

# TEST REPORT

Report number : Z01C-04096

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<br>135, Higashinozaki, Hobara-machi, Date-gun,<br>Fukushima 960-0695 Japan<br>Phone: +81-24-575-2191 Fax: +81-24-574-2277 |
| Equipment under test (EUT) | : Dot Matrix Printer                                                                                                                               |
| FCC ID                     | : KHZ010M3391A                                                                                                                                     |
| Trade Name                 | : FUJITSU ISOTEC LIMITED                                                                                                                           |
| Model number               | : M3391A                                                                                                                                           |
| Serial number              | : MA197003                                                                                                                                         |
| 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

Remarks : The EUT is in compliance with the conducted emissions limits 15.107 adopted under FCC 02-157 (ET Docket 98-80).

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

**NVLAP**<sup>®</sup>  
NVLAP LAB CODE 200306-0

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## ***1. Summary of Test***

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### **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**

| <b>Test item</b>                 | <b>Test method</b> | <b>Classification of EUT</b> | <b>Test</b> |
|----------------------------------|--------------------|------------------------------|-------------|
| 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

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### 2.1 EUT information

| No. | EUT                | Company                | Model No.    | Serial No. | DoC/FCC ID   | Comment |
|-----|--------------------|------------------------|--------------|------------|--------------|---------|
| 1   | Dot Matrix Printer | FIJITSU ISOTEC LIMITED | M3391A       | MA197003   | KHZ010M3391A | -       |
| 2   | Front C.S.F        | FIJITSU ISOTEC LIMITED | CA02464-0051 | N/A        | N/A          | Option  |
| 3   | Rear C.S.F (1bin)  | FIJITSU ISOTEC LIMITED | CA02464-0001 | N/A        | N/A          | Option  |
| 4   | Rear C.S.F (2bin)  | FIJITSU ISOTEC LIMITED | CA02464-0031 | N/A        | N/A          | Option  |
| 5   | Stacker unit       | FIJITSU ISOTEC LIMITED | CA02464-0081 | N/A        | N/A          | Option  |
| 6   | 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.]

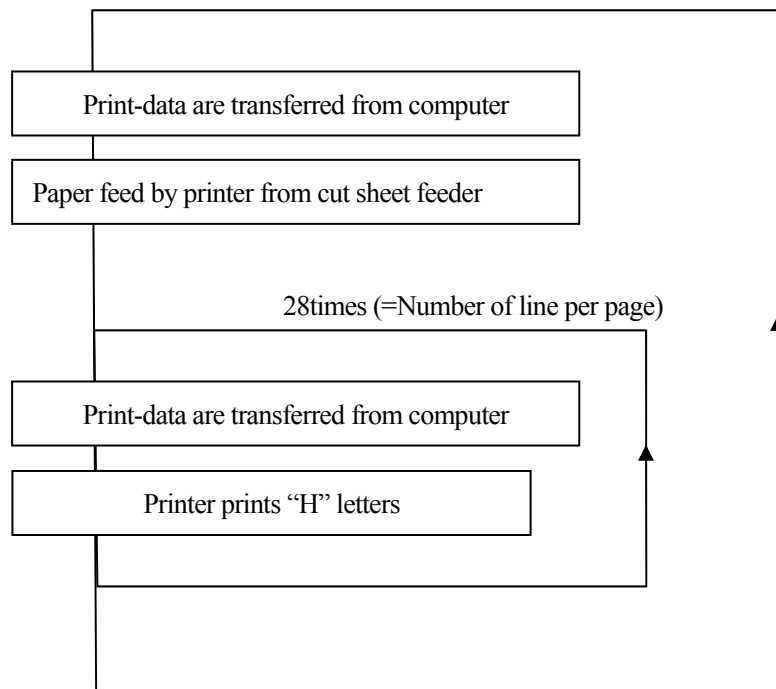
Port(s) : Serial I/F  
Parallel I/F

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

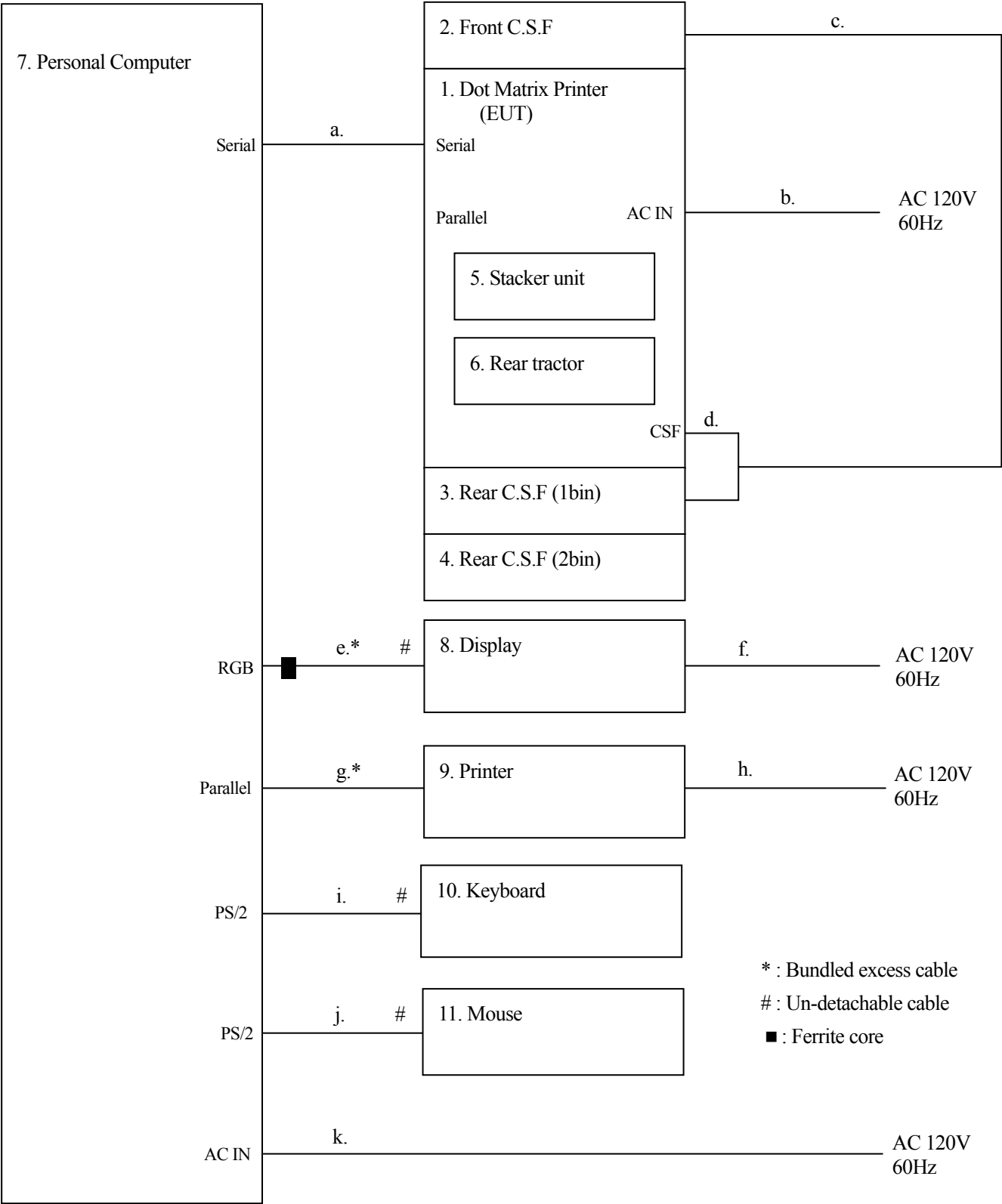
#### 3.1 Peripheral(s) used [Serial I/F mode]

| No. | Equipment         | Company   | Model No.                             | Serial No.                   | DoC / FCC ID | Comment |
|-----|-------------------|-----------|---------------------------------------|------------------------------|--------------|---------|
| 7   | Personal Computer | DELL      | DCS                                   | T3LWV                        | DoC          | -       |
| 8   | Display           | DELL      | E551                                  | MY-044NEK-46632<br>-0CB-9122 | DoC          | -       |
| 9   | Printer           | HP        | C4555A                                | US6BC212N                    | B94C4555X    | -       |
| 10  | Keyboard          | DELL      | SK-1000REW                            | M980265381                   | GYUR36SK     | -       |
| 11  | Mouse             | Microsoft | Mouse Port<br>Compatible<br>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     | C.S.F cable (No.d) | -         |
| d   | C.S.F cable               | 0.32      | Shielded   | Metal     | EUT     | Rear C.S.F (1bin)  | -         |
| e   | RGB cable                 | 2.0       | Shielded   | Metal     | PC      | Display            | -         |
| f   | AC power cord for Display | 1.8       | Unshielded | Plastic   | Display | AC outlet          | -         |
| g   | Parallel cable            | 2.1       | Shielded   | Metal     | PC      | Printer            | -         |
| h   | AC power cord for Printer | 2.7       | Unshielded | Plastic   | Printer | AC outlet          | -         |
| i   | Keyboard cable            | 1.9       | Unshielded | Metal     | PC      | Keyboard           | -         |
| j   | Mouse cable               | 1.9       | Unshielded | Metal     | PC      | Mouse              | -         |
| k   | 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: Cut Sheet Feeder cable (No.c) and Cut Sheet Feeder cable (No.d) are connected at the same time.

Note 3: RGB cable (No.e) with one ferrite core is accessory for Display (No.8).

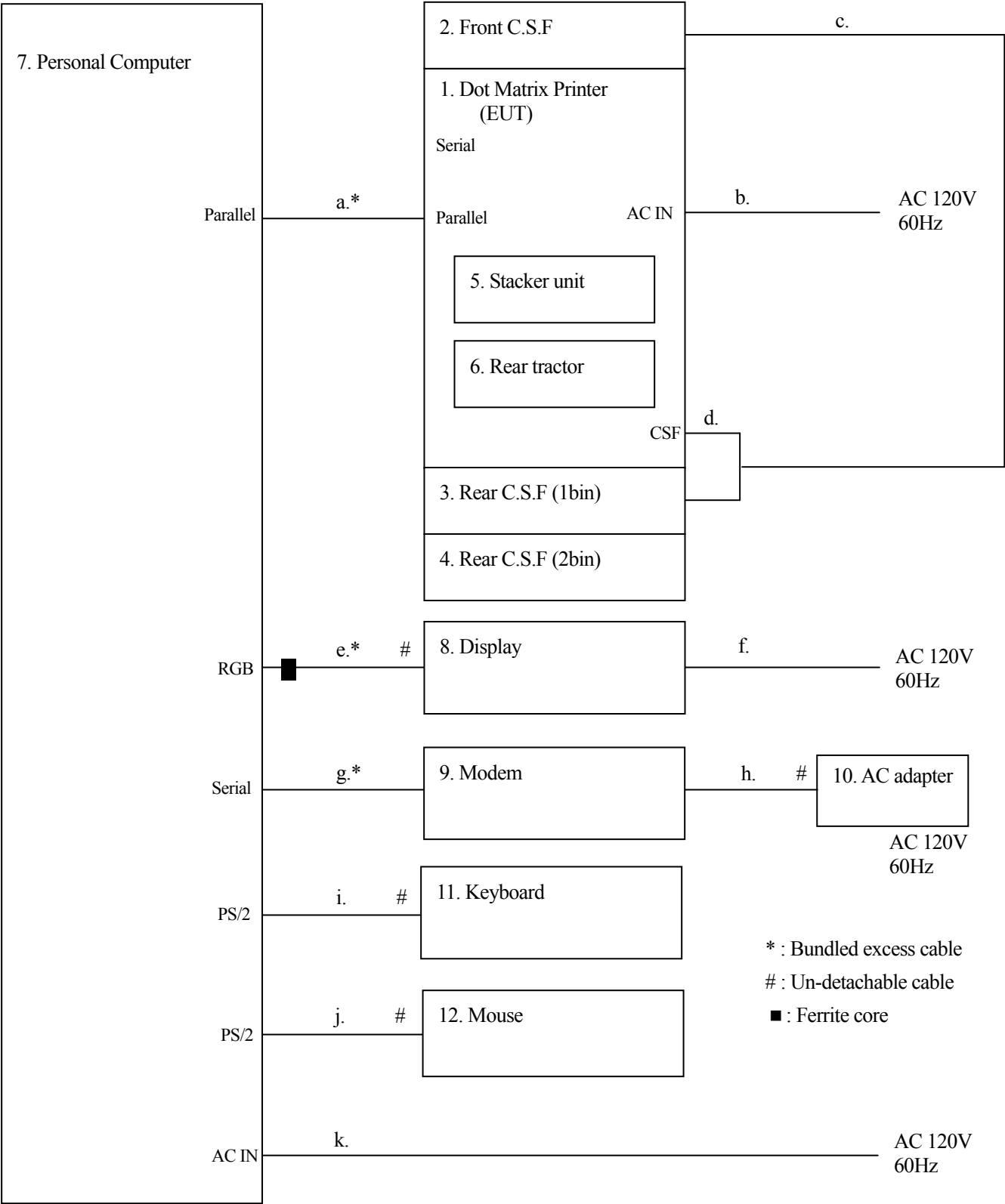
### 3.4 Peripheral(s) used [Parallel I/F mode]

| No. | Equipment               | Company      | Model No.                             | Serial No.                   | DoC / FCC ID | Comment |
|-----|-------------------------|--------------|---------------------------------------|------------------------------|--------------|---------|
| 7   | Personal Computer       | DELL         | DCS                                   | T3LWV                        | DoC          | -       |
| 8   | Display                 | DELL         | E551                                  | MY-044NEK-46632<br>-0CB-9122 | DoC          | -       |
| 9   | Modem                   | US. Robotics | Sport_Ster<br>33.6Kbps                | 000839032BK6YV4J             | DoC          | -       |
| 10  | AC adaptor<br>for Modem | US. Robotics | N/A                                   | N/A                          | N/A          | -       |
| 11  | Keyboard                | DELL         | SK-1000REW                            | M980265381                   | GYUR36SK     | -       |
| 12  | Mouse                   | Microsoft    | Mouse Port<br>Compatible<br>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     | C.S.F cable (No.d) | -         |
| d   | C.S.F cable                      | 0.32      | Shielded   | Metal     | EUT     | Rear C.S.F (1bin)  | -         |
| e   | RGB cable                        | 1.7       | Shielded   | Metal     | PC      | Display            | -         |
| f   | AC power cord for Display        | 1.8       | Unshielded | Plastic   | Display | AC outlet          | -         |
| g   | Serial cable                     | 1.5       | Shielded   | Metal     | PC      | Modem              | -         |
| h   | DC cable for<br>Modem AC adapter | 1.7       | Unshielded | Plastic   | Modem   | AC adapter         | -         |
| i   | Keyboard cable                   | 1.9       | Unshielded | Metal     | PC      | Keyboard           | -         |
| j   | Mouse cable                      | 1.9       | Unshielded | Metal     | PC      | Mouse              | -         |
| k   | 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: Cut Sheet Feeder cable (No.c) and Cut Sheet Feeder cable (No.d) are connected at the same time.

Note 3: RGB cable (No.e) with one ferrite core is accessory for Display (No.8).

## **4. Conducted emission at mains port test information**

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### **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.

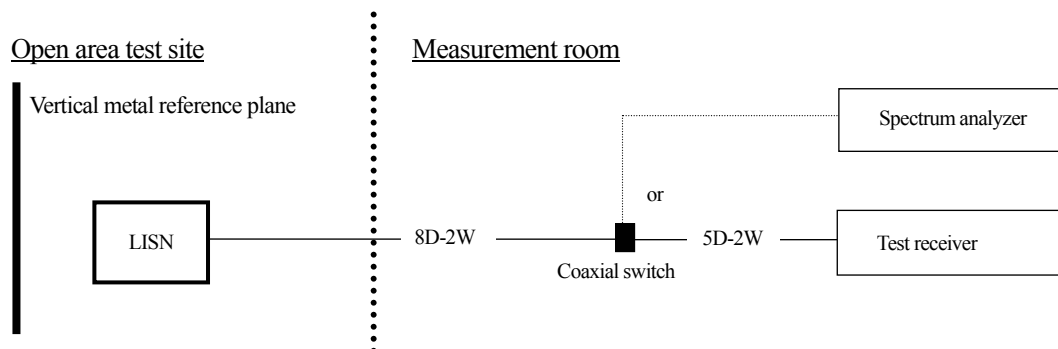
Reported emissions

- 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<br>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* | $\text{dB}\mu\text{V} = 20\log_{10}(\mu\text{V})$ <p>Limit @ 6.770MHz : 60.0dBμV(Quasi-peak)<br/>: 50.0dBμV(Average)</p> <p>(Quasi peak) Reading = 51.2dBμV<br/>Cable loss + LISN factor = 0.3dB<br/>Total = 51.2 + 0.3 = 51.5dBμV<br/>Margin = 60.0 – 51.5 = 8.5dB</p> <p>(Average) Reading = 45.0dBμV<br/>Cable loss + LISN factor = 0.3dB<br/>Total = 45.0 + 0.3 = 45.3dBμV<br/>Margin = 50.0 – 45.3 = 4.7dB</p> |
| 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**

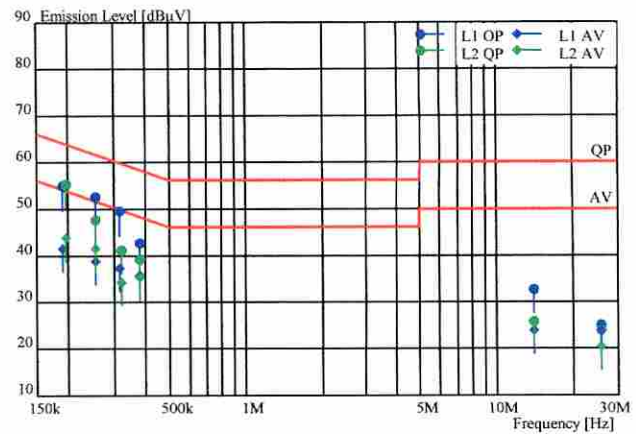
··· For Conducted emission

## 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] : 19.6  
 Humidity [%] : 28.3  
 Operator : T.Seino  
 Signature : *Tadashi Seino*  
 Company name : FUJITSU ISOTEC LIMITED  
 EUT : Dot Matrix Printer  
 Model number : M3391A  
 Serial number : MA197003  
 Test mode : Serial I/F mode  
 Comment :



| Phase | Frequency<br>[MHz] | Reading      |              | Factor<br>[dB] | Emission level |              | Limit        |              | Margin     |            | Comment |
|-------|--------------------|--------------|--------------|----------------|----------------|--------------|--------------|--------------|------------|------------|---------|
|       |                    | QP<br>[dBμV] | AV<br>[dBμV] |                | QP<br>[dBμV]   | AV<br>[dBμV] | QP<br>[dBμV] | AV<br>[dBμV] | QP<br>[dB] | AV<br>[dB] |         |
| L1    | 0.189              | 54.7         | 41.4         | 0.2            | 54.9           | 41.6         | 64.1         | 54.1         | 9.2        | 12.5       |         |
| L1    | 0.257              | 52.6         | 38.6         | 0.2            | 52.8           | 38.8         | 61.5         | 51.5         | 8.7        | 12.7       |         |
| L1    | 0.319              | 49.4         | 37.3         | 0.1            | 49.5           | 37.4         | 59.7         | 49.7         | 10.2       | 12.3       |         |
| L1    | 0.384              | 42.6         | 35.5         | 0.1            | 42.7           | 35.6         | 58.2         | 48.2         | 15.5       | 12.6       |         |
| L1    | 13.981             | 32.2         | 23.2         | 0.6            | 32.8           | 23.8         | 60.0         | 50.0         | 27.2       | 26.2       |         |
| L1    | 25.665             | 23.4         | 22.4         | 1.6            | 25.0           | 24.0         | 60.0         | 50.0         | 35.0       | 26.0       |         |
| L2    | 0.195              | 55.3         | 43.7         | 0.2            | 55.5           | 43.9         | 63.8         | 53.8         | 8.3        | 9.9        | *       |
| L2    | 0.257              | 47.5         | 41.4         | 0.2            | 47.7           | 41.6         | 61.5         | 51.5         | 13.8       | 9.9        |         |
| L2    | 0.320              | 41.1         | 34.3         | 0.1            | 41.2           | 34.4         | 59.7         | 49.7         | 18.5       | 15.3       |         |
| L2    | 0.383              | 39.3         | 35.4         | 0.1            | 39.4           | 35.5         | 58.2         | 48.2         | 18.8       | 12.7       |         |
| L2    | 13.964             | 25.2         | 25.3         | 0.6            | 25.8           | 25.9         | 60.0         | 50.0         | 34.2       | 24.1       |         |
| L2    | 25.681             | 22.4         | 18.9         | 1.6            | 24.0           | 20.5         | 60.0         | 50.0         | 36.0       | 29.5       |         |

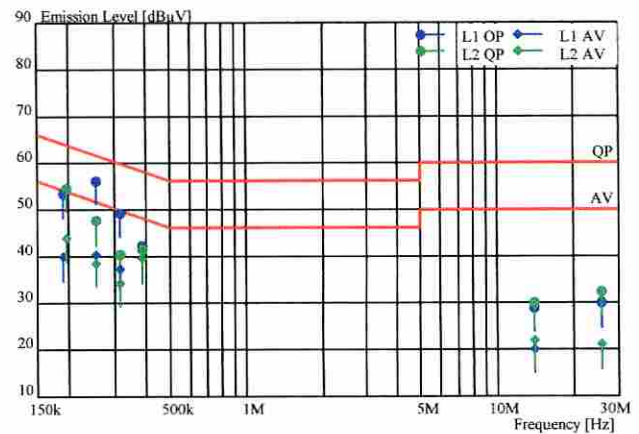
\* : The worst emission Factor : LISN Factor + Cable Loss

Ver.2.71 F1#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] : 19.6  
 Humidity [%] : 28.3  
 Operator : T.Seino  
 Signature : *Tadokoro Seino*  
 Company name : FUJITSU ISOTEC LIMITED  
 EUT : Dot Matrix Printer  
 Model number : M3391A  
 Serial number : MA197003  
 Test mode : Parallel I/F mode  
 Comment :



| Phase | Frequency<br>[MHz] | Reading      |              | Factor<br>[dB] | Emission level |              | Limit        |              | Margin     |            | Comment |
|-------|--------------------|--------------|--------------|----------------|----------------|--------------|--------------|--------------|------------|------------|---------|
|       |                    | QP<br>[dBμV] | AV<br>[dBμV] |                | QP<br>[dBμV]   | AV<br>[dBμV] | QP<br>[dBμV] | AV<br>[dBμV] | QP<br>[dB] | AV<br>[dB] |         |
| L1    | 0.188              | 53.1         | 39.7         | 0.2            | 53.3           | 39.9         | 64.1         | 54.1         | 10.8       | 14.2       |         |
| L1    | 0.255              | 55.9         | 40.2         | 0.2            | 56.1           | 40.4         | 61.6         | 51.6         | 5.5        | 11.2       | *       |
| L1    | 0.318              | 49.1         | 37.4         | 0.1            | 49.2           | 37.5         | 59.8         | 49.8         | 10.6       | 12.3       |         |
| L1    | 0.387              | 42.3         | 39.4         | 0.1            | 42.4           | 39.5         | 58.1         | 48.1         | 15.7       | 8.6        |         |
| L1    | 14.007             | 28.3         | 19.3         | 0.7            | 29.0           | 20.0         | 60.0         | 50.0         | 31.0       | 30.0       |         |
| L1    | 25.687             | 28.3         | 19.4         | 1.6            | 29.9           | 21.0         | 60.0         | 50.0         | 30.1       | 29.0       |         |
| L2    | 0.195              | 54.4         | 43.8         | 0.2            | 54.6           | 44.0         | 63.8         | 53.8         | 9.2        | 9.8        |         |
| L2    | 0.255              | 47.4         | 38.3         | 0.2            | 47.6           | 38.5         | 61.6         | 51.6         | 14.0       | 13.1       |         |
| L2    | 0.318              | 40.1         | 34.3         | 0.1            | 40.2           | 34.4         | 59.8         | 49.8         | 19.6       | 15.4       |         |
| L2    | 0.385              | 41.4         | 39.4         | 0.1            | 41.5           | 39.5         | 58.2         | 48.2         | 16.7       | 8.7        |         |
| L2    | 14.005             | 29.4         | 21.1         | 0.7            | 30.1           | 21.8         | 60.0         | 50.0         | 29.9       | 28.2       |         |
| L2    | 25.698             | 30.7         | 19.6         | 1.6            | 32.3           | 21.2         | 60.0         | 50.0         | 27.7       | 28.8       |         |

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

Ver.2.71 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<br>(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:<br>Oats 3m/10m | Filing date<br>(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<br>registration No. | Conducted emission<br>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.