

TEST REPORT

Report number : Z01C-04097

Issue date : February 3, 2005

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

FCC Part15 Subpart B
- 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-gun, Fukushima 960-0695 Japan Phone: +81-24-575-2191 Fax: +81-24-574-2277
Equipment under test (EUT)	: Dot Matrix Printer
FCC ID	: KHZ009M3390A
Trade Name	: FUJITSU ISOTEC LIMITED
Model number	: M3390A
Serial number	: MA195356
EUT condition	: Production

Date of test : March 31, 2004

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

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 samples tested.

This report shall not be re-produced except in full without the written approval of ZACTA Technology Corporation.

Authorized by: Kiyoshi Endo
General Manager of EMC Technical Division

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1. Summary of Test

1.1 Purpose of the test

The purpose of the test is to confirm that the EUT is in compliance with the conducted emissions limits 15.107 adopted under FCC 02-157 (ET Docket 98-80) with FCC Part 15 Subpart B.

1.2 Test standards

FCC Part 15 Subpart B

1.3 Emission measurement

Test item	Test method	Classification of EUT	Test
Conducted emission at mains port	ANSI C63.4-2001	Class B	Applied
Radiated emission	ANSI C63.4-2001	Class B	Not applied

Note : Only the measurement of Conducted emission at mains port were performed. Refer to section 1.1 Purpose of the test.

2. Equipment Under Test

2.1 EUT information

No.	EUT	Company	Model No.	Serial No.	DoC/FCC ID	Comment
1	Dot Matrix Printer	FIJITSU ISOTEC LIMITED	M3390A	MA195356	KHZ009M3390A	-
2	Front C.S.F	FIJITSU ISOTEC LIMITED	CA02464-0051	N/A	N/A	Option
3	Stacker unit	FIJITSU ISOTEC LIMITED	CA02464-0081	N/A	N/A	Option
4	Rear tractor	FIJITSU ISOTEC LIMITED	CA02464-E602	N/A	N/A	Option

Max. used frequency : 20MHz

Power ratings : AC 100-120V 50/60Hz
[Power supply for EUT in testing was AC 120V 60Hz.]

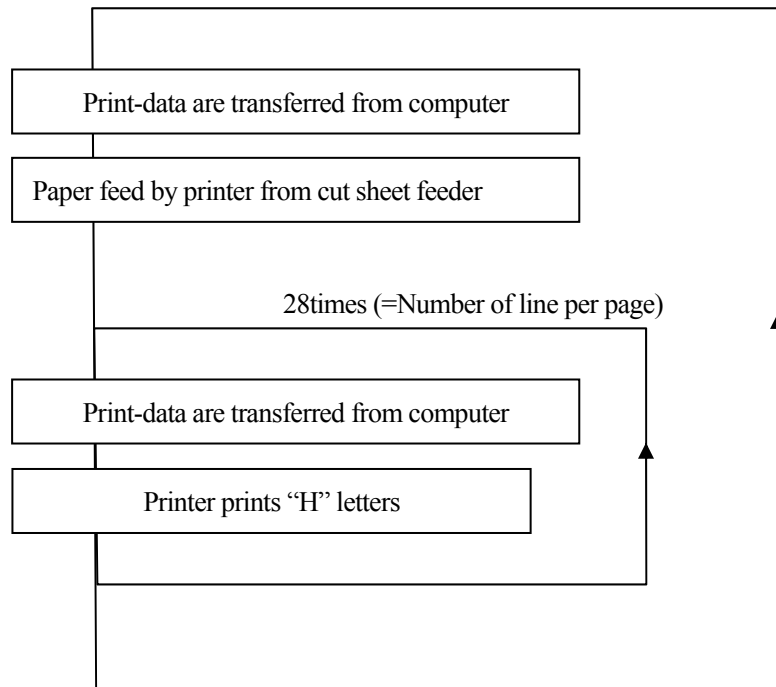
Port(s) : Serial I/F
Parallel I/F

Size : (W) 600 x (D) 300 x (H) 265mm

Variation of model(s) : Not applicable

2.2 Operating mode

Serial I/F mode, Parallel I/F mode



3. Configuration of equipment

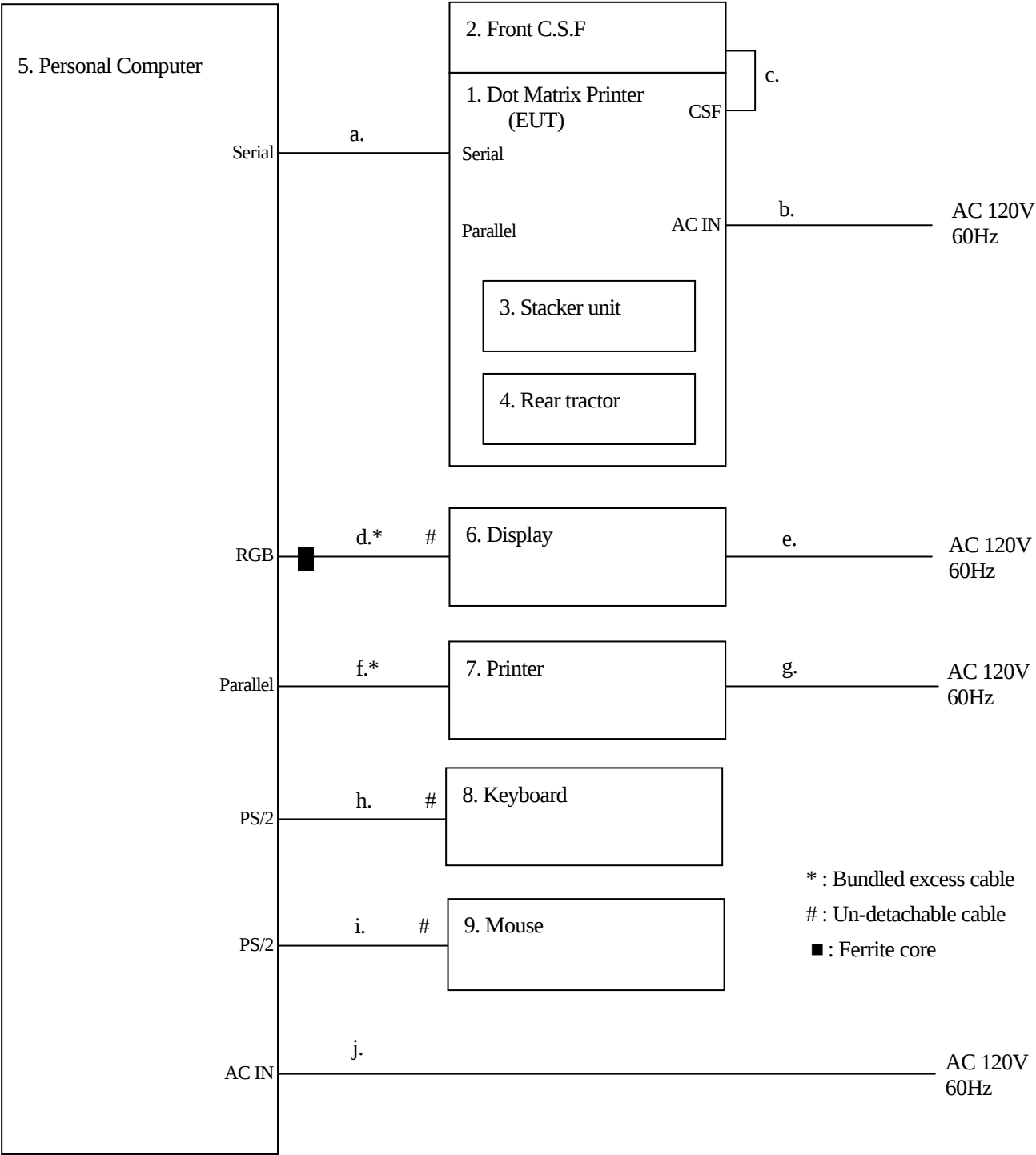
3.1 Peripheral(s) used [Serial I/F mode]

No.	Equipment	Company	Model No.	Serial No.	DoC / FCC ID	Comment
5	Personal Computer	DELL	DCS	T3LWV	DoC	-
6	Display	DELL	E551	MY-044NEK-46632 -0CB-9122	DoC	-
7	Printer	HP	C4555A	US6BC212N	B94C4555X	-
8	Keyboard	DELL	SK-1000REW	M980265381	GYUR36SK	-
9	Mouse	Microsoft	Mouse Port Compatible Mouse2.1A	N/A	C3KKMP1	-

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

No.	Cable	Length[m]	Shield	Connector	From	To	Comment
a	Serial cable	1.5	Shielded	Metal	PC	EUT	-
b	AC power cord for EUT	2.0	Unshielded	Plastic	EUT	AC outlet	Accessory
c	C.S.F cable	0.62	Shielded	Metal	EUT	Front C.S.F	-
d	RGB cable	2.0	Shielded	Metal	PC	Display	-
e	AC power cord for Display	1.8	Unshielded	Plastic	Display	AC outlet	-
f	Parallel cable	2.1	Shielded	Metal	PC	Printer	-
g	AC power cord for Printer	2.7	Unshielded	Plastic	Printer	AC outlet	-
h	Keyboard cable	1.9	Unshielded	Metal	PC	Keyboard	-
i	Mouse cable	1.9	Unshielded	Metal	PC	Mouse	-
j	AC power cord for PC	2.0	Unshielded	Plastic	PC	AC outlet	-

3.3 System configuration [Serial I/F mode]



Note 1: 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”.

Note 2: RGB cable (No.d) with one ferrite core is accessory for Display (No.6).

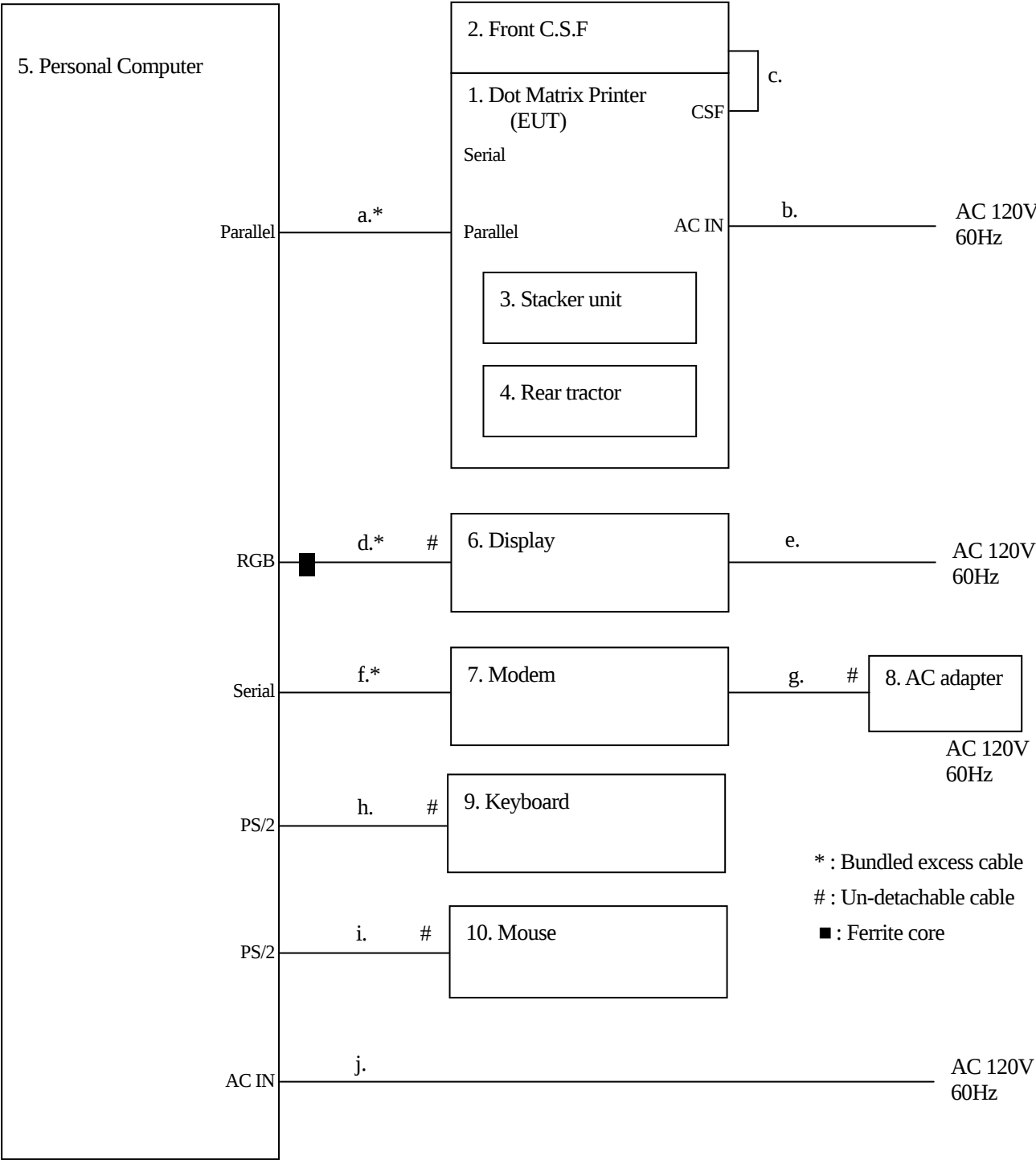
3.4 Peripheral(s) used [Parallel I/F mode]

No.	Equipment	Company	Model No.	Serial No.	DoC / FCC ID	Comment
5	Personal Computer	DELL	DCS	T3LWV	DoC	-
6	Display	DELL	E551	MY-044NEK-46632 -0CB-9122	DoC	-
7	Modem	US. Robotics	Sport_Ster 33.6Kbps	000839032BK6YV4J	DoC	-
8	AC Adaptor for Modem	US. Robotics	N/A	N/A	N/A	-
9	Keyboard	DELL	SK-1000REW	M980265381	GYUR36SK	-
10	Mouse	Microsoft	Mouse Port Compatible Mouse2.1A	N/A	C3KKMP1	-

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

No.	Cable	Length[m]	Shield	Connector	From	To	Comment
a	Parallel cable	1.5	Shielded	Metal	PC	EUT	-
b	AC power cord for EUT	2.0	Unshielded	Plastic	EUT	AC outlet	Accessory
c	C.S.F cable	0.62	Shielded	Metal	EUT	Front C.S.F	-
d	RGB cable	1.7	Shielded	Metal	PC	Display	-
e	AC power cord for Display	1.8	Unshielded	Plastic	Display	AC outlet	-
f	Serial cable	1.5	Shielded	Metal	PC	Modem	-
g	DC cable for Modem AC adapter	1.7	Unshielded	Plastic	Modem	AC adapter	-
h	Keyboard cable	1.9	Unshielded	Metal	PC	Keyboard	-
i	Mouse cable	1.9	Unshielded	Metal	PC	Mouse	-
j	AC power cord for PC	2.5	Unshielded	Plastic	PC	AC outlet	-

3.6 System configuration [Parallel I/F mode]



Note 1: 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”.

Note 2: RGB cable (No.d) with one ferrite core is accessory for Display (No.6).

4. Conducted emission at mains port test information

4.1 Measurement procedure

Test receiver setting

- Detector: Quasi-peak, Average
- Bandwidth: 9kHz

Frequency range: 0.15MHz to 30MHz

Vertical Metal Reference Plane: 2.4m(W) × 2.7m(H) in size was placed 0.4m away from EUT.

Line Impedance Stabilization Network

- 50Ω/50μH
- LISN for EUT was placed 80cm away from EUT.
- LISN for peripheral was terminated in 50Ω.

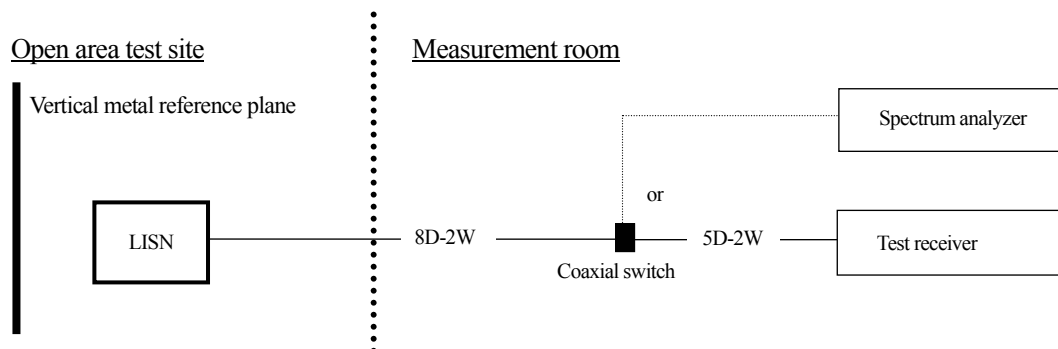
Reported emissions

- At least 6 points of maximum emission are reported.
- Maximum emission configuration was determined by manipulating the EUT, support equipment, interconnecting cables and varying the mode of operation.

Others

- Table: Wooden table of 2.3m(W) × 1.0m(D) × 0.8m(H) in size
- Sufficient time for EUT, support equipment and test equipment were 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	E7405A	US41160344	Mar. 2005
Test receiver	ROHDE&SCHWARZ	ESHS10	842884/009	Jan. 2005
Line impedance stabilization network for peripheral	Kyoritsu Electrical Works, Ltd.	KNW-242C	8-1096-3	Mar. 2005
Line impedance stabilization network for EUT	Kyoritsu Electrical Works, Ltd.	KNW-407	8-693-19	Mar. 2005
50Ω terminator	Agilent Technologies	11593A	N/A	May. 2004
Coaxial cable	FUJIKURA	8D-2W/15m 5D-2W/1m	YTCRFC#1C	May. 2004
Coaxial switch	ANRITSU	MP59B	6100097273	May. 2004

*The calibrations of the above equipment are traceable to NIST or equivalent standards of the reference organizations.

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) (Quasi peak) Reading = 51.2dBμV Cable loss + LISN factor = 0.3dB Total = 51.2 + 0.3 = 51.5dBμV Margin = 60.0 – 51.5 = 8.5dB (Average) Reading = 45.0dBμV Cable loss + LISN factor = 0.3dB Total = 45.0 + 0.3 = 45.3dBμV Margin = 50.0 – 45.3 = 4.7dB
0.5MHz to 5MHz	56	46	
5MHz to 30MHz	60	50	

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

4.4 Uncertainty

Expanded uncertainties stated were calculated with a coverage Factor k=2.

±3.0dB

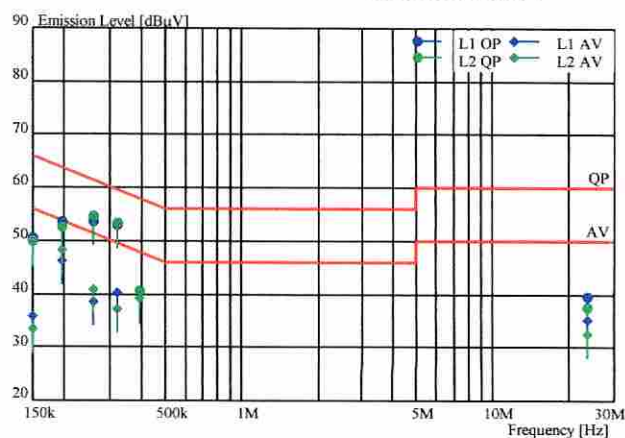
··· For Conducted emission

4.5 Test data

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

Sheet number : 1

Standard : FCC Part 15 Subpart B
 Class : B
 Terminal : Mains
 Date of test : 2004/3/31
 Test site : 1
 Temperature [°C] : 19.1
 Humidity [%] : 39.3
 Operator : T.Seino
 Signature : *Tadashi Seino*
 Company name : FUJITSU ISOTEC LIMITED
 EUT : Dot Matrix Printer
 Model number : M3390A
 Serial number : MA195356
 Test mode : Serial I/F mode
 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	50.4	35.6	0.2	50.6	35.8	66.0	56.0	15.4	20.2	
L1	0.194	53.5	46.2	0.2	53.7	46.4	63.9	53.9	10.2	7.5	
L1	0.261	53.6	38.4	0.2	53.8	38.6	61.4	51.4	7.6	12.8	
L1	0.325	53.0	40.0	0.1	53.1	40.1	59.6	49.6	6.5	9.5	
L1	0.393	40.5	39.0	0.1	40.6	39.1	58.0	48.0	17.4	8.9	
L1	23.733	38.2	34.1	1.2	39.4	35.3	60.0	50.0	20.6	14.7	
L2	0.150	49.6	33.4	0.2	49.8	33.6	66.0	56.0	16.2	22.4	
L2	0.194	52.6	48.0	0.2	52.8	48.2	63.9	53.9	11.1	5.7	*
L2	0.261	54.5	40.7	0.2	54.7	40.9	61.4	51.4	6.7	10.5	
L2	0.325	53.1	37.2	0.1	53.2	37.3	59.6	49.6	6.4	12.3	
L2	0.393	40.5	39.1	0.1	40.6	39.2	58.0	48.0	17.4	8.8	
L2	23.733	36.2	31.2	1.2	37.4	32.4	60.0	50.0	22.6	17.6	

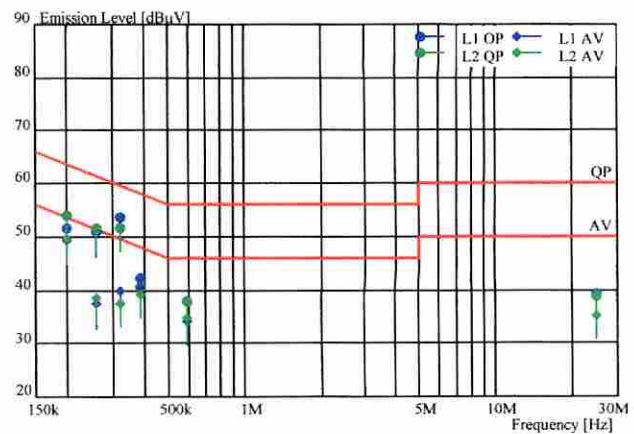
* : The worst emission Factor : LISN Factor + Cable Loss

Ver.2.72 FI#011

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

Sheet number : 2

Standard : FCC Part 15 Subpart B
 Class : B
 Terminal : Mains
 Date of test : 2004/3/31
 Test site : 1
 Temperature [°C] : 19.1
 Humidity [%] : 39.3
 Operator : T.Seino
 Signature : *Tadokoro Seino*
 Company name : FUJITSU ISOTEC LIMITED
 EUT : Dot Matrix Printer
 Model number : M3390A
 Serial number : MA195356
 Test mode : Parallel I/F mode
 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	0.197	51.4	49.2	0.2	51.6	49.4	63.7	53.7	12.1	4.3	
L1	0.260	50.7	37.2	0.2	50.9	37.4	61.4	51.4	10.5	14.0	
L1	0.325	53.6	39.7	0.1	53.7	39.8	59.6	49.6	5.9	9.8	
L1	0.390	42.1	40.3	0.1	42.2	40.4	58.1	48.1	15.9	7.7	
L1	0.586	37.7	34.0	0.1	37.8	34.1	56.0	46.0	18.2	11.9	
L1	25.000	37.7	33.7	1.6	39.3	35.3	60.0	50.0	20.7	14.7	
L2	0.197	53.8	49.3	0.2	54.0	49.5	63.7	53.7	9.7	4.2	*
L2	0.260	51.5	38.3	0.2	51.7	38.5	61.4	51.4	9.7	12.9	
L2	0.325	51.6	37.5	0.1	51.7	37.6	59.6	49.6	7.9	12.0	
L2	0.390	40.3	39.1	0.1	40.4	39.2	58.1	48.1	17.7	8.9	
L2	0.586	37.6	34.6	0.1	37.7	34.7	56.0	46.0	18.3	11.3	
L2	25.000	37.3	33.5	1.6	38.9	35.1	60.0	50.0	21.1	14.9	

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

Ver.2.72 FI#011

5. 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) FCC site filing: Pursuant to CFR47 § 2.948

Site name	Filing date (Terms of validity: 3 years)
Site 1, Site 2 and Site 3	December 17, 2002

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) NVLAP accreditation:

NVLAP Lab. code: 200306-0

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.

5) ETL SEMKO authorization:

Authorized as an EMC test laboratory.

6) TUV Rheinland authorization:

Authorized as an EMC test laboratory.