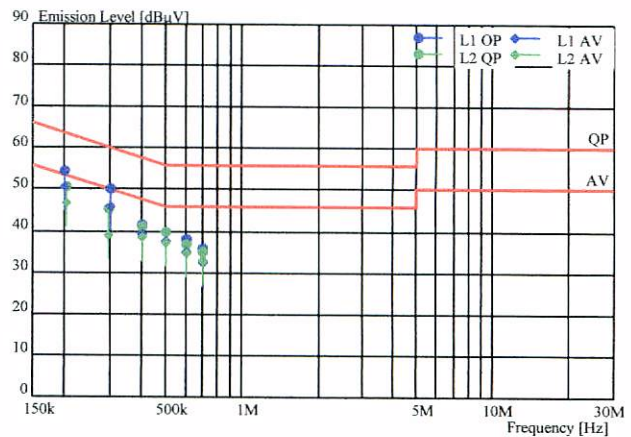
* : The worst emission Factor : LISN Factor + Cable Loss

Ver.2.80 F3#019

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

Sheet number : 2

Standard : FCC Part 15 Subpart B
Class : B
Terminal : Mains
Date of test : 2005/11/18
Test site : 3
Temperature [°C] : 17.1
Humidity [%] : 33.6
Operator : Y. Takahashi
Signature : *Yoshinori Takahashi*
Company name : FUJITSU ISOTEC LIMITED
EUT : Dot Matrix Printer
Model number : M3391A
Serial number : N/A
Test mode : Centronics I/F mode
Comment : Rear CSF



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	0.197	53.3	49.3	1.3	54.6	50.6	63.7	53.7	9.1	3.1	*
L1	0.301	49.8	45.5	0.5	50.3	46.0	60.2	50.2	9.9	4.2	
L1	0.399	40.9	38.8	0.5	41.4	39.3	57.9	47.9	16.5	8.6	
L1	0.500	39.6	37.2	0.4	40.0	37.6	56.0	46.0	16.0	8.4	
L1	0.599	37.5	34.6	0.4	37.9	35.0	56.0	46.0	18.1	11.0	
L1	0.700	35.6	32.2	0.4	36.0	32.6	56.0	46.0	20.0	13.4	
L2	0.201	50.0	45.9	0.8	50.8	46.7	63.6	53.6	12.8	6.9	
L2	0.298	44.5	38.3	0.8	45.3	39.1	60.3	50.3	15.0	11.2	
L2	0.399	40.5	38.2	0.5	41.0	38.7	57.9	47.9	16.9	9.2	
L2	0.498	39.5	36.9	0.4	39.9	37.3	56.0	46.0	16.1	8.7	
L2	0.599	36.6	34.3	0.4	37.0	34.7	56.0	46.0	19.0	11.3	
L2	0.696	34.8	32.7	0.4	35.2	33.1	56.0	46.0	20.8	12.9	

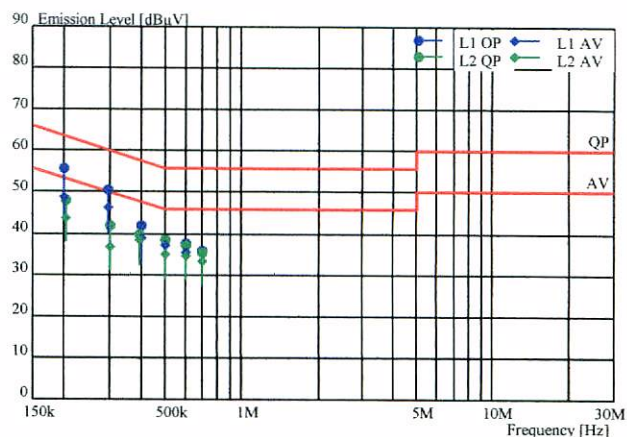
* : The worst emission Factor : LISN Factor + Cable Loss

Ver.2.80 F3#019

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

Sheet number : 3

Standard : FCC Part 15 Subpart B
 Class : B
 Terminal : Mains
 Date of test : 2005/11/18
 Test site : 3
 Temperature [°C] : 17.1
 Humidity [%] : 33.6
 Operator : Y. Takahashi
 Signature : *Yoshiaki Takahashi*
 Company name : FUJITSU ISOTEC LIMITED
 EUT : Dot Matrix Printer
 Model number : M3391A
 Serial number : N/A
 Test mode : RS232C I/F mode
 Comment : Front CSF



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	0.198	54.6	47.8	1.3	55.9	49.1	63.7	53.7	7.8	4.6	
L1	0.298	49.9	45.3	0.8	50.7	46.1	60.3	50.3	9.6	4.2	*
L1	0.398	41.3	38.3	0.5	41.8	38.8	57.9	47.9	16.1	9.1	
L1	0.496	38.0	36.9	0.4	38.4	37.3	56.1	46.1	17.7	8.8	
L1	0.597	37.2	35.2	0.4	37.6	35.6	56.0	46.0	18.4	10.4	
L1	0.694	35.5	32.8	0.4	35.9	33.2	56.0	46.0	20.1	12.8	
L2	0.201	47.2	42.9	0.8	48.0	43.7	63.6	53.6	15.6	9.9	
L2	0.300	41.6	36.3	0.5	42.1	36.8	60.2	50.2	18.1	13.4	
L2	0.397	39.4	37.9	0.5	39.9	38.4	57.9	47.9	18.0	9.5	
L2	0.498	38.3	34.5	0.4	38.7	34.9	56.0	46.0	17.3	11.1	
L2	0.597	36.8	34.2	0.4	37.2	34.6	56.0	46.0	18.8	11.4	
L2	0.695	35.0	33.1	0.4	35.4	33.5	56.0	46.0	20.6	12.5	

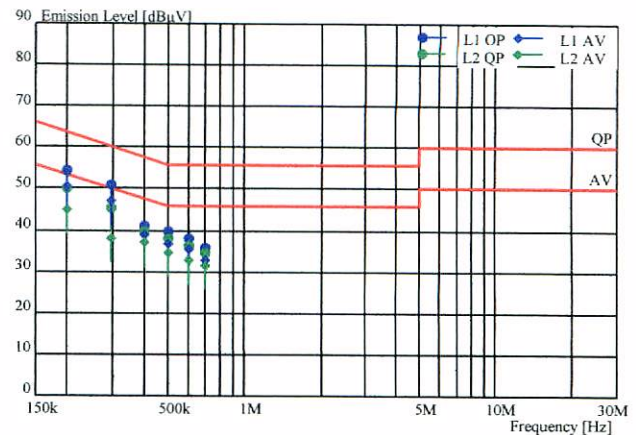
* : The worst emission Factor : LISN Factor + Cable Loss

Ver.2.80 F3#019

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

Sheet number : 4

Standard : FCC Part 15 Subpart B
Class : B
Terminal : Mains
Date of test : 2005/11/18
Test site : 3
Temperature [°C] : 17.1
Humidity [%] : 33.6
Operator : Y. Takahashi
Signature : *Yoshinori Takahashi*
Company name : FUJITSU ISOTEC LIMITED
EUT : Dot Matrix Printer
Model number : M3391A
Serial number : N/A
Test mode : RS232C I/F mode
Comment : Rear CSF



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	0.197	53.1	49.4	1.3	54.4	50.7	63.7	53.7	9.3	3.0	*
L1	0.299	50.3	46.2	0.8	51.1	47.0	60.3	50.3	9.2	3.3	
L1	0.398	40.4	38.5	0.5	40.9	39.0	57.9	47.9	17.0	8.9	
L1	0.498	39.3	36.2	0.4	39.7	36.6	56.0	46.0	16.3	9.4	
L1	0.597	37.5	34.9	0.4	37.9	35.3	56.0	46.0	18.1	10.7	
L1	0.696	35.5	32.6	0.4	35.9	33.0	56.0	46.0	20.1	13.0	
L2	0.198	49.1	43.9	1.3	50.4	45.2	63.7	53.7	13.3	8.5	
L2	0.298	44.6	37.3	0.8	45.4	38.1	60.3	50.3	14.9	12.2	
L2	0.402	39.3	36.7	0.4	39.7	37.1	57.8	47.8	18.1	10.7	
L2	0.498	37.9	34.3	0.4	38.3	34.7	56.0	46.0	17.7	11.3	
L2	0.598	35.8	32.3	0.4	36.2	32.7	56.0	46.0	19.8	13.3	
L2	0.696	34.2	31.3	0.4	34.6	31.7	56.0	46.0	21.4	14.3	

* : The worst emission Factor : LISN Factor + Cable Loss

Ver.2.80 F3#019

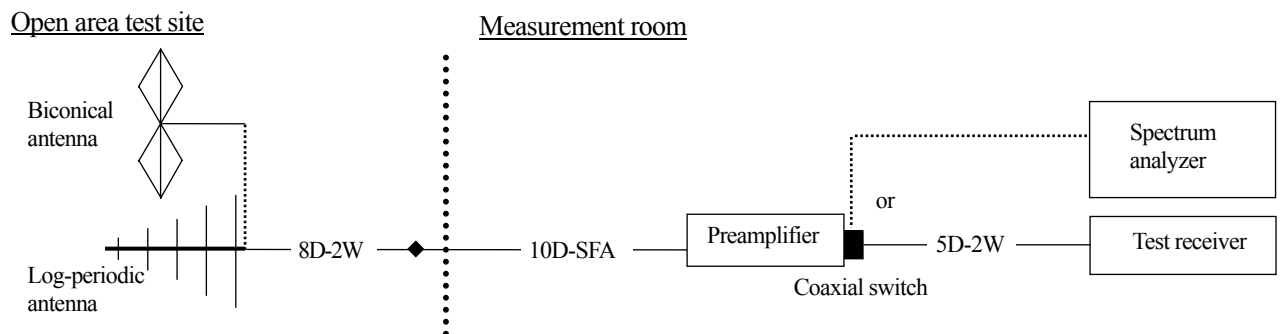
5. Radiated emission test information

5.1 Measurement procedure

- Frequency range: 30MHz to 1000MHz
- Test receiver setting
 - Detector: Quasi-peak
 - Bandwidth: 120 kHz
- Test procedure

Radiated emission measurements are performed at open area test site according to ANSI C63.4 section 8. EUT is placed on wooden table of 2.3m(W) × 1.0m(D) × 0.8m(H) in size. Distance from antenna to EUT is 3m. 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, support equipment and test equipment is provided in order for them to warm up to their normal operating condition.

- Test configuration for Radiated emission



5.2 Test equipment for Radiated emission

Equipment	Company	Model No.	Serial No.	Cal. due
Spectrum analyzer	Agilent Technologies	8568B 85662A	2732A03847 2648A13585	Mar. 2006
Test receiver	ROHDE&SCHWARZ	ESVS10	825475/0012	Jun. 2006
Biconical antenna	Schwarzbeck	VHA9103/BBA9106	1488	May. 2006
Log periodic antenna	Schwarzbeck	UHALP9108A	0398	May. 2006
Coaxial cable	FUJIKURA	8D-SFA/15m	YTCRFC#3R-001	Sep. 2006
Coaxial cable	FUJIKURA	8D-SFA/15m	YTCRFC#3R-002	Sep. 2006
Coaxial cable	FUJIKURA	8D-2W/8m	YTCRFC#3R-003	Sep. 2006
Coaxial cable	FUJIKURA	5D-2W/1m	YTCRFC#3R,3C-004	Sep. 2006
Preamplifier	ANRITSU	MH648A	M96257	Apr. 2006
Coaxial switch	ANRITSU	MP59B	6200331883	Apr. 2006
Site attenuation	ZACTA Technology Corp.	N/A	N/A	Jul. 2006

5.3 Sample calculation

Radiated emission [Sample calculation]

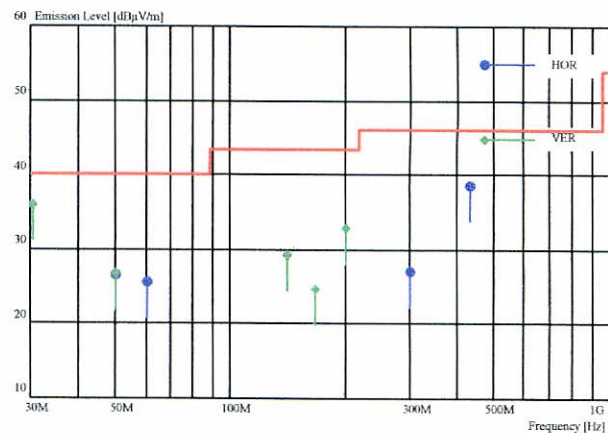
Frequency	Class B limit	Sample of field strength calculation
	(dBμV/m)	
30MHz to 88MHz	40.0	$\text{dB}\mu\text{V/m} = 20\log_{10}(\mu\text{V/m})$
88MHz to 216MHz	43.5	Limit @ 147.6MHz : 43.5dBμV/m
216MHz to 960MHz	46.0	Reading = 42.8dBμV Ant.factor + Cable loss – Amp. Gain= 14.2 + 3.0 – 30.0= 12.8dB/m Total = 42.8 – 12.8 = 30.0dBμV/m
Above 960MHz	54.0	Margin = 43.5 – 30.0 = 13.5dB

5.4 Test data

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

Sheet number : 1

Standard : FCC Part 15 Subpart B
Class : B
Distance [m] : 3
Date of test : 2005/11/17
Test site : 3
Temperature [°C] : 16.2
Humidity [%] : 32.3
Operator : Y. Takahashi
Signature : *Yoshinori Takahashi*
Company name : FUJITSU ISOTEC LIMITED
EUT : Dot Matrix Printer
Model number : M3391A
Serial number : N/A
Test mode : Centronics I/F mode
Comment : Front CSF



Antenna		Table	Reading		Factor	Emission		Limit	Margin	Comment
Pol.	Height	Radian	Frequency	Level		Level				
HOR/VER	[m]	[Deg.]	[MHz]	[dBμV]	[dB/m]	[dBμV/m]	[dBμV/m]	[dB]		
VER	1.0	275	30.07	46.2	-10.2	36.0	40.0	4.0	*	
HOR	4.0	350	50.09	43.9	-17.2	26.7	40.0	13.3		
VER	1.0	180	50.15	44.1	-17.2	26.9	40.0	13.1		
HOR	4.0	305	60.16	45.9	-20.2	25.7	40.0	14.3		
VER	1.0	210	140.30	42.6	-13.4	29.2	43.5	14.3		
VER	1.0	200	166.82	36.6	-12.0	24.6	43.5	18.9		
VER	1.0	280	200.20	43.0	-10.2	32.8	43.5	10.7		
HOR	1.1	285	300.65	40.2	-13.1	27.1	46.0	18.9		
HOR	1.0	185	432.07	48.3	-9.7	38.6	46.0	7.4		

* : The worst emission.

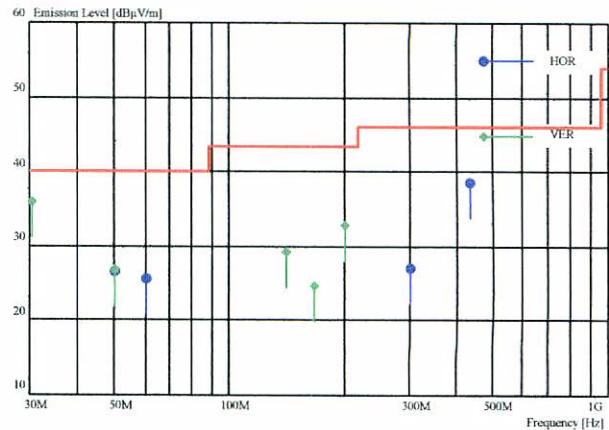
Factor : Antenna Factor + Cable Loss - Amp Gain

Ver.2.80 F3#019

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

Sheet number : 2

Standard : FCC Part 15 Subpart B
 Class : B
 Distance [m] : 3
 Date of test : 2005/11/17
 Test site : 3
 Temperature [°C] : 16.2
 Humidity [%] : 32.3
 Operator : Y. Takahashi
 Signature : *Yoshinori Takahashi*
 Company name : FUJITSU ISOTEC LIMITED
 EUT : Dot Matrix Printer
 Model number : M3391A
 Serial number : N/A
 Test mode : Centronics I/F mode
 Comment : Rear CSF



Antenna		Table	Reading		Factor	Emission	Limit	Margin	Comment
Pol.	Height	Radian	Frequency	Level		Level			
HOR/VER	[m]	[Deg.]	[MHz]	[dBμV]	[dB/m]	[dBμV/m]	[dBμV/m]	[dB]	
VER	1.0	195	30.07	47.0	-10.2	36.8	40.0	3.2	*
VER	1.0	95	35.10	44.5	-12.4	32.1	40.0	7.9	
VER	1.0	200	100.24	48.4	-18.1	30.3	43.5	13.2	
VER	1.0	210	140.30	45.1	-13.4	31.7	43.5	11.8	
VER	1.0	10	167.53	43.2	-11.8	31.4	43.5	12.1	
HOR	1.0	250	300.69	47.8	-13.1	34.7	46.0	11.3	
HOR	1.0	110	432.07	48.1	-9.7	38.4	46.0	7.6	

* : The worst emission.

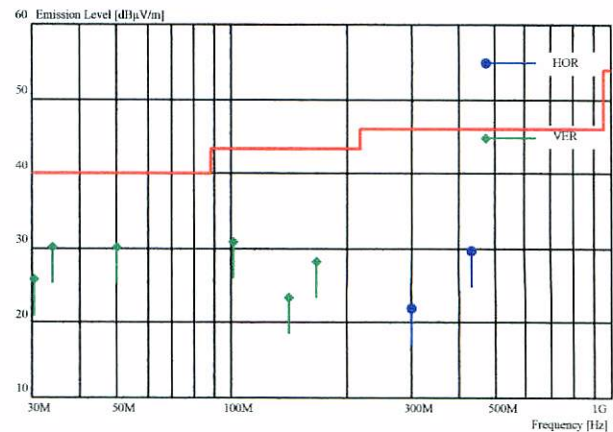
Factor : Antenna Factor + Cable Loss - Amp Gain

Ver.2.80 F3#019

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

Sheet number : 3

Standard : FCC Part 15 Subpart B
Class : B
Distance [m] : 3
Date of test : 2005/11/17
Test site : 3
Temperature [°C] : 16.2
Humidity [%] : 32.3
Operator : Y. Takahashi
Signature : *Y. Takahashi*
Company name : FUJITSU ISOTEC LIMITED
EUT : Dot Matrix Printer
Model number : M3391A
Serial number : N/A
Test mode : RS232C I/F mode
Comment : Front CSF



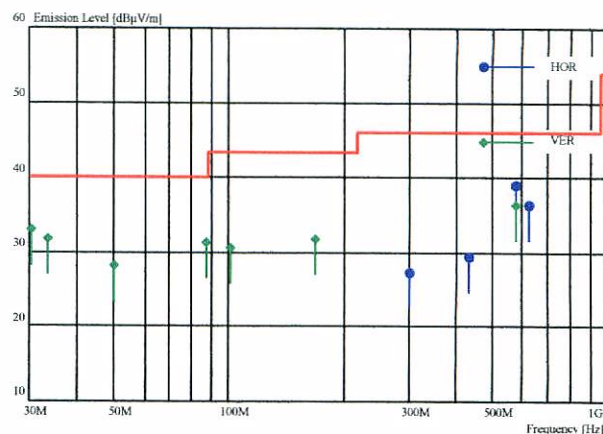
Antenna		Table	Reading		Factor	Emission	Limit	Margin	Comment
Pol.	Height	Radian	Frequency	Level		Level			
HOR/VER	[m]	[Deg.]	[MHz]	[dBμV]	[dB/m]	[dBμV/m]	[dBμV/m]	[dB]	
VER	1.0	300	30.07	36.1	-10.2	25.9	40.0	14.1	
VER	1.0	75	33.82	41.6	-11.3	30.3	40.0	9.7	*
VER	1.0	100	50.12	47.3	-17.2	30.1	40.0	9.9	
VER	1.0	160	100.22	49.0	-18.1	30.9	43.5	12.6	
VER	1.0	220	140.35	36.8	-13.4	23.4	43.5	20.1	
VER	1.0	355	166.97	40.3	-12.0	28.3	43.5	15.2	
HOR	2.7	300	300.69	35.0	-13.1	21.9	46.0	24.1	
HOR	2.4	295	432.07	39.5	-9.7	29.8	46.0	16.2	

* : The worst emission. Factor : Antenna Factor + Cable Loss - Amp Gain Ver.2.80 F3#019

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

Sheet number : 4

Standard : FCC Part 15 Subpart B
 Class : B
 Distance [m] : 3
 Date of test : 2005/11/17
 Test site : 3
 Temperature [°C] : 16.2
 Humidity [%] : 32.3
 Operator : Y. Takahashi
 Signature : *Y. Takahashi*
 Company name : FUJITSU ISOTEC LIMITED
 EUT : Dot Matrix Printer
 Model number : M3391A
 Serial number : N/A
 Test mode : RS232C I/F mode
 Comment : Rear CSF



Antenna		Table	Reading		Factor	Emission	Limit	Margin	Comment
Pol.	Height	Radian	Frequency	Level		Level			
HOR/VER	[m]	[Deg.]	[MHz]	[dBμV]	[dB/m]	[dBμV/m]	[dBμV/m]	[dB]	
VER	1.0	90	30.07	43.3	-10.2	33.1	40.0	6.9	*
VER	1.0	215	33.32	43.1	-11.3	31.8	40.0	8.2	
VER	1.0	275	50.11	45.4	-17.2	28.2	40.0	11.8	
VER	1.0	180	87.17	52.3	-21.0	31.3	40.0	8.7	
VER	1.0	185	100.20	48.8	-18.1	30.7	43.5	12.8	
VER	1.0	20	168.09	43.7	-11.8	31.9	43.5	11.6	
HOR	2.4	355	300.68	40.3	-13.1	27.2	46.0	18.8	
HOR	2.6	295	432.07	39.2	-9.7	29.5	46.0	16.5	
HOR	1.5	140	576.05	45.6	-6.5	39.1	46.0	6.9	*
VER	2.0	315	576.07	42.9	-6.5	36.4	46.0	9.6	
HOR	1.5	195	624.05	42.7	-6.2	36.5	46.0	9.5	

* : The worst emission.

Factor : Antenna Factor + Cable Loss - Amp Gain

Ver.2.80 F3#019

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 (150kHz - 30MHz)	$\pm 2.6\text{dB}$
Radiated emission (30MHz - 1000MHz)	$\pm 4.1\text{dB}$
Radiated emission (1000MHz - 26GHz)	$\pm 3.6\text{dB}$

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 type:

Site name: Site 1, Site 2 and Site 3 - Total 3 sites.

Site type: Whether protected site

*3m/10m Radiated emission & Conducted emission testing can be performed on each site

3m anechoic chamber

Shielded room

3. Facility filing information:

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

2) Industry Canada Oats site filing: Pursuant to RSS 212, Issue 1(Provisional)

Site name	Sites on file: Oats 3m/10m	Filing date (Terms of validity: 3 years)
Site 1	4224-1	January 11, 2005
Site 2	4224-2	January 11, 2005
Site 3	4224-3	January 11, 2005

3) VCCI site filing: Pursuant to V-5/2003.04 VCCI regulations for registration of measurement facilities

Site name	Radiated emission registration No.	Conducted emission registration No.	Duration of registration
Site 1	R-136	C-132	September 30, 2006
Site 2	R-137	C-133	September 30, 2006
Site 3	R-138	C-134	September 30, 2006

4) ETL SEMKO authorization:

Authorized as an EMC test laboratory.

5) TUV Rheinland authorization:

Authorized as an EMC test laboratory.

8. Configuration photographs

Conducted emission at mains port [Centronics I/F mode Front CSF]



The photographs show maximized emission configuration.

Radiated emission [Centronics I/F mode Front CSF]



The photographs show maximized emission configuration.

Conducted emission at mains port [Centronics I/F mode Rear CSF]



The photographs show maximized emission configuration.

Radiated emission [Centronics I/F mode Rear CSF]



The photographs show maximized emission configuration.

Conducted emission at mains port [RS232C I/F mode Front CSF]



The photographs show maximized emission configuration.

Radiated emission [RS232C I/F mode Front CSF]



The photographs show maximized emission configuration.

Conducted emission at mains port [RS232C I/F mode Rear CSF]



The photographs show maximized emission configuration.

Radiated emission [RS232C I/F mode Rear CSF]



The photographs show maximized emission configuration.