

EMC Measurement Report

Project No. : 98E1026
Issued Date : January 14, 1998
Equipment : Keyboard
Model No. : KBD-6307、KBD-6307C
KBD-6307I、KBD-6307J
KBD-6307G、KBD-6307F

Trade Name : Advantech

Company

Name : Advantech Co., LTD
Address : F1.4, No.108-3, Ming-Chuan
Road, Shing-Tien City, Taipei,
Taiwan, R.O.C.

Testing Laboratory

Neutron Engineering Inc.

NEUTRON ENGINEERING INC.

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CERTIFICATION

We hereby certify that:

The test data , data evaluation , test procedures, and equipment configurations shown in this report(Refer No. of NEI-EMC-97209-1) were carried out by the best of our knowledge and ability in accordance with the EEC harmonized standard given in following:

Generic STD	(X) EN 50081-1:1992	(X) EN 50082-1:1992
Product Family STD	() EN 60555-2:1987	() EN61000-3-2:1995
	() EN 60555-3:1987	() EN61000-3-3:1995
	(X) EN 55022:1987/CISPR 22:1996	
Basic STD	(X) EN61000-4-2:1995/IEC1000-4-2	() EN61000-4-5:1996/IEC1000-4-5
	(X) EN61000-4-3:1995/IEC1000-4-3	() EN61000-4-6:1995/IEC1000-4-6
	(X) EN61000-4-4:1995/IEC1000-4-4	() EN61000-4-11:1996/IEC1000-4-11

The Emission and/or Immunity by the sample EUT tested as described in this report is in compliance with the standard(s) mentioned above which following the provisions of the EMC Directive (89/336/EEC).



(Authorized Signaturer)

General Manager

(Title / Position)

January 14, 1998

(Date)

Neutron represents to the client that testing is done in accordance with standard procedures as applicable and that reported test results are accurate within generally accepted commercial ranges of accuracy, unless a specific measure of greater accuracy has been agreed to in writing by **Neutron** and the client.

Neutron reports apply only to the specific samples tested under conditions. It is manufacture' s responsibility to assure that additional production units of this model are manufactured with the identical electrical and mechanical components. **Neutron** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **Neutron** issued reports.

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NEUTRON ENGINEERING INC.

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Part 1. General Information

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- 1-11 Sample of CE Mark and Conformity Declaration

1. PART 1. GENERAL INFORMATION**1-1 Applicant**

Name: Advantech Co., LTD

Address: F1.4, No.108-3, Ming-Chuan Road, Shing-Tien City, Taipei, Taiwan, R.O.C.

1-2 Manufacturer

Name: Advantech Co., LTD

Address: F1.3, No.168, Lian-Cheng Road, Chung-Ho City, Taipei, Taiwan, R.O.C.

1-3 Brand/Model Covered (if applicable)

Models covering in this test report are :

Advantech Brand : KBD-6307/KBD-6307C/KBD-6307I/KBD-6307J/KBD-6307G/KBD-6307F

1-4 Standard Compliance

Part A. Emission Regulation

☒ (X) EN55022:1987/CISPR 22:1996

☐ () EN60555-2:1987/IEC 555-2

☐ () EN61000-3-2:1995/IEC1000-3-2

☐ () EN60555-3:1987/IEC 555-3

☐ () EN61000-3-3:1995/IEC1000-3-3

Part B. Immunity Regulation

☒ (X) EN61000-4-2:1995/IEC1000-4-2:1995

☒ (X) EN61000-4-3:1996/IEC1000-4-3:1995

☒ (X) EN61000-4-4:1995/IEC1000-4-4:1995

☐ () EN61000-4-5:1995/IEC1000-4-5:1995

☐ () EN61000-4-6:1996/IEC1000-4-6:1996

☐ () EN61000-4-11:1994/IEC1000-4-11:1994

1-5 Test Facility

The test facility used to collect the test data in this report is NEUTRON ENGINEERING INC. Laboratory located at 1Fl. 20, Alley 50, Lane 119, Dong Hwu Road, Nei Hwu, Taipei, Taiwan, R.O.C.

1-6 Measuring Instruments

Refer to **Part 4. Attachment C-1, C-2 , C-3** enclosed.

Measuring instruments used has been calibrated with the standards traceable to National Measurement Laboratory (NML) of R.O.C., or National Institute of Standards and Technology (NIST) of U.S.A.

1-7 Product Descriptions

1-7-1. Specification, features, and/or product application if appropriate

The Advantech Co., LTD Model: KBD-6307/KBD-6307C/KBD-6307I/KBD-6307J/KBD-6307G/KBD-6307F (referred to as the EUT in this report) is a keyboard with Touchpad and Rack which is a device to efficiently control up to four network servers. The KBD-6307/KBD-6307C/KBD-6307I/KBD-6307J/KBD-6307G/KBD-6307F is parts of Advantech's Total Rack Solution for network systems.

A more detailed descriptions, technical datas and/or specifications of EUT is enclosed in **Part 4. Attachment - F.**

1-7-2. Connecting I/O Port(s)

- (1). Keyboard Port: 5-pin DIN or mini DIN connector.
- (2). Mouse Port: DB-9 or mini DIN connector.

1-7-3. Products Covered

The equipment under test covered in this test report includes the following sub-system, module, and/or accessory:

Sub-system, Module, and/or Accessory	Model/Type No.	Int. Installation Ext. Connection
Keyboard	KBD-6307/KBD-6307C/KBD-6307I/KBD-6307J/KBD-6307G/KBD-6307F	Ext. Connection

1-7-4. Model Difference (Series, Versions, if any)

The following models are identical to the basic model KBD-6307 except the keyin alphabet designation.

The distinction of the models designation are as follows ;

Model	
KBD-6307	English keyboard
KBD-6307C	Chinese keyboard
KBD-6307I	Italy keyboard
KBD-6307J	Japan keyboard
KBD-6307G	German keyboard
KBD-6307F	French keyboard

1-8 Electric Circuit Diagram/Block Diagram

See **Part 4 Attachment - A** enclosed

1-9 EUT Modifications (check one, if applicable)

- (X) No any modification required for the EUT to comply with the standards mentioned in **Subclause 1.4** above during the measurement.
- () To achieve compliance with the standards mentioned in **Subclause 1.4** above during the measurement, the modifications as **Part 4. Attachment - B** enclosed shall be implemented in all mass production models of this equipment for compliance to be maintained.

1-10 Photos of EUT

Photo # 1 Front View
Photo # 2 - 5 Unit Partially Dissembled

See **Part 4. Attachment - E** enclosed.

1-11 Sample of CE Mark/ Conformity Declaration

See **Part 4. Attachment - D** enclosed.

Part 2. RFI Emissions Measurement

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- 2-1 Standard Compliance
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2. RF Emissions Measurement

2-1 Standard compliance

EN 55022:1987/CISPR 22:1996, Class A

2-2 Limits of RF Emissions

2-2.1 Conducted Emission Limits for the Frequency Range 150KHz-30MHz

Frequency Range (MHz)	Mains Terminal Quasi-Peak Mode (dBuV)	Mains Terminals Average Mode (dBuV)
0.15 - 0.50	79	66
0.50 - 5.00	73	60
5.00 - 30.0	73	60

2-2.2 Radiated Emission Limits for the Frequency Range 30MHz-1000MHz

Frequency (MHz)	Quasi-Peak (dB μ V/m @ 10m)
30 - 230	40
230 - 1000	47

2-3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in CISPR 22 (1996). Radiated testing was performed at an antenna to EUT distance 10 meters.

2-4 Sample(s) Tested

The representative sample tested in this reports are models KBD-6307/KBD-6307C/KBD-6307I/KBD-6307J/KBD-6307G/KBD-6307F, test results in this test report relate only to the sample(s) tested.

2-5 System Tested Configuration

2-5-1. Tested System Details

The system was configured for testing in a typical fashion (as a customer would normally use) or inaccordance with the operating configuration specified in the user's manual. Figure 2-5-1 shown the Configuration of System Tested; Table 2-5-1 shown all equip-ment items , plus descriptions of the FCC IDs used in the system tested and Table 2-5-2 shown the descriptions of all cables used in this testing.

Fig. 2-5-1 Configuration of Tested System

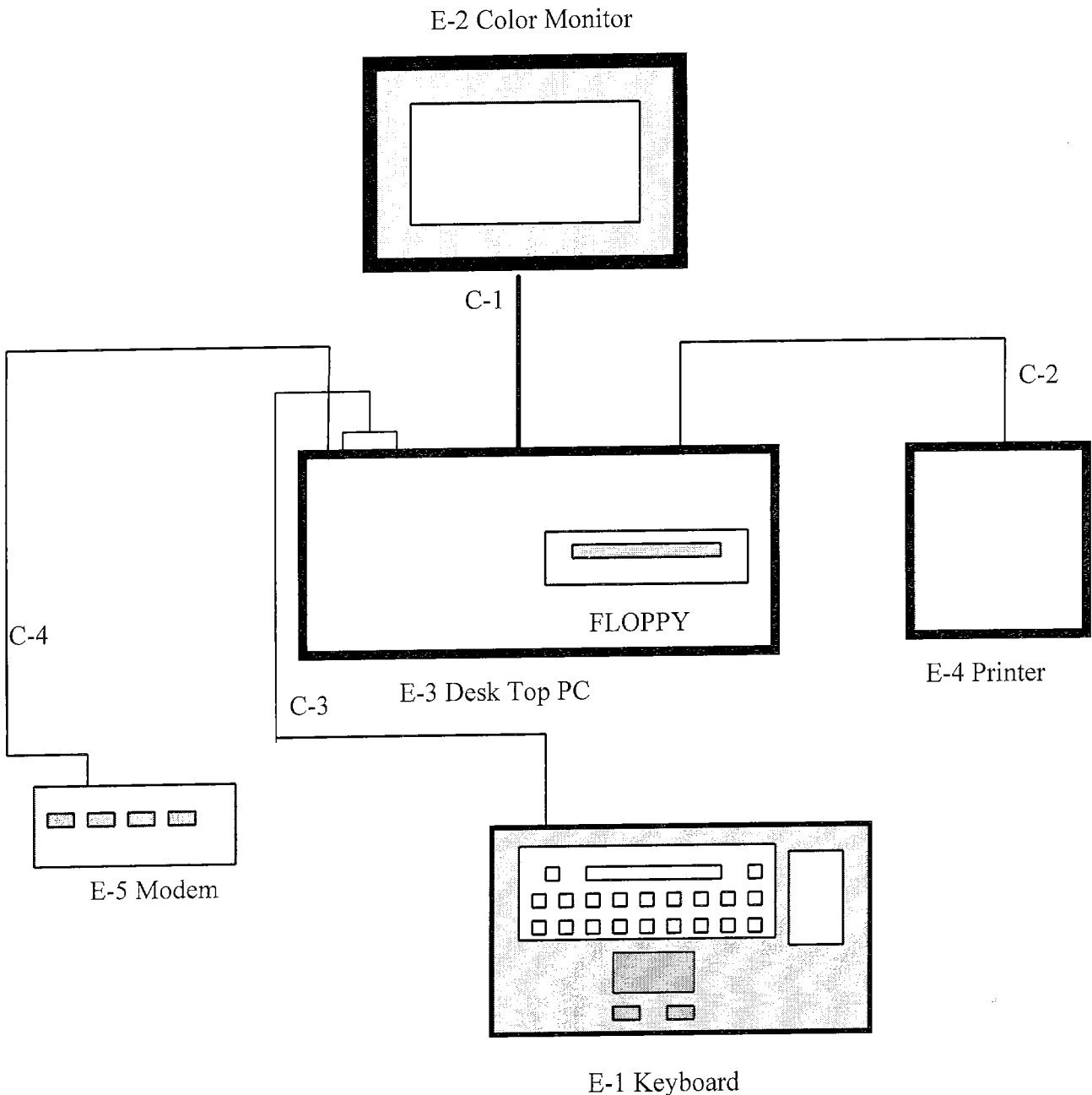


Table 2-5-1 Equipments Used in Tested System

Item	Equipment	Mfr.	Model/Type No.	I/O Port	FCC ID	Remark
E-1	Keyboard	Advantech	KBD-6307/KBD-6307C/KBD-6307I/KBD-6307J/KBD-6307G/KBD-6307F	KB Port COM Port	N/A	EUT
E-2	Monitor	Chern-Yih	NE64	VGA Port	KFBNE64	
E-3	Desktop PC	HP	Vectra VL 5/75 Series3		K4UVECTRAVL5	
E-4	Printer	HP	HP2225C+	Printer Port	DSI6XU2225	
E-5	Modem	Datatronics	AT-1200CK	COM Port	E2O5OV1200CK	

Note:

- (1) Unless otherwise denoted as EUT in 『Remark』 column, device(s) used in tested system is a support equipment.
- (2) Unless otherwise marked as ※ in 『Remark』 column, Neutron consigns the support equipment(s) to the tested system.

Table 2-5-2 Informations of Interface Cable

[illegible]

Note:

- (1) Unless otherwise marked as ※ in 『Remark』 column, Neutron consigns the support equipment(s) to the tested system.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2-5-2. Justification

The system was configured for testing in a typical fashion (as a customer would normally use it). The Keyboard was connected to support equipment-Personal computer. Peripherals of PC, such as monitor, printer and modem were contained in this system in order to comply with the ANSI C63.4 Rulse requirement. The PC operated in the default 640x480/31.5 Khz VGA Graphic mode. This operated condition was tested and used to collect to collect the included data.

The serial ports, COM2 tested by connecting a stand along modem as support equipment simultaneously.

2-5-3. EUT Exercise Software

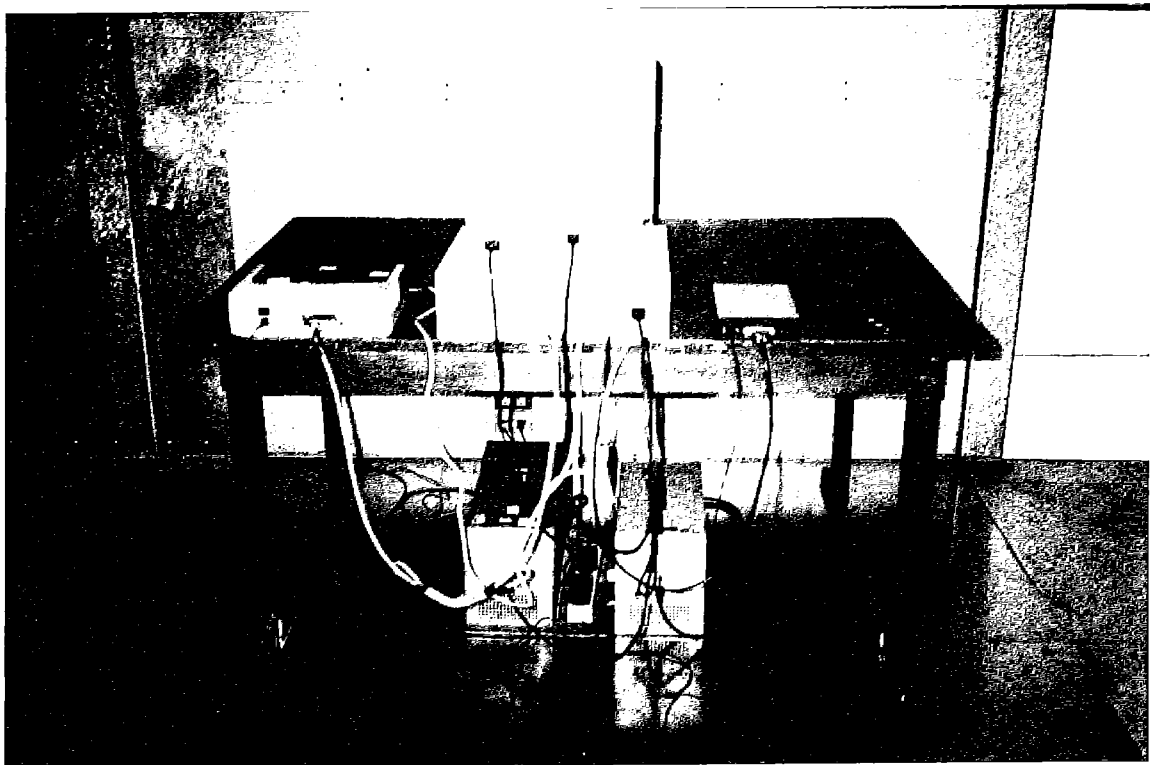
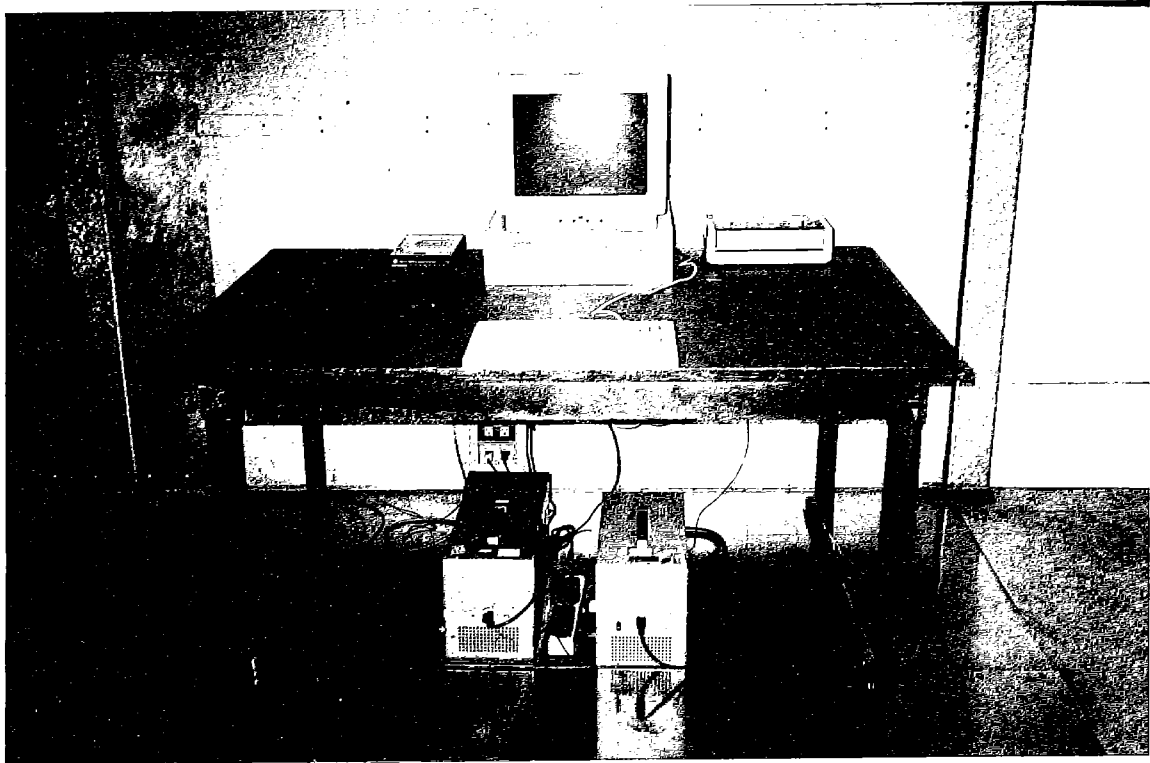
The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use. The software, contained on a 3-1/2 inch disk, was inserted into driver A and is auto-starting on power-up. Once loaded, the program sequentially exercises each system component in turn. The sequence used is:

1. Read (write) from (to) mass storage device (Disk).
2. Send "H" Pattern to video port device (Monitor).
3. Send "H" pattern to parallel port device (Printer).
4. Send "H" pattern to serial port device (Modem).
5. Repeated from 2 to 4 continuously.

As the Keyboard and mouse are strictly input devices, no data is transmitted to (from) them during test. They are, however, continuously scanned for data input activity.

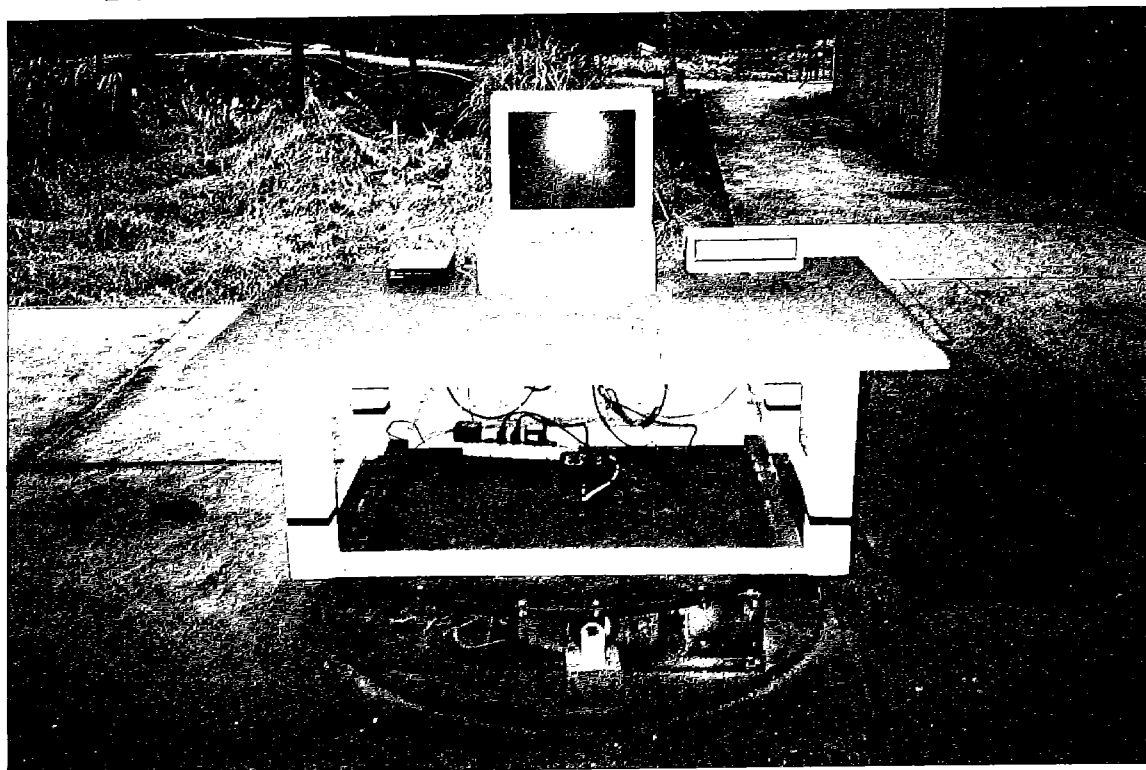
2-6 Conducted and Radiated Measurement Photos

2-6-1. Conducted Measurement Photos

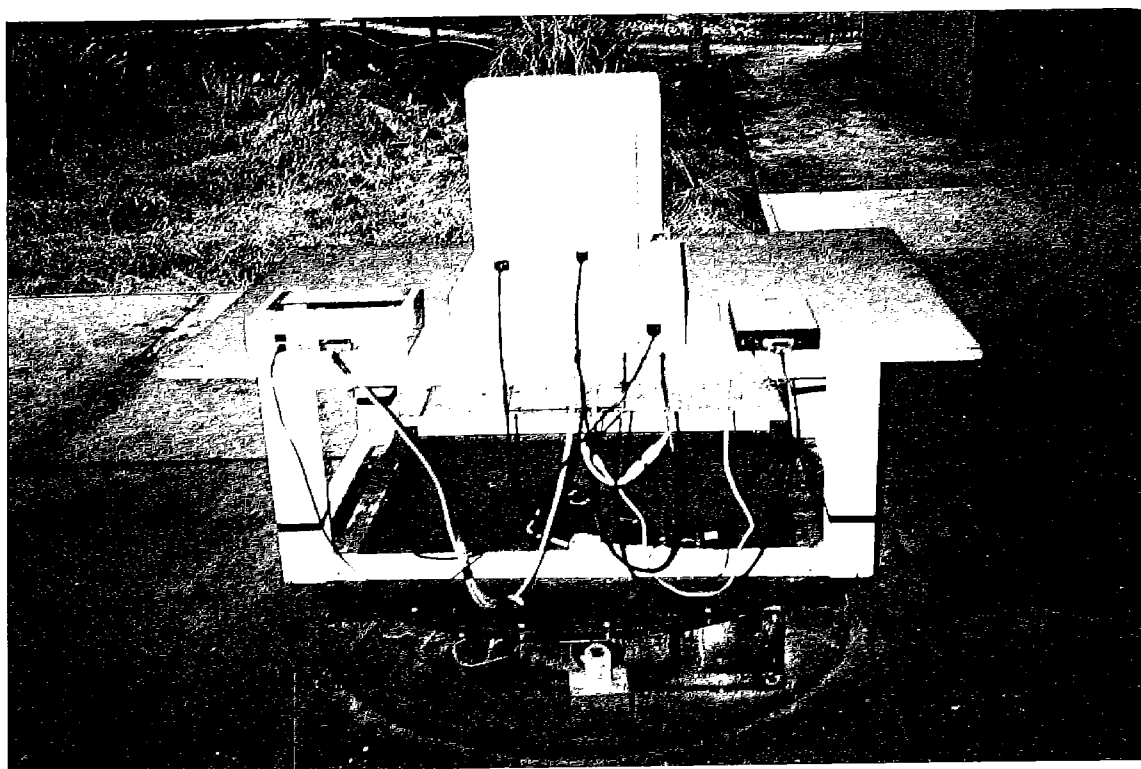


2-6 Conducted and Radiated Measurement Photos

2-6-2. Radiated Measurement Photos



(Front View)



(Rear View)

2-7 Emissions Measurement Data

2-7-1. Conducted Emission Data

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the above datas, and these signals are then Quasi-Peaked. Data of Table 2-7-1 lists the significant emission frequencies , measured levels, limits and safe margins.

2-7-2. Radiated Emission Data

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the above datas, and these signals are then Quasi-Peaked. Data of Table 2-7-2 lists the significant emission frequencies, measured levels, correction factor(includes cable and antenna corrections), the corrected reading, as well as the limit, safe margins. Explanation of the Correction Factor is given in paragraph 2-7-3.

Table 2-7-1 Conducted Emission Data

Model No. : KBD-6307/KBD-6307C/KBD-6307I/KBD-6307J/KBD-6307G/KBD-6307F Limit : CISPR 22, Class A

Project No. : 98E1026 Tested Date : OCT. 13, 1997 Temp. : 27.2°C RH : 72.5%

EUT Operation/Configuration Mode : 640x480/31.5KHz VGA graphic mode

Judgement : Passed by -23.2 dB at 13.87 MHz X AV QP X Line Neutral

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Safe Margins (dBuV) Note	
		QP-Mode	AV-Mode	QP-Mode	AV-Mode		
0.19	Line	41.80	39.60	79.00	66.00	-26.40	(AV)
0.25	Line	39.70	37.10	79.00	66.00	-28.90	(AV)
1.61	Line	34.40	31.30	73.00	60.00	-28.70	(AV)
13.87	Line	41.50	36.80	73.00	60.00	-23.20	(AV)
23.98	Line	34.00	27.20	73.00	60.00	-32.80	(AV)
0.19	Neutral	40.10	38.10	79.00	66.00	-27.90	(AV)
0.25	Neutral	40.30	38.90	79.00	66.00	-27.10	(AV)
1.17	Neutral	32.90	30.40	73.00	60.00	-29.60	(AV)
14.03	Neutral	40.60	34.30	73.00	60.00	-25.70	(AV)
23.98	Neutral	32.90	20.30	73.00	60.00	-39.70	(AV)

Remark :

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9KHz ; SPA setting in RBW=100KHz, VBW=100KHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=1MHz, VBW=10Hz, Swp. Time = 0.3 sec./MHz.
- (2) All readings are QP Mode value unless otherwise stated AVG in column of 'Note'. If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a "*" marked in AVG Mode column of Interference Voltage Measured.
- (3) Measuring frequency range from 150KHz to 30MHz.

Mgn. Director : ChunghoTech. Mgr. : AndyTest Engr. : Robit Bera

Table 2-7-2 Radiated Emission Data

Model No. : KBD-6307/KBD-6307C/KBD-6307I/KBD-6307J/KBD-6307G/KBD-6307F Limit : CISPR22, Class A, 10m

Project No. : 98E1026 Tested Date : OCT. 13, 1997 Temp. : 27.2°C RH : 72.5 %

EUT Operation/Configuration Mode : 640x480/31.5KHz VGA graphic mode

Judgement : Passed by -8.43 dB at 251.2 MHz X Peak QP X Hor. Vert.

Freq. (MHz)	Ant. H/V	Reading(RA) (dBuV)	Corr.Factor(CF) (dB)	Measured(FS) (dBuV/m)	Limits(QP) (dBuV/m)	Safe Margins (dBuV/m)	Note
66.20	V	18.90	8.59	27.49	40.00	-12.51	
137.80	H	14.60	12.35	26.95	40.00	-13.05	
160.40	V	16.90	14.49	31.39	40.00	- 8.61	
169.10	H	11.90	16.24	28.14	40.00	-11.86	
171.30	V	14.80	16.67	31.47	40.00	- 8.53	
189.60	V	11.30	18.88	30.18	40.00	- 9.82	
196.80	H	8.20	18.73	26.93	40.00	-13.07	
211.20	H	17.90	12.04	29.94	40.00	-10.06	
251.20	V	23.10	13.77	36.87	47.00	-10.13	
251.20	H	24.80	13.77	38.57	47.00	- 8.43	
266.40	V	19.30	14.68	33.98	47.00	-13.02	
266.40	H	21.30	14.68	35.98	47.00	-11.02	
351.20	V	17.60	16.64	34.24	47.00	-12.76	
351.20	H	17.00	16.64	33.64	47.00	-13.36	

Remark :

- (1) Reading in which marked as QP or Peak means measurements by using are Quasi-Peak Mode or Peak Mode with Detector BW=120KHz ; SPA setting in RBW=1MHz, VBW =1MHz, Swp. Time = 0.3 sec./MHz .
- (2) All readings are Peak unless otherwise stated QP in colum of 『 Note 』 . Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform .
- (3) Measuring frequency range from 30MHz to 1000MHz .
- (4) If the peak scan value lower limit more than 20dB, then this signal data does not show in table .

Mgn. Director :

Tech. Mgr. :

Test Engr. :

2-7-3. Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where **FS = Field Strength**
RA = Receiver Amplitude
AF = Antenna Factor (1)
CL = Cable Attenuation Factor (Cable Loss) (1)
AG = Amplifier Gain (1) (2)

Remark :

- (1) The Correction Factor = $AF + CL - AG$, as shown in the data tables' Correction Factor column.
- (2) AG is not available for Neutron's Open Site Facility

Example of Calculation:

Assume a Receiver Reading of 23.7 dBuV is obtained with an Antenna Factor of 7.2 dB and a Cable Factor of 1.1 dB. Then:

1. The Correction Factor will be calculated by

$$\text{Correction Factor} = AF + CL - AG = 7.2 + 1.1 - 0 = 8.3 \text{ (dB)}$$

as shown in the data tables' Correction Factor column.

2. The Field Strength will be calculated by

$$FS = RA + \text{Correction Factor} = 23.7 + 8.3 = 32 \text{ (dBuV/m)}.$$

FS is the value shown in the data tables' Corrected Reading column and RA is the value shown in the data tables' Receiver Reading column. The 32 dBuV/m value was mathematically converted to its corresponding level in uV/m as:

$$\text{Log}^{-1} \left[(32.0 \text{ dBuV/m}) / 20 \right] = 39.8 \text{ (uV/m)}$$

2-7-4. Correction Factor VS Frequency

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30.00	11.60	0.10
35.00	10.80	0.20
40.00	11.20	0.20
45.00	11.30	0.20
50.00	11.10	0.40
55.00	10.50	0.50
60.00	9.90	0.60
65.00	8.70	0.60
70.00	7.70	0.60
75.00	6.60	0.60
80.00	6.30	0.60
85.00	7.20	0.70
90.00	8.60	0.70
95.00	10.10	0.70
100.00	11.40	0.70
110.00	12.90	0.90
120.00	13.40	1.00
130.00	13.20	1.00
140.00	12.50	1.00
150.00	12.20	1.10
160.00	13.00	1.10
170.00	14.50	1.10
180.00	15.90	1.10
190.00	17.00	1.10
200.00	17.50	1.20
225.00	12.20	1.20
250.00	13.30	1.30
275.00	14.20	1.40
300.00	15.90	1.30
325.00	14.80	1.40
350.00	15.90	1.50
375.00	20.80	1.60
400.00	17.10	1.60
450.00	18.10	1.70
500.00	19.40	1.60
550.00	19.70	2.00
600.00	20.10	2.10
650.00	21.00	2.00
700.00	22.30	2.30
750.00	22.20	2.40
800.00	22.20	2.50
850.00	23.50	2.50
900.00	24.30	2.70
950.00	24.60	2.60
1000.00	25.70	2.80

Part 3. Electromagnetic Immunity Test

Table Contents

- 3-1 Standard Compliance//Servrity Level/Criteria
- 3-2 Test Methodology
- 3-3 Sample(s) Tested
- 3-4 Test Set-Up Configuration
- 3-5 EUT Operating Condition
- 3-6 EUT Tested Results

3. Immunity Test

3-1 Standard compliance/Servrity Level/Criteria

Tests Standard No.	Test Specification Servrity Level	Test Mode Test Ports	Perform. Criteria	Remark
1. ESD IEC801-2(1991) EN61000-4-2 (1995)	8KV air discharge 4KV contact discharge	Direct Mode	B	
	4KV HCP discharge 4KV VCP discharge	Indirect Mode	B	
2. RS EN61000-4-3 (1996) IEC801-3(1991)	80 MHz to 1000 MHz 3V/m(rms), 1 KHz, 80%, AM Un-modulated	Enclosure	A	
	27 MHz to 500 MHz 3V/m(rms), Un-modulated	Enclosure	A	N/A
3. EFT/Burst EN61000-4-4 (1996)	1.0 KV(peak) 5/50ns Tr/Th 5KHz Repetition Freq.	Common Mode I/O Port Power Supply	B	
	0.5 KV(peak) 5/50ns Tr/Th 5KHz Repetition Freq.	Common Mode CTL/Signal, Data Line	B	N/A
4. Injected Current EN61000-4-6 (1996)	0.15 MHz to 230 MHz 3V(rms), un-modulated 150Ω source impedance	Input/Output AC Power Supply	A	N/A
	0.15 MHz to 230 MHz 1V(rms), un-modulated 150Ω source impedance	Input/Output DC Power Supply	A	N/A
	0.15 MHz to 230 MHz 1V(rms), un-modulated 150Ω source impedance	CTL/Signal Line	A	N/A
5. Surges EN61000-4-5 (1995)	1 KV(5P/5N) 1.2/50(80/20) Tr/Th us	Line to Line Line to Neutral	B	N/A
	2 KV(5P/5N) 1.2/50(80/20) Tr/Th us	Line to PE Neutral to PE	B	N/A
6. Volt. Interruptions Volt. Dips EN61000-4-11 (1996)	Level 0 % U_T , Duration 0.5			N/A
	Level 40 % U_T , Duration 10 Level 70 % U_T , Duration 50	in 60 % U_T in 30 % U_T	C	N/A

* Remark: N/A - denotes tests is not applicable in this Test Report

3-2 Test Methodology

The testing was carried out according to the referenced Basic Standards listed in the follows:

Tests	Basic Standards	Provisions Referenced	Remark
1. ESD	EN 61000-4-2 IEC 1000-4-2	Clause 5.0, 7.0, 8.0	
2. RF Electromagnetic Field Strength	EN61000-4-3	Clause 5.0, 7.0, 8.0	
3. EFT/Burst	EN 61000-4-4 IEC 1000-4-4	Clause 5.0, 7.0, 8.0	
4. Surges	EN 61000-4-5 IEC 1000-4-5	Clause 5.0, 7.0, 8.0	N/A
5. Injected Current	EN 61000-4-6 IEC 1000-4-6	Clause 5.0, 7.0, 8.0	N/A
6. Volt. Interruptions Volt. Dips	EN 61000-4-11 IEC 1000-4-11	Clause 5.0, 7.0, 8.0	N/A N/A

Remark: * N/A - denotes tests is not applicable in this Test Report

3-3 Sample(s) Tested

The representative sample tested in this reports is the same as the statements of **Part 2. Subclause 2.4** unless otherwise a special model no. is specified in the record(Table of Test Results).

3-4 Test Set-Up Configuration

The testing was carried out according to the Test Set-Up Configuration Figures in the follows:

Tests	Basic Standards	Test Set-Up Configuration Figures	Remark
1. ESD	EN 61000-4-2 IEC 1000-4-2	Fig. 3-4-1 ESD Test Set-Up	
2. RF Electromagnetic Field Strength	EN61000-4-3	Fig. 3-4-3 RS Test Set-Up	
3. EFT/Burst	EN 61000-4-4 IEC 1000-4-4	Fig. 3-4-2 EFT/Burst Test Set-Up	
4. Surges	EN 61000-4-5 IEC 1000-4-5	Fig. 3-4-5 Surges Test Set-Up	N/A
5. Injected Current	EN 61000-4-6 IEC 1000-4-6	Fig. 3-4-4 Injection Current Test Set-Up	N/A
6. Volt. Interruptions Volt. Dips	EN 61000-4-11 IEC 1000-4-11	Fig. 3-4-6 Volt. Interruptions/DIPs Test Set-Up	N/A

Remark: * N/A - denotes tests is not applicable in this Test Report

Fig. 3-4-1 ESD Test Set-Up Configuration

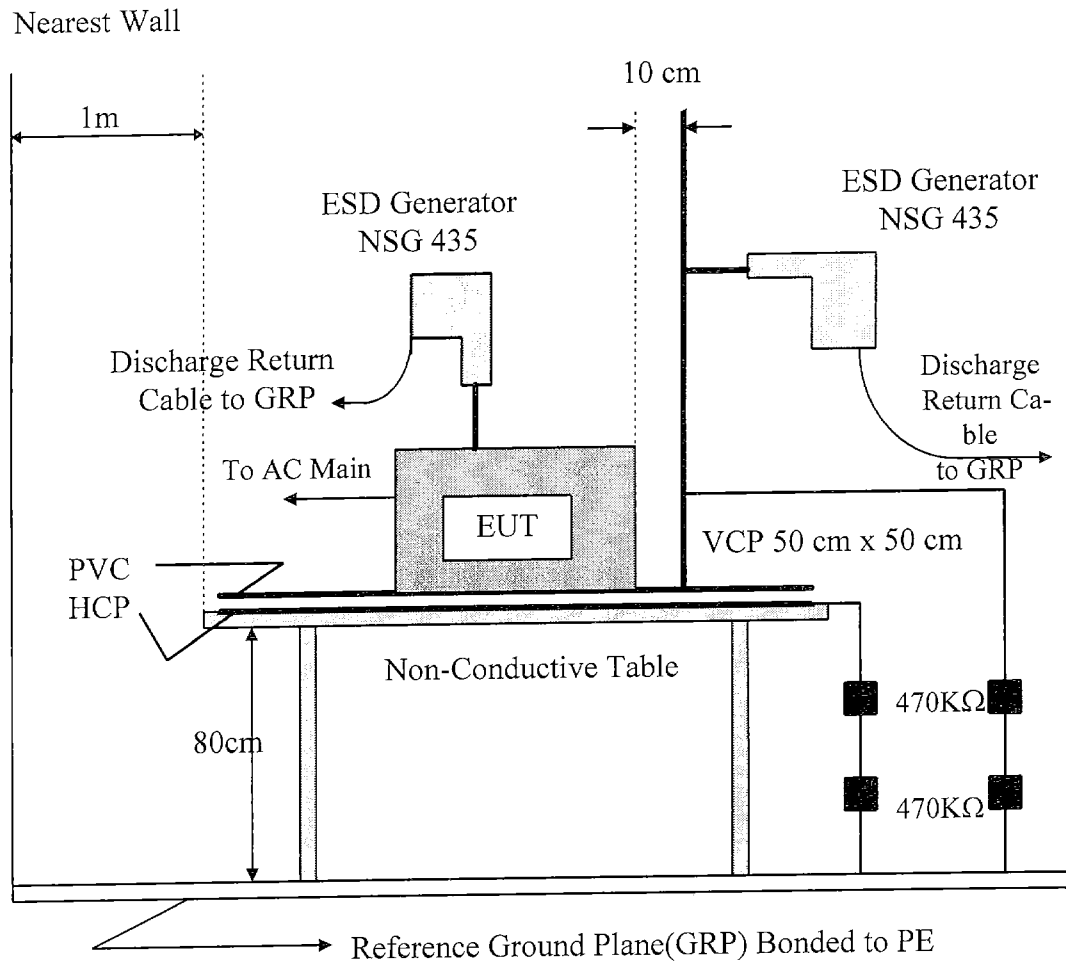
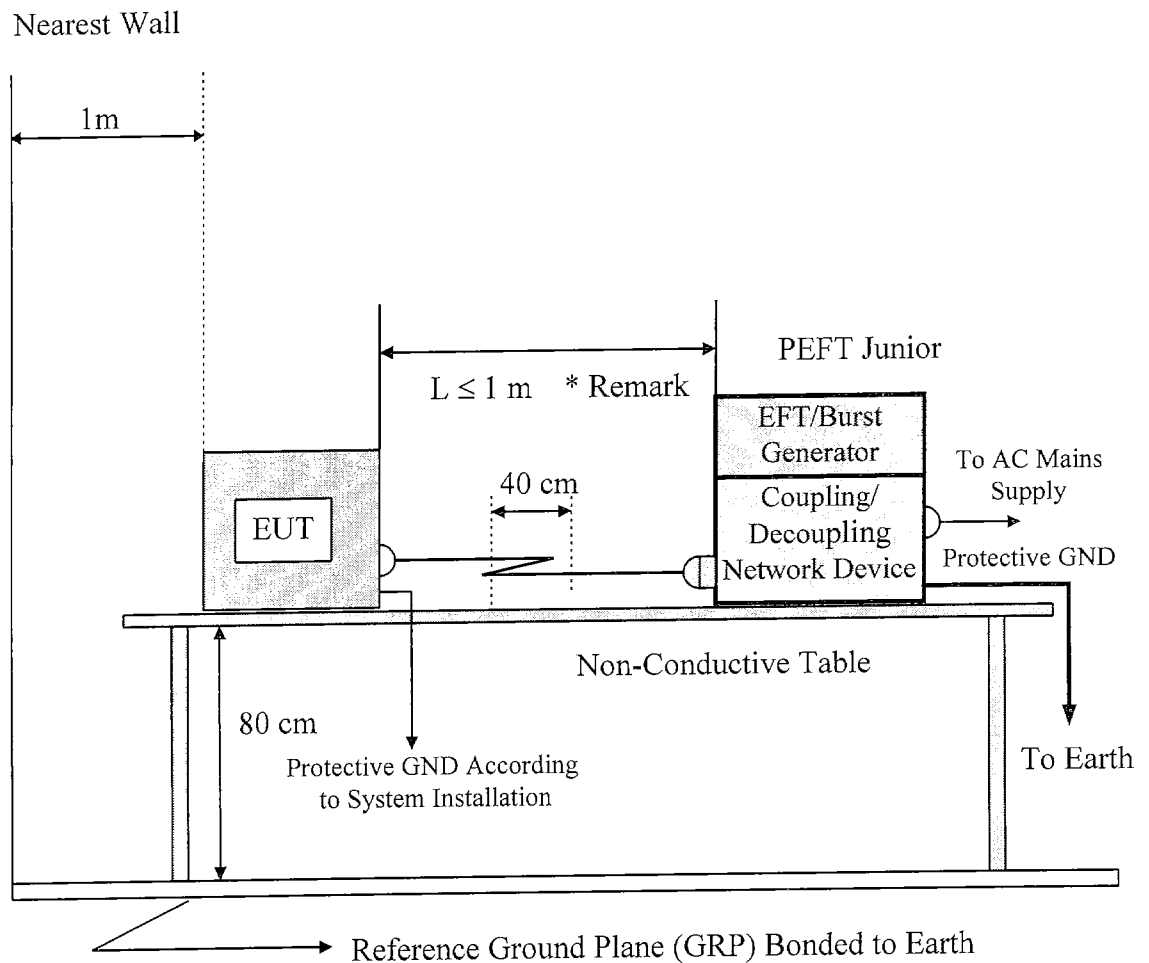


Fig. 3-4-2 EFT Test Set-Up Configuration

Fig. 3-4-2 EFT Test Set-Up Configuration - for AC Power Supply Ports



Remark :

If the manufacturer provides a non-detachable power cord more than 1m long with the EUT, the excess length of this power cord shall be folded back and forth forming a bundle 30-40 cm long and situated at a distance of 10 cm above the reference ground plane (GRP).

Fig. 3-4-2 EFT Test Set-Up Configuration - for CTL/Signal I/O Ports

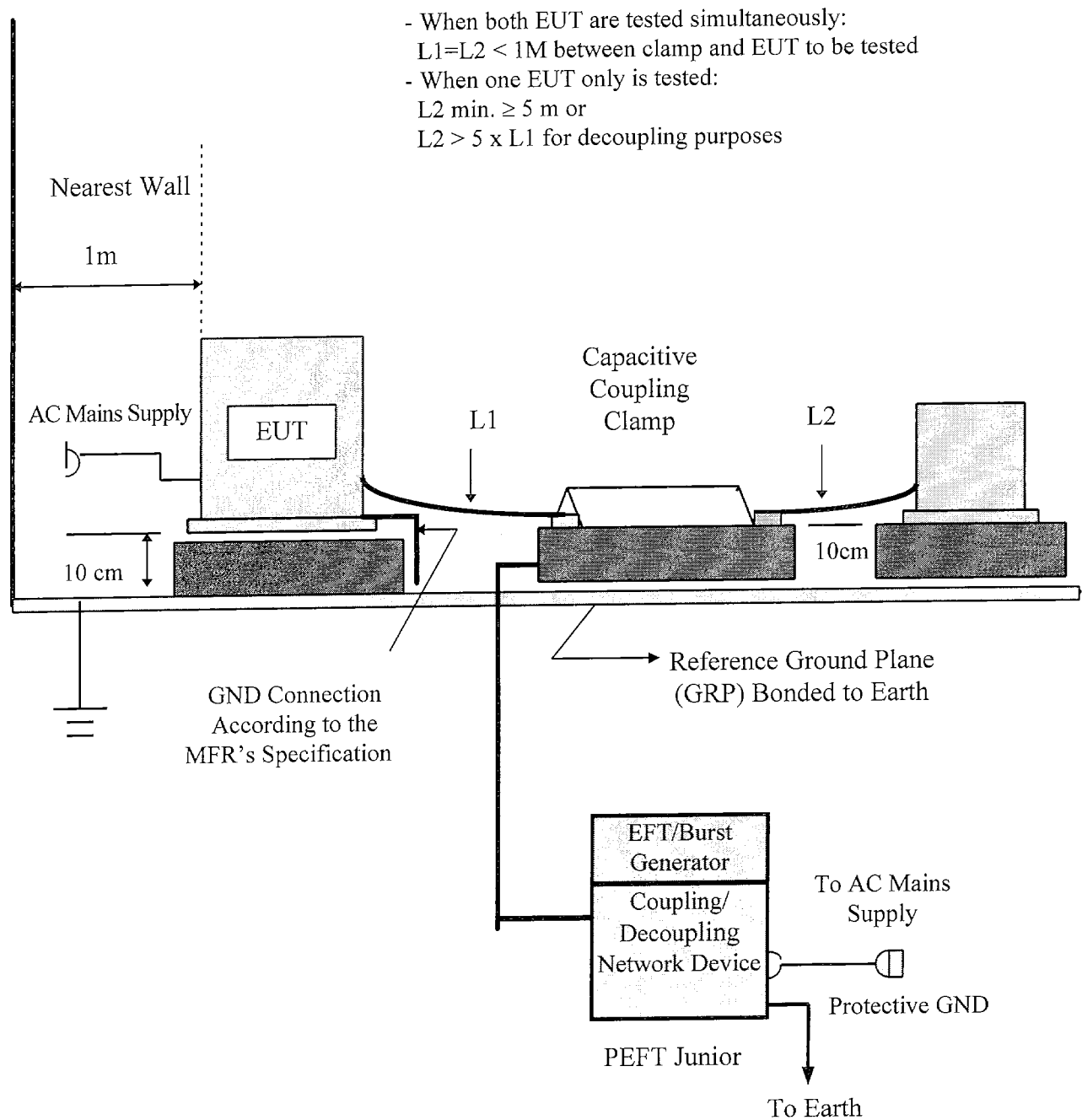
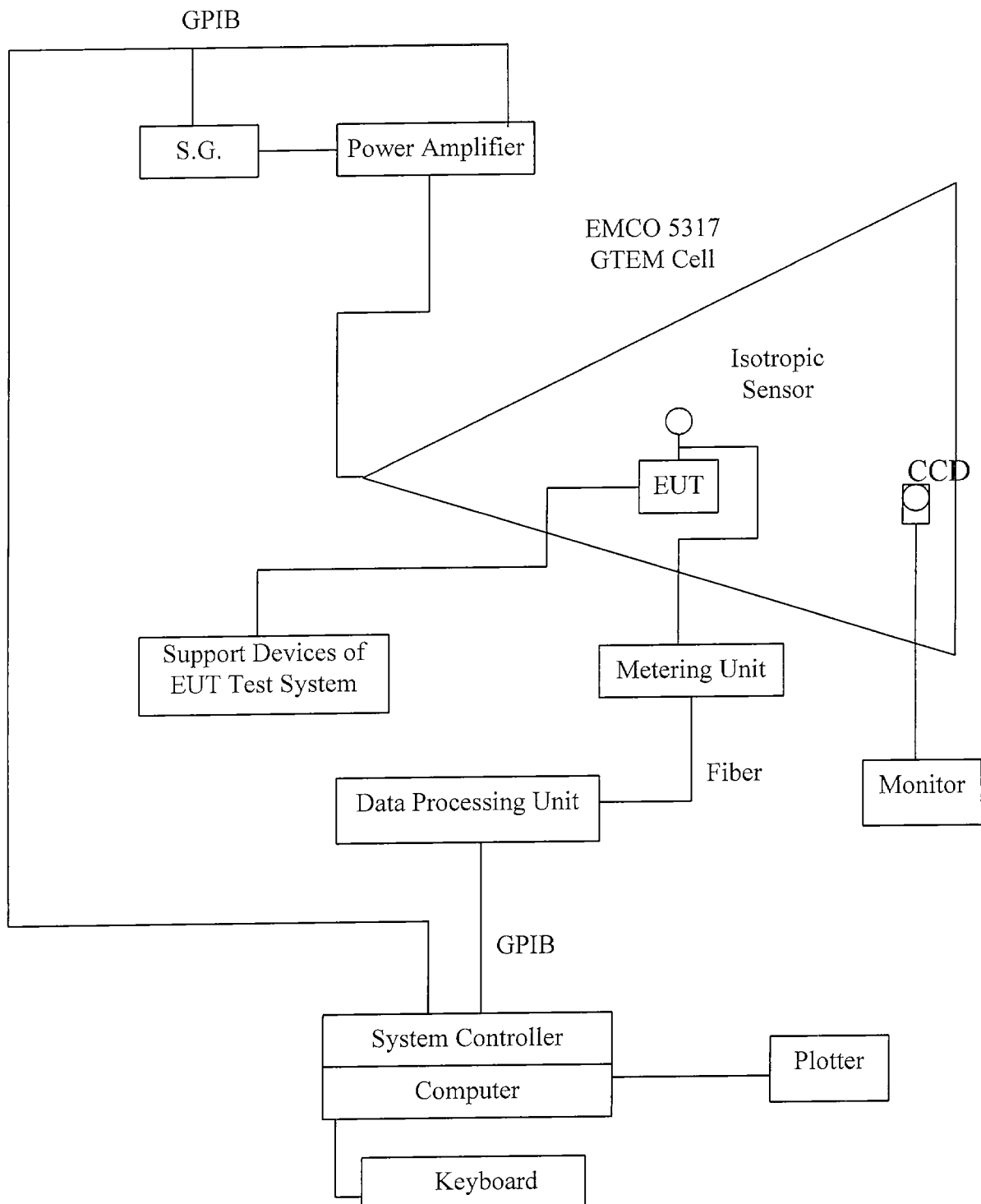


Fig. 3-4-3 RS Test Set-Up Configuration



3-5 EUT Operating Condition

The EUT tested system was configured as the statements of **Part 2. Subclause 2.5** unless otherwise a special operating condition is specified in the follows during the testing.

3-6 EUT Tested Results

Tests	Basic Standards	EUT Tested Results	Remark
1. ESD	EN 61000-4-2 IEC 1000-4-2	Table 3-4-1 ESD Testing	
2. RF Electromagnetic Field Strength	EN 61000-4-3 IEC 1000-4-3	Table 3-4-3 RS Testing	
3. EFT/Burst	EN 61000-4-4 IEC 1000-4-4	Table 3-4-2 EFT/Burst Testing	
4. Surges	EN 61000-4-5 IEC 1000-4-5	Table 3-4-5 Surges Testing	N/A
5. Injected Current	EN 61000-4-6 IEC 1000-4-6	Table 3-4-4 Injection Current Testing	N/A
6. Volt. Interruptions Volt. Dips	EN 61000-4-11 IEC 1000-4-11	Table 3-4-6 Volt. Interruptions/ DIPs Testing	N/A

Remark: * N/A - denotes tests is not applicable in this Test Report

Table 3-6-1 ESD Testing

Project No. 98E1026 Product: Keyboard Model /Type KBD-6307/KBD-6307C/KBD-6307I/KBD-6307J/KBD-6307G/KBD-6307F

Temperature : 23.0 °C Relative Humidity : 57 % RH Test Date OCT. 06, 1997

Standard Apply () IEC 801-2 (X) IEC 1000-4-2

Application of Discharge (X) Direct Air / Contact () Indirect HCP/VCP

Special Notes :

(if need)

Mode Locations	(X) Air / () HCP Discharge								(X) Contact / () VCP Discharge							
	2KV		4KV		8KV		15KV		2KV		4KV		6KV		8KV	
	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N
1					B	B					B	B				
2					B	B					B	B				
3					B	B					B	B				
4											B	B				
5											B	B				
6											B	B				
7																
8																
9																
10																
Criteria	B								B							
Judgment	PASS								PASS							

Note:

- 1) P/N denotes the Positive/Negative polarity of the output voltage.
- 2) A/B/C denotes the performance criterion class:
 - A - No degradation of performance or loss of function.
 - B - Temporary degradation of performance or loss of function, but no change of actual operating state or stored data.
 - C - Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by operation of the controls, or by any operation specified in the instructions for use.

C1: before resetting

C2: after resetting

- 3) Test location(s) in which discharge to be applied illustrated by photos shown in next page(s).

Approval

Reviewed

Test Engineer

Table 3-6-1 ESD Testing

Project No. 98E1026 Product: Keyboard Model /Type KBD-6307/KBD-6307C/KBD-6307I/KBD-6307J/KBD-6307G/KBD-6307F

Temperature : 23.0 °C Relative Humidity : 57.0 % RH Test Date OCT. 06, 1997

Standard Apply () IEC 801-2 (X) IEC 1000-4-2

Application of Discharge () Direct Air / Contact (X) Indirect HCP/VCP

Special Notes :

(if need)

Mode Locations	() Air / (X) HCP Discharge								() Contact / (X) VCP Discharge							
	2KV		4KV		6KV		8KV		2KV		4KV		6KV		8KV	
	P	N	P	N	P	N	P	N	P	N	P	N	P	N	P	N
1			B	B							B	B				
2			B	B							B	B				
3			B	B							B	B				
4			B	B							B	B				
5																
6																
7																
8																
9																
10																
Criteria	B								B							
Judgement	PASS								PASS							

Note:

- 1) P/N denotes the Positive/Negative polarity of the output voltage.
- 2) A/B/C denotes the performance criterion class:
 - A - No degradation of performance or loss of function.
 - B - Temporary degradation of performance or loss of function, but no change of actual operating state or stored data.
 - C - Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by operation of the controls, or by any operation specified in the instructions for use.

C1: before resetting C2: after resetting

- 3) Test location(s) in which discharge to be applied illustrated by photos shown in next page(s).

Approval

Reviewed

Test Engineer

Photo(s) shown the location(s) ESD evaluated

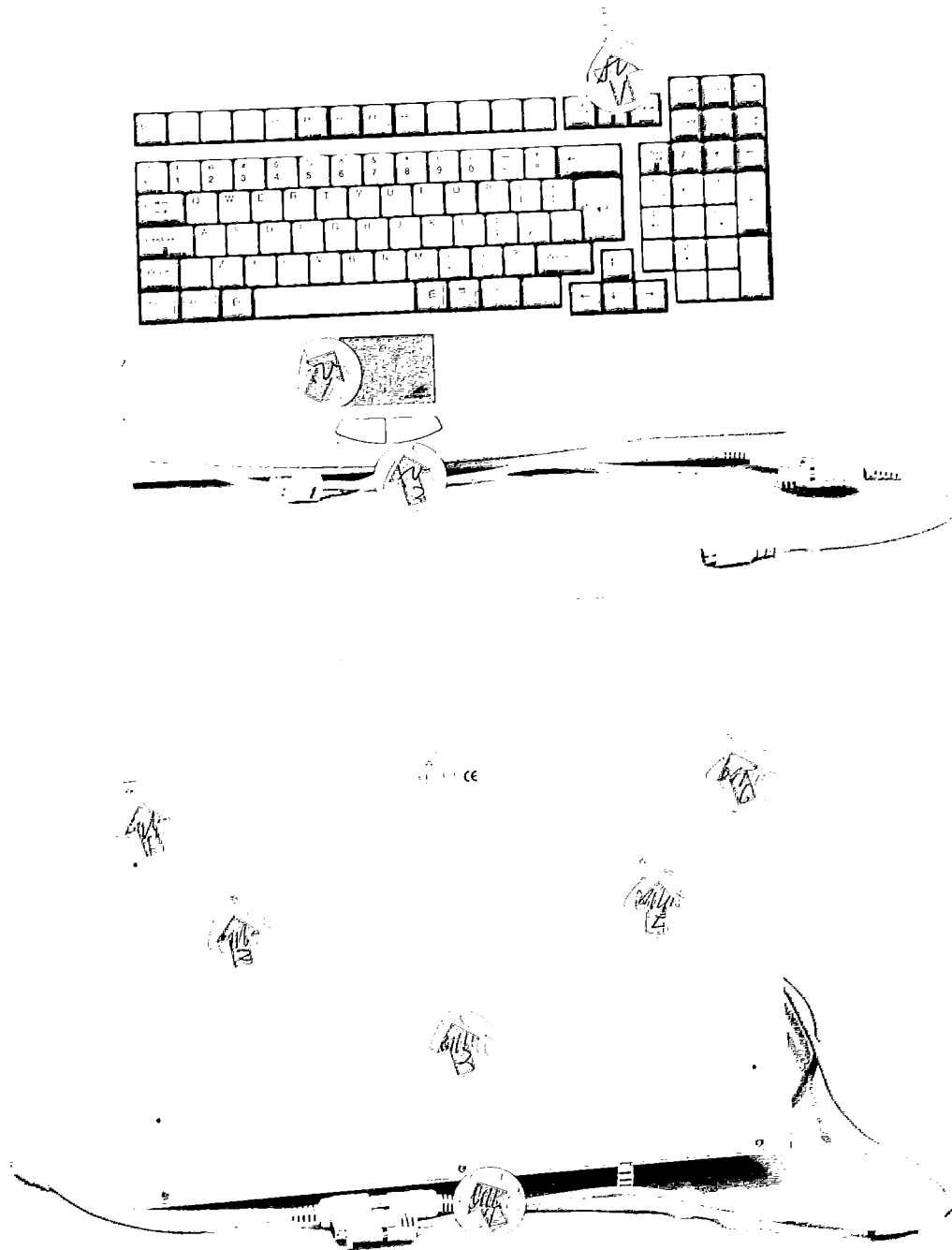


Table 3-6-2 EFT/Burst Testing

Project No. : 98E1026 Product : Keyboard Model /Type : KBD-6307/KBD-6307C/KBD-6307I/KBD-6307J/KBD-6307G/KBD-6307F

Temperature : 23.0 °C Relative Humidity : 57.0 % RH Test Date : OCT. 06, 1997

Standard Apply : EN 61000-4-4 Mains Supply : 230V, 50Hz, 1Ø

Voltage (Peak) 1 KV Repet. Rate : 5 KHz Impulse Rise Time (Tr) : 5 ns \pm 30 %

Impulse Duration (Th) : 50 ns \pm 30 % Burst Duration : 15 ms \pm 20 %

Burst Period : 300 ms \pm 20 % Duration of Test : 1 min, 15 secs rest between each testing

Test Mode (X) AC Power Line Port () DC Power Line Port () Signal/CTL Line Port

Special Notes :
(if need)

Mode Port(s)	AC Power Line Port		DC Power Line Port		Signal/Control Line Port	
	Polarity	Results	Polarity	Results	Polarity	Results
Line (L)	P	B	P		P	
	N	B	N		N	
Neutral (N)	P	B	P		P	
	N	B	N		N	
Ground (PE)	P	B	P		P	
	N	B	N		N	
Remark			N/A		N/A	
Perform Criteria	B		B		B	
Judgement	PASS		N/A		N/A	

Note:

- 1) Remark N/A - denotes tests is not applicable in this Test Report
- 2) P/N denotes the Positive/Negative polarity of the output voltage.
- 3) A/B/C denotes the performance criterion class:
 - A - No degradation of performance or loss of function.
 - B - Temporary degradation of performance or loss of function, but no change of actual operating state or stored data.
 - C - Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by operation of the controls, or by any operation specified in the instructions for use.

C1: before resetting

C2: after resetting

Approval

Reviewed

Test Engineer

Table 3-6-2 EFT/Burst Testing

Project No. : 98E1026 Product : Keyboard Model KBD-6307/KBD-6307C/KBD-6307I/KBD-6307J/KBD-6307G/KBD-6307F
 /Type :
 Temperature : 23.0 °C Relative Humidity : 57.0 % RH Test Date : OCT. 06, 1997
 Standard Apply : EN 61000-4-4 Mains Supply : 230V, 50Hz, 1Ø
 Voltage (Peak) 0.5 KV Repet. Rate : 5 KHz Impulse Rise Time (Tr) : 5 ns ± 30 %
 Impulse Duration (Th) : 50 ns ± 30 % Burst Duration : 15 ms ± 20 %
 Burst Period : 300 ms ± 20 % Duration of Test : 1 min, 15 secs rest between each testing
 Test Mode () AC Power Line Port () DC Power Line Port (X) Signal/CTL Line Port
 Special Notes :
 (if need)

Mode Port(s)	AC Power Line Port		DC Power Line Port		Signal/Control Line Port	
	Polarity	Results	Polarity	Results	Polarity	Results
Line (L)	P		P		P	B
	N		N		N	B
Neutral (N)	P		P		P	
	N		N		N	
Ground (PE)	P		P		P	
	N		N		N	
Remark	N/A		N/A			
Perform Criteria	B		B		B	
Judgement	N/A		N/A		PASS	

Note:

- 1) Remark N/A - denotes tests is not applicable in this Test Report
 - 2) P/N denotes the Positive/Negative polarity of the output voltage.
 - 3) A/B/C denotes the performance criterion class:
 - A - No degradation of performance or loss of function.
 - B - Temporary degradation of performance or loss of function, but no change of actual operating state or stored data.
 - C - Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by operation of the controls, or by any operation specified in the instructions for use.
- C1: before resetting C2: after resetting

Approval

Reviewed

Test Engineer

Table 3-6-3 RS Testing

Project No. : 98E1026 Product : Keyboard Model /Type : KBD-6307/KBD-6307C/KBD-6307I/KBD-6307J/KBD-6307G/KBD-6307F

Temperature : 25.0 °C Relative Humidity 60.0 % RH Test Date : OCT. 13, 1997

Mains Supply : AC 230V, 50Hz, 1Ø Modulation Type : Signal 1KHz, 80% , AM

Standard Apply : () IEC 801-3 (X) IEC 1000-4-3

Frequency Range : () 27 MHz - 500 MHz (X) 80 MHz - 1000 MHz

Test Level : (X) 3 V/m () 10 V/m (X) Modulated () Un-modulated

Special Notes :
(if need)

Frequency Range (MHz)	RF Field Position	R.F. Field Strength	Results	Perform. Criteria	Judgment	Remark
27MHz - 270MHz	Common Mode	3 V(rms)		A		N/A
270MHz - 500MHz	Common Mode	3 V(rms)				N/A
80MHz - 230MHz	Common Mode	3 V(rms)	A	A	PASS	
230MHz - 1000MHz	Common Mode	3 V(rms)	A		PASS	

Remark: * N/A - denotes tests is not applicable in this Test Report

Note:

- 1) P/N denotes the Positive/Negative polarity of the output voltage.
- 2) A/B/C denotes the performance criterion class:
 - A - No degradation of performance or loss of function.
 - B - Temporary degradation of performance or loss of function, but no change of actual operating state or stored data.
 - C - Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by operation of the controls, or by any operation specified in the instructions for use.

C1: before resetting

C2: after resetting

Approval

Reviewed

Test Engineer

Part 4. Attachment**Table Contents**

- A. Electric Circuit Diagram/Block Diagram
- B. EUT Modification Description
- C. Measurement Instruments List
 - C-1 EMI
 - C-2 EMS
 - C-3 Harmonics/Flickers - Power Analyzer 6630
 - C-4 Harmonics/Flickers - Power Source 6630
- D. Sample of CE Mark and Conformity Declaration
- E. EUT Photos Exhibition
- F. User's Manual or Technical Data/Specification

Attachment - A.

Electric Circuit Diagram/Block Diagram

Attachment - B.

EUT Modification Description

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Attachment C-1
Measurement Instruments List -EMI

Item	Instruments	Mfr./Model/Type No.	Manufacturer/Brand	Note
1	Biconical Antenna	EMCO 3104 C	EMCO	✓
2	Log-Period Antenna	EMCO 3146	EMCO	✓
3	Biconical Antenna	EMCO 3104C	EMCO	✓
4	Log-Period Antenna	EMCO 3146	EMCO	✓
5	Horn Antenna	EMCO 3115	EMCO	
6	Loop Antenna	R&S HFH 2-Z2	R & S	
7	Tuned Dipole Antenna	EMCO 3121	EMCO	
8	LISN	Kyoritsu KNW-407	Kyoritsu	✓
9	LISN	Kyoritsu KNW-242	Kyoritsu	✓
10	LISN	EMCO 3825/2	EMCO	
11	LISN	Compliance 8012	Compliance	
12	Pre-Amplifier	R&S ESMI-Z7	R&S	
13	Quasi-Peak Adapter	HP 85650A	EMCO	✓
14	RF Pre-Selector	HP 85685A	R & S	✓
15	Spectrum Analyzer	HP 8568B	HP	✓
16	Test Receiver	R&S ESH3	R & S	
17	Test Receiver	R&S ESVP	R & S	
18	Test Receiver Monitor	R&S EZM	R & S	
19	Test Receiver	R&S ESMI	R & S	✓
20	Antenna Mast	N/A		✓
21	Turn Table	N/A		✓

Remark :

- (1) ✓ indicates the instrument used in this test report °
- (2) N/B denotes No Brand measurement facility °

Attachment C-2**Measurement Instruments List -EMS**

No.	Test Items	Instruments Description	Manufacturer Company	Model/Type No.	Remark
1	ESD	ESD Simulator	Schaffner	NSG 435	
2	EFT/Burst	Burst Tester	Haefely	PEFT Junior	
3	Injected Current	Signal Generator Power Amplifier Coupling/Decoupling Network	Marconi A & R Fisher	2031 100A100 FCC-801-M3-25	N/A
4	RF Electromagnetic Field	GTEM Cell Power Amplifier Data Processing Metering Unit & Probe Signal Generator	EMCO IFI EMCO EMCO HP	5317 5540 7110 7122 8648A	
5	Surges	Surge Tester	Haefely	Paurge 4.1	N/A
6	Volt. Interruptions/Dips	Mains Interference Simulator	Haefely	Pline 1610	N/A

Remark: * N/A - denotes tests is not applicable in this Test Report

Attachment C-3.**Technical Specifications of Power Analyzer Model 6630**

Harmonics Analyzer	Flicker Measurements
Compliance measurements acc. to IEC555-2 and EN 61000-3-2	Compliance measurements acc. to IEC555-3 and EN 61000-3-3
Testing : Preprogrammed limits according to standard for Pass/Fail testing.	Testing: Preprogrammed limits according to standard for Pass/Fail testing.
Method of Analysis: DFT & DSP technology for steady state and fluctuating harmonics	Method of Analysis: Implementation of IEC 868/EN60868 Flickermeter Specification
Measurement: Harmonic order: 1 - 40 Freq. of fundamental: 40 - 70 Hz Freq. Source: Voltage or Current Data Source: Voltage or Current AD conversion: 18 bit resolution Measurement window: Rectangular Analyzed periods: 1 - 47	Measurement: 1024 classify scales for flicker level 100/120Hz sample rate for 50/60 Hz fundamental Range Pst : 0.1 - 20 Plt: 0.1 - 20 d : 0 - 25 % Freq. Range : 40 - 70 Hz
Synchronization uncertainty: 0.01 %	Reference Impedance R + jX simulated in calculation, range of R and X 0.01 - 70 ohm
Measurement time: 3.5s analyzing 6 periods	Measurement Time: 1 - 15 min. No. of Measurements: 1-1100 Uncertainty: Pst 4 % of rdg for $0.5 < Pst < 20$ Plt 4 % of rdg for $0.5 < Pst < 20$ d: 2 % of rdg for $d_{max} > 0.1 \%$
Uncertainty: +/- (0.5% of rdg + 0.03% of range)	

Class D Waveform Detector for EN 61000-3-2

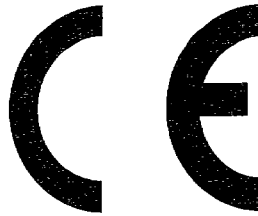
Compliance Class D rectangular envelope detecting
 Display: Simultaneous presentation of V and I waveforms
 Measurement: Frequency Range 40 - 70 Hz fundamental, Frequency Source Voltage or Current
 Measurement Mode AC+DC

Attachment C-4.**Technical Specifications of Power Source Model 6530**

Output Ratings	Input Ratings
Phase: Single	Voltage Range: 190-254V, single Ph.
Power: 3000VA	Frequency Range: 47 - 63 Hz
Voltage: Range 150V/300V Auto	Current: 23 A Max.
Accuracy 0.5 % of F. S(15-45 Hz) 0.2% of F. S(>45Hz-2KHz)	PF: 0.98 Min. under full load
Resolution 0.1 V	Measurements
Distortion 1% (15 Hz - 45 Hz) 0.5%(>45Hz - 500Hz) 1 % (>500 Hz - 1KHz) 2 % (> 1Khz - 2 KHz)	Voltage:
Line Regulation 0.1 %	Range 0 - 150V/ 0 - 300V
Load Regulation 0.1 %	Accuracy(RMS) 0.1% F.S + 0.25 %
Temp. Coefficient 0.2 % per C drg.	Resolution 0.1 V
Max. Currents:	Current:
RMS 30A/15A(150V/300V range)	Range(peak) 0-140A
Peak 90A/45A/(15Hz-100Hz)	Accuracy
75A/38A(>100Hz-1KHz)	(RMS) 0.1 % F.S. + 0.4 %
60A/30A(>1KHz - 2 KHz)	(Peak) 0.2 % F. S. + 0.4 %
Frequency:	Resolution 0.01A
Range 15Hz - 2 Khz	Power:
Accuracy 0.15 %	Accuracy 1 % F.S. (CF<6)
Resolution 0.01 Hz (15 - 99.99 Hz) 0.1 Hz (100 - 999.9 Hz) 0.2 Hz (1 Khz - 2 KHz)	Resolution 0.01W
	Frequency:
	Range 15 - 2000 Hz
	Accuracy 0.1 % + 2 count.
	Resolution 0.01 Hz
	Others
	Efficiency 80 % typical
	Protection OPP, OLP, OPT, Fan, Fail

Attachment - D.

Sample of CE Mark and Conformity Declaration



Conformity Declaration

Application of Council Directive(s).....89/336/EEC
Standard(s) Conformity Declared.....EN50081-1, EN55022,
EN50082-1, EN61000-4-2 , EN61000-4-3, EN 61000-4-4
Manufacturer's Name..... Advantech Co., LTD
Manufacturer's Address..... F1.3, No.168, Lian-Cheng Road, Chung-Ho City, Taipei,
Taiwan, R.O.C.
Importer's Name.....(Please insert your importer's name here).
Importer's Address.....(Please insert your importer's address here).
Type of Appliance Keyboard
Model No.: KBD-6307/KBD-6307C/KBD-6307I/KBD-6307J/KBD-6307G/KBD-6307F
(Please insert model no. here) Year of Manufacture1997

I, the undersigned, hereby declare that the equipment specified
above conforms to the above Directive(s) and Standard(s)

Importer

Manufacturer

Name: _____ (Signature)

Name: _____ (Signature)

Name: _____ (Type)

Name: _____ (Type)

Position/Title: _____

Position/Title: _____

Place: _____

Place: _____

Date: _____ (dd/mm/yy)

Date: _____ (dd/mm/yy)

Attachment - E.

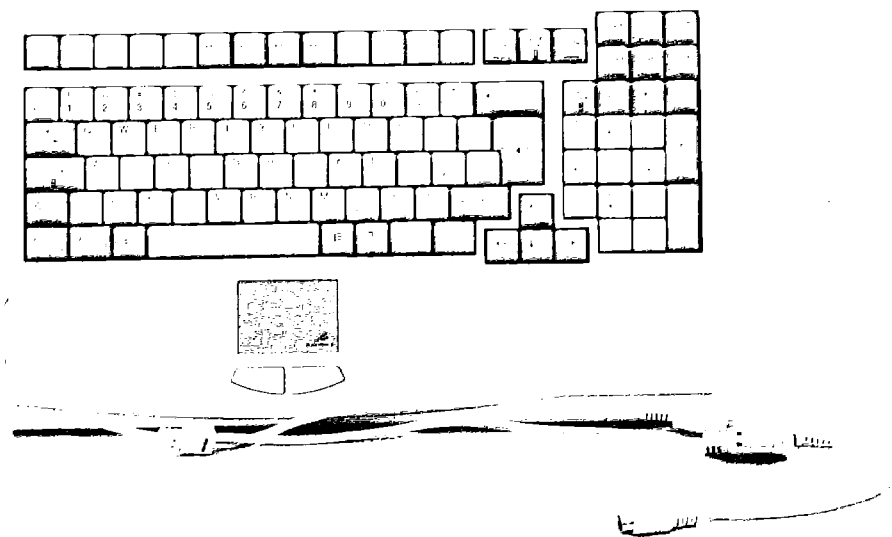
EUT Photos Exhibition

Photo # 1 Front View

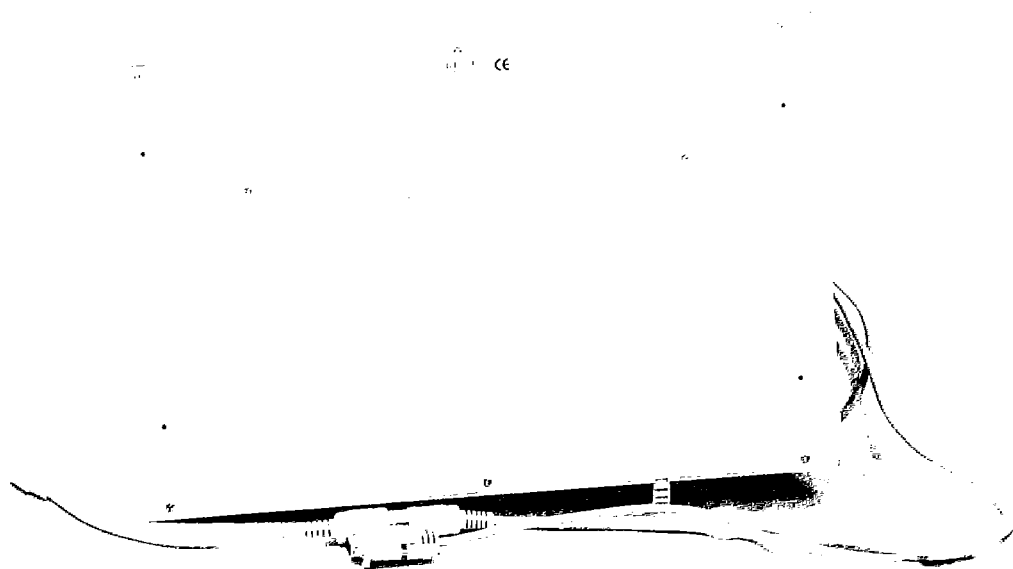
Photo # 2 Rear View

Photo # 3 - 6 Unit Partially Disassembled

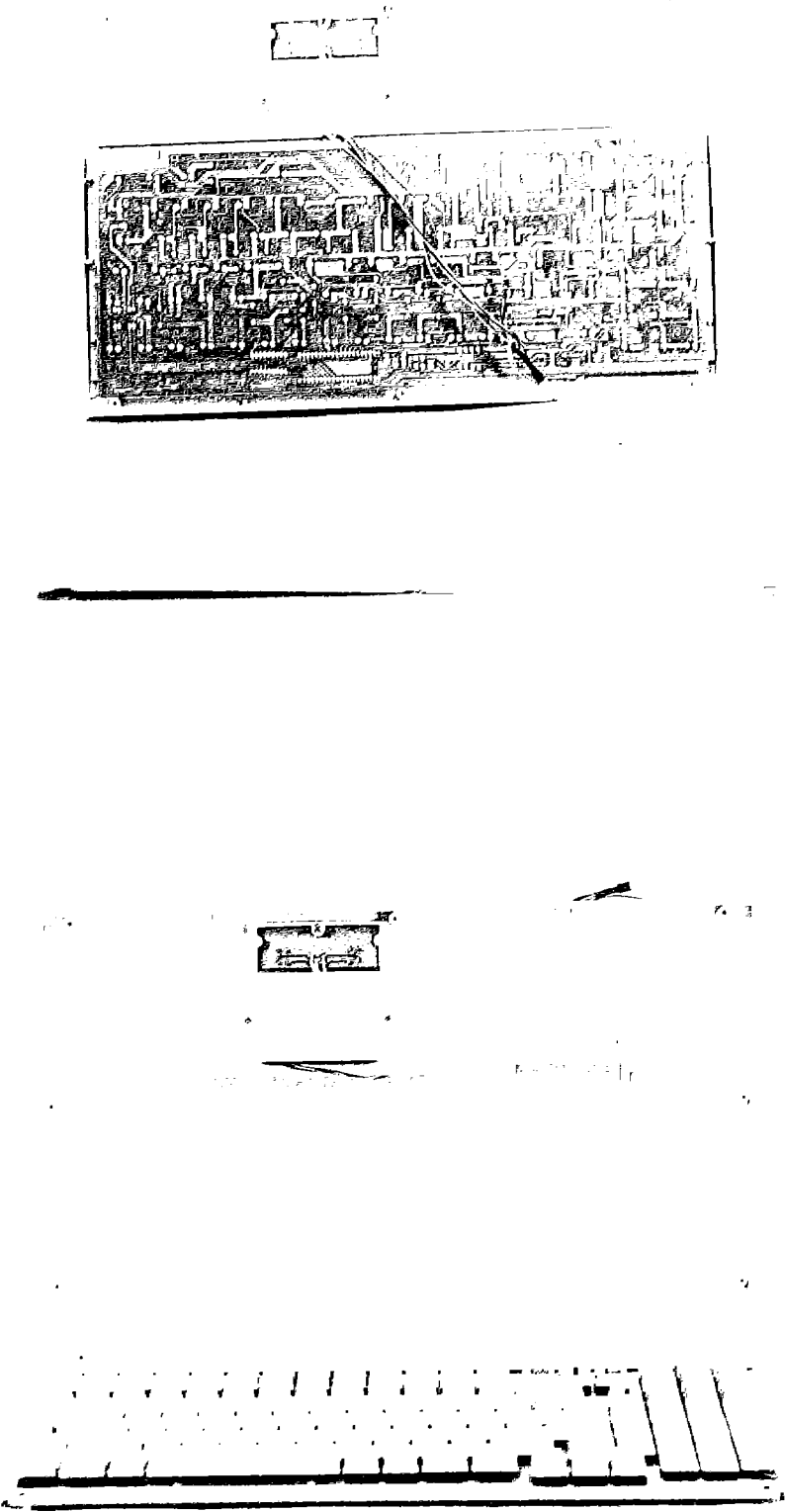
Photo#1 Front View



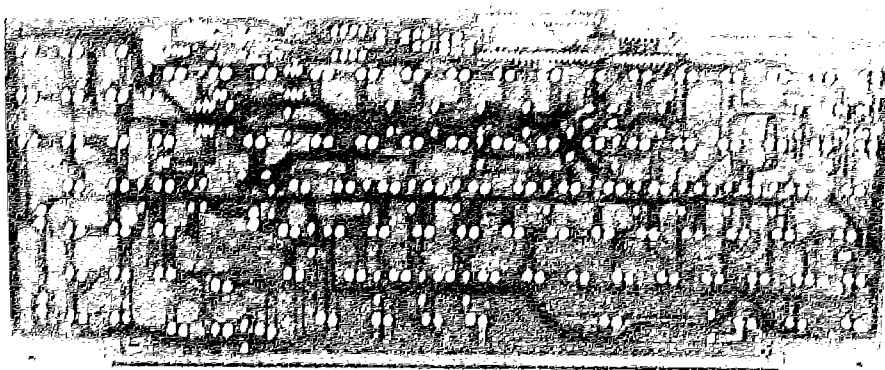
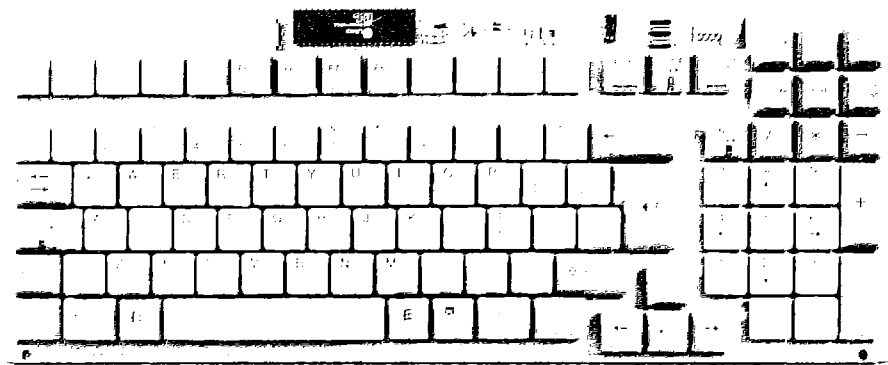
Photo#2 Rear View



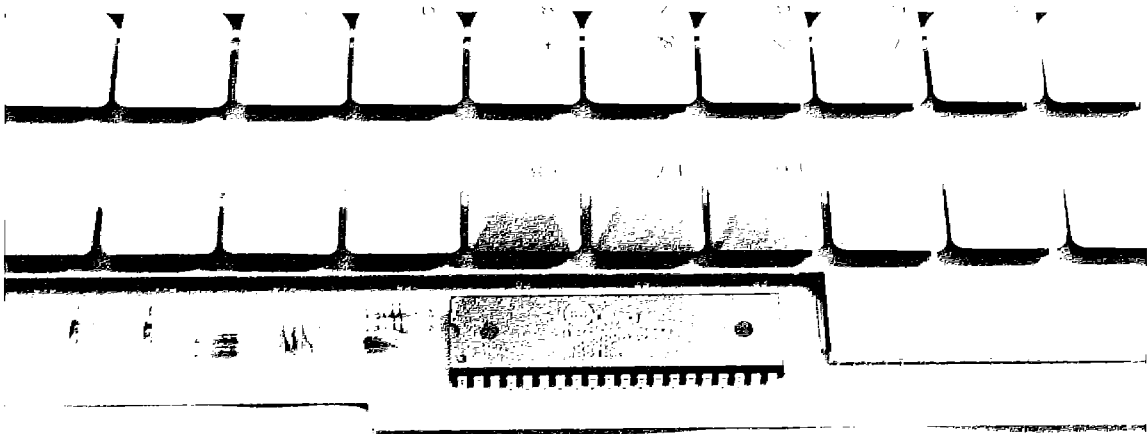
Photo#3 Unit Partially Disassembled



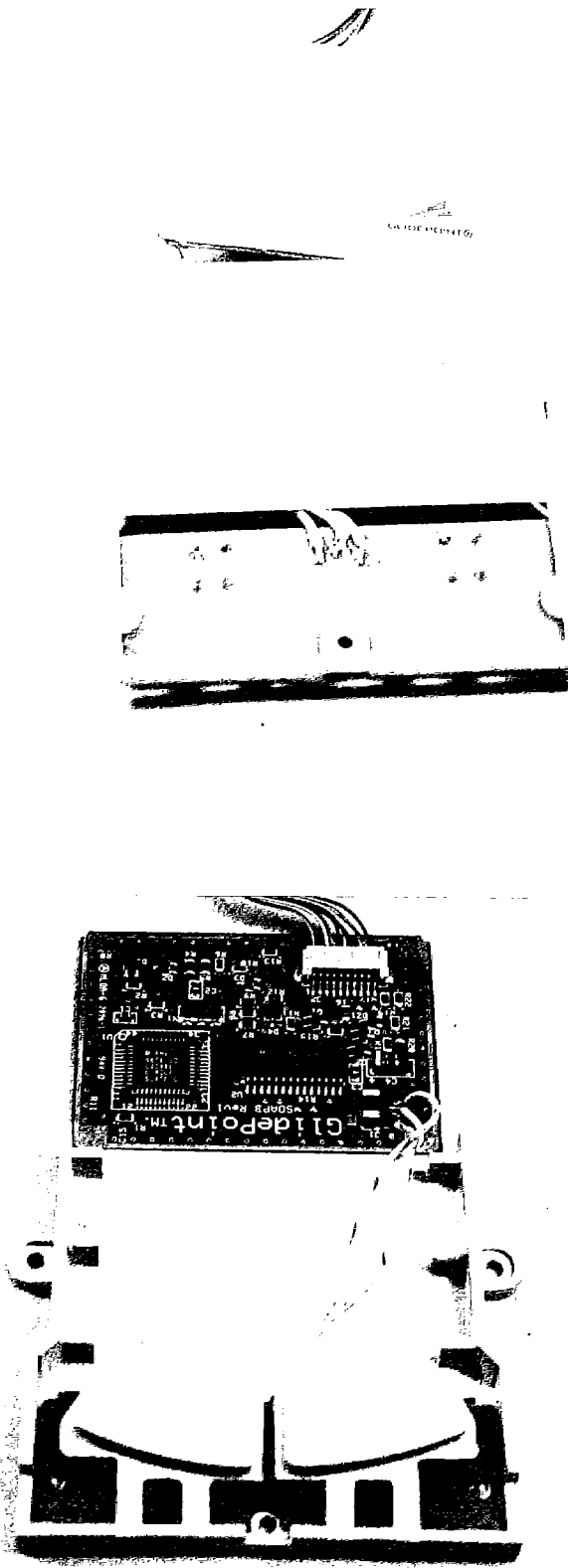
Photo#4 Unit Partially Disassembled



Photo#5 Unit Partially Disassembled



Photo#6 Unit Partially Disassembled



QUICK INSTALLATION GUIDE

1. Installation

The KBD-6307 Keyboard with Touchpad and Rack can connect to both standard computers and the KBD-6307 Server Console Switch, which is a device to efficiently control up to four network servers. Both the KBD-6307 are parts of SVEC's Total Rack Solution for network systems.

Please use the following procedure to properly install the KBD-6307 Keyboard with Touchpad:

- 1) Shut down your computer or system.
- 2) Plug the keyboard's standard 5-pin DIN or MiniDIN connector to the computer's keyboard port.
- 3) Plug the KBD-6307 Touchpad's DB-9 or MiniDIN Connector to the RS-232 serial port or the PS/2 mouse port of the computer.
- 4) Power on the computer or system.
- 5) The keyboard will automatically install. When 3 LED's (Num Lock, Caps Lock, and Scroll Lock) flash, then the keyboard installation is complete.
- 6) The touchpad is 100% compatible with the Microsoft mouse driver in Windows95 and Windows 3.1

2. Using the Touchpad

Clicking with the touchpad: The KBD-6307 Touchpad features two easy-to-use clicking methods.

- 1) While moving the arrow cursor with your finger on the touchpad, just tap your finger on the touchpad to click! You may click once or click twice as you wish.
- 2) Use the two buttons on the bottom of the touchpad as you would mouse buttons. The left button selects, moves, opens, and closes objects while the right button opens the context menu for objects.

To move the arrow cursor: Simply slide your finger on the surface of the touchpad.

To select an object: Move the cursor to the object you want and click once.

To select and move an object: Move the cursor to the object you want and click

twice. Then use your finger on the touchpad to move the object. To put down the object, just remove your finger from the touchpad.

To use application software: Move the cursor to the icon of the application you want to use, and click twice.

3. New Functions for Windows

The KBD-6307 Keyboard with Touchpad features 2 new keys for special use with the Windows95 operating system. They are the Applications key (for special applications use) and the Windows key (for special Windows95 functions). The Applications key has a small screen and cursor symbol on it, while the 2 identical Windows keys (on either side of the space bar) feature the standard Windows logo.

Use of the Applications key

When the Applications key is pressed, it will bring up the context menu for the selected window or icon. The Applications key has the same function as you would find with the right mouse button on most systems.

Use of the Windows key

If you are using the Windows95 operating system, the Windows key allows you to use some of Windows95 special functions and shortcuts. For more information please refer to the Windows95 users manual. Here is a brief list of helpful commands:

Windows (key)	--	Open the "Start" Menu
Windows + F1	--	Open the pop-up menu of the selected object
Windows + TAB	--	Activate the next minimized application window from the bottom of the screen
Windows + E	--	Open the "My Computer" window
Windows + F	--	Find a document or file
Windows + CTRL+F	--	Find a computer
Windows + M	--	Minimize all open windows
SHIFT + Windows + M	--	Cancel the "Minimize all open windows" command
Windows + R	--	Open the "Run" Window
Windows + PAUSE	--	Execute system function

Attachment - F.

User Manual or Technical Data / Specification