

APPLICATION FOR CERTIFICATION

On Behalf of
Silitek Corporation

Keyboard

Model Number: SK-1689

Prepared for : Silitek Corporation
10F., No. 25, Sec. 1, Tung Hwa S. Rd.,
Taipei, Taiwan, R.O.C.

Prepared By : Audix Technology (Shenzhen) Co., Ltd.
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Report Number	ACS-20F017
Date of Test	Jan. 26, 2000
Date of Report	Jan. 28, 2000

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TEST REPORT CERTIFICATION

Applicant Silitek Corporation
Manufacturer Yet Foundate Limited
EUT Description Keyboard
(A) MODEL NO. : SK-1689
(B) SERIAL NO. : F2000011101
(C) POWER SUPPLY : +5V DC

Test Procedure Used:

FCC Rules and Regulations Part 15 Subpart B Class B October 1998 & ANSI C63.4-1992

The device described above is tested by AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart Class B limits both radiated and conducted emissions.

The test results are contained in this test report and AUDIX TECHNOLOGY (SHENZHEN) CO., LTD. is assumed of full responsibility for the accuracy and completeness of these tests. Also, this report shows that the Equipment Under Test (EUT) is technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

This report must not be used by the applicant to claim product endorsement by NVLAP or any agency of the U.S. Government.

Date of Test :

Jan. 26, 2000

Prepared by :

Katherine Ge Jan. 31
(KATHERINE GE / ASSISTANT)

Reviewer :

Martin Lu 1/2
(MARTIN LU / SUPERVISOR)
For and on behalf of
AUDIX TECHNOLOGY (SHENZHEN) CO., LTD.

Approved & Authorized Signer :

[Signature]
(SMART TSAI / MANAGER)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description	:	Keyboard
Model Number	:	SK-1689
Applicant	:	Silitek Corporation
		10F., No. 25, Sec. 1, Tung Hwa S. Rd., Taipei, Taiwan, R.O.C.
Manufacturer	:	Yet Foundate Limited
		West Di, Shi Heng Rd., Shi Jie Xian, Dongguan, Guangdong, China
Data Cable	:	Shielded, Nondetachable, 1.2m
Date of Test	:	Jan. 26, 2000

1.2. Tested Supporting System Details

1.2.1. PERSONAL COMPUTER

Model Number	P2L97
Serial Number	No. 1
FCC ID	DoC
Manufacturer	Asus Computer International Co.
Switching Power Supply	Model FSP300-60GT Sparkle Power Int'l Ltd.
Floppy Driver	NEC Model FD247HF
Hard Disk Driver	Quantum, Model 1700AT
Disk Ctrl Card	Onboard
Serial/Parallel Card	Onboard
Power Cord	Unshielded, Detachable, 1.8m
VGA Card	Model Number : DSV3365 Serial Number : E601604161 Manufacturer : Dataexpert Co., Ltd. FCC ID : LUT-DSV3365

1.2.2. MONITOR

Model Number	KS-M1421
Serial Number	120954
Manufacturer	KASI Electronics Co., Ltd.
Data Cable	Shielded, Detachable, 1.2m
Power Cord	Unshielded, Nondetachable, 1.2m
FCC ID	KVCKS-M1421

1.2.3. MOUSE

Model Number	M-S34
Serial Number	LZA81403356
Manufacturer	LOGITECH
Data Cable	Unshielded, Detachable, 2.5m
FCC ID	DZL210365

1.2.4. PRINTER

Model Number	2225C+
Serial Number	2937S56660
FCC ID	DSI6XU2225
Manufacturer	Hewlett Packard
Power Adapter	Hewlett Packard, Model 82241A
Data Cable	Shielded, Detachable, 1.5m

1.2.5. MODEM #1

Model Number	MODEM 1414
Serial Number	980013573
FCC ID	IFAXDM1414
Manufacturer	Aceex
Data Cable	Unshielded, Detachable, 1.5m
AC Adapter	M/N: SCP41-91000A

1.2.6. MODEM #2

Model Number	MODEM 1414
Serial Number	980013577
FCC ID	IFAXDM1414
Manufacturer	Aceex
Data Cable	Unshielded, Detachable, 1.5m
AC Adapter	M/N: SCP41-91000A

1.3. Test Facility

Site Description

3m Anechoic Chamber	:	certificated by FCC, USA Aug. 18, 1997
3m & 10m Open Site	:	certificated by FCC, USA Feb. 13, 1998
EMC Lab.	:	certificated by VCCI, Japan Oct. 29, 1998
		certificated by DATech, German Feb. 02, 1999
		certificated by NVLAP, USA until Mar. 03, 2000 NVLAP Code: 200372-0
		certificated by DNV, Norway May 26, 1999
Name of Firm	:	Audix Technology (Shenzhen) Co., Ltd.
Site Location	:	No. 6, Ke Feng Rd., 52 Block, Shenzhen Science & Industrial Park, Nantou, Shenzhen, Guangdong, China

1.4. Test Uncertainty

Conducted Emission Uncertainty	=	$\pm 2.66\text{dB}$
Radiated Emission Uncertainty	=	$\pm 4.26\text{dB}$

2. POWER LINE CONDUCTED EMISSION TEST

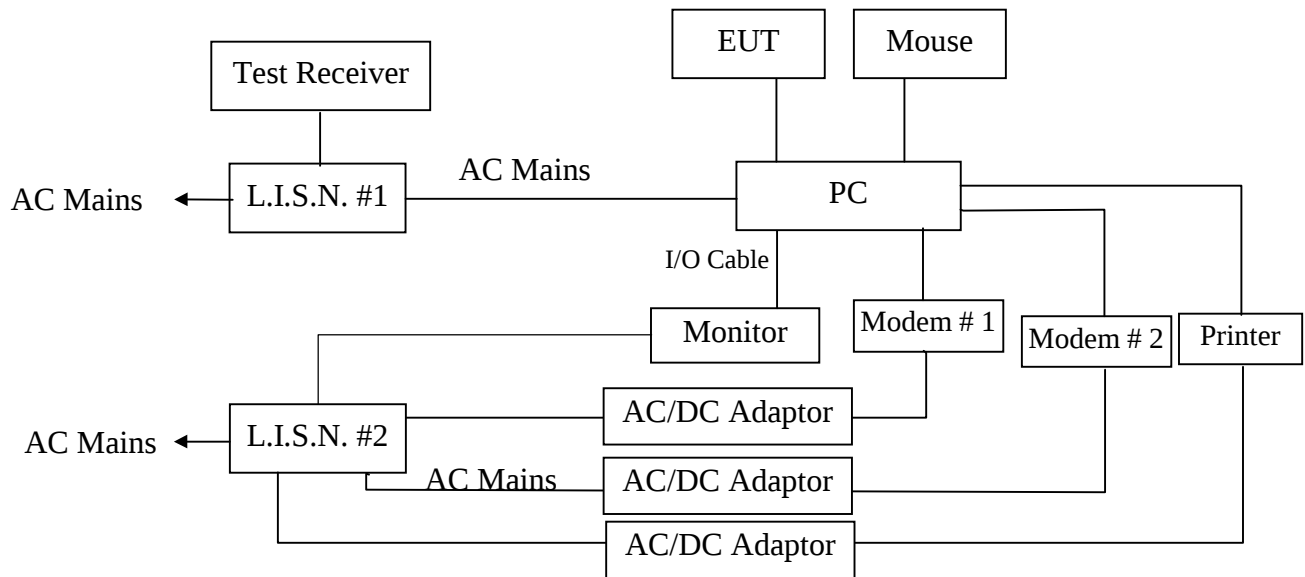
2.1. Test Equipment

The following test equipments are used during the power line conducted emission test:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS20	836600/006	Jun. 06, 99	1 Year
2.	L.I.S.N. #1	Kyoritsu	KNW-407	8-541-4	Jun. 06, 99	1 Year
3.	L.I.S.N. #2	EMCO	3825/2	9006-1660	Jun. 06, 99	1 Year
4.	Terminator	EMCO	50Ω	No. 1	Jun. 06, 99	1 Year
5.	Terminator	EMCO	50Ω	No. 2	Jun. 06, 99	1 Year
6.	RF Cable	FUJIKURA	RG-55/U	LISN Cable	Aug. 30, 99	1/2 Year
7.	Coaxial Switch	Anritsu	MP59B	M73989	Dec. 05, 99	1/2 Year

2.2. Block Diagram of Test Setup

2.2.1. Block diagram of connection between the EUT and simulators



(EUT: Keyboard)

2.3. Power Line Conducted Emission Test Limits

Frequency MHz	Maximum RF Line Voltage	
	μV	dB(μV)
0.45 ~ 30	250	48

Remarks: RF Line Voltage (dB(μV)) = 20 log RF Line Voltage (μV)

2.4. Configuration of EUT on Test

The following equipment are installed on Power Line Conducted Emission Test to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

2.4.1. Keyboard (EUT)

Model Number : SK-1689
 Serial Number : F2000011101
 Manufacturer : Yet Foundate Limited

2.4.2. Support Equipment : As Tested Supporting System Detail, in Section 1.2..

2.5. Operating Condition of EUT

2.5.1. Setup the EUT and simulator as shown as Section 2.2.

2.5.2. Turn on the power of all equipment.

2.5.3. Let the EUT work in test mode (Running) and test it.

2.6. Test Procedure

The EUT is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm coupling impedance for the EUT. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission levels. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.4-1992 on Conducted Emission Test.

The bandwidth of test receiver (R & S ESHS20) is set at 10KHz.

The frequency range from 450KHz to 30MHz is checked.

The test result are reported on Section 2.7., all the scanning waveforms for Conducted Emission Test are attached in Appendix I.

2.7. Power Line Conducted Emission Test Results

PASS.

The frequency range from 450KHz to 30MHz is investigated. As the peak value is too low against the limit, so the quasi-peak value had been omitted, and the scanning waveforms are put in Appendix I.

3. RADIATED EMISSION TEST

3.1. Test Equipment

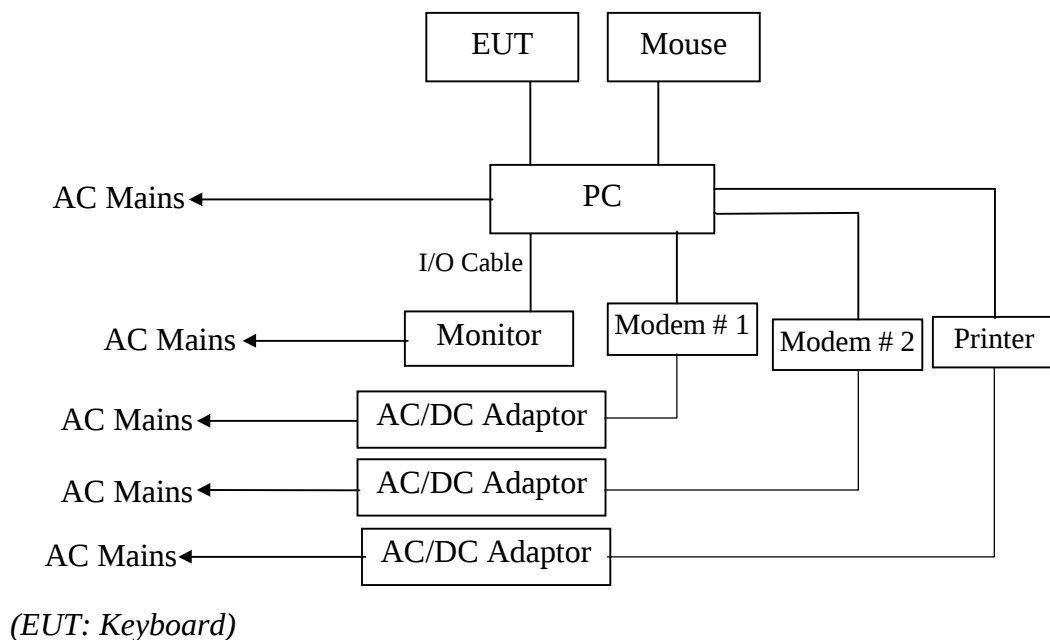
The following test equipments are used during the radiated emission test:

3.1.1. For Anechoic Chamber

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	HP	85422E	3625A00181	Jun. 06, 99	1 Year
2.	Test Receiver	Rohde & Schwarz	ESVS20	830350/005	Jun. 06, 99	1 Year
3.	Amplifier	HP	8447D	2944A07794	Dec. 05, 99	1/2 Year
4.	Bilog Antenna	Chase	CBL6112A	2176	Sep. 26, 99	1 Year
5.	Computer	N/A	N/A	N/A	N/A	N/A
6.	Printer	NEC	P3800	568101448	N/A	N/A
7.	RF Cable	MIYAZAKI	5D-2W	3# Chamber No.1	Aug. 11, 99	1/2 Year
8.	RF Cable	MIYAZAKI	5D-2W	3# Chamber No.2	Aug. 11, 99	1/2 Year
9.	RF Cable	FUJIKURA	RG-55/U	3# Chamber No.3	Aug. 11, 99	1/2 Year
10.	RF Cable	FUJIKURA	RG-55/U	3# Chamber No.4	Aug. 11, 99	1/2 Year
11.	Coaxial Switch	Anritsu	MP59B	M74389	Dec. 05, 99	1/2 Year

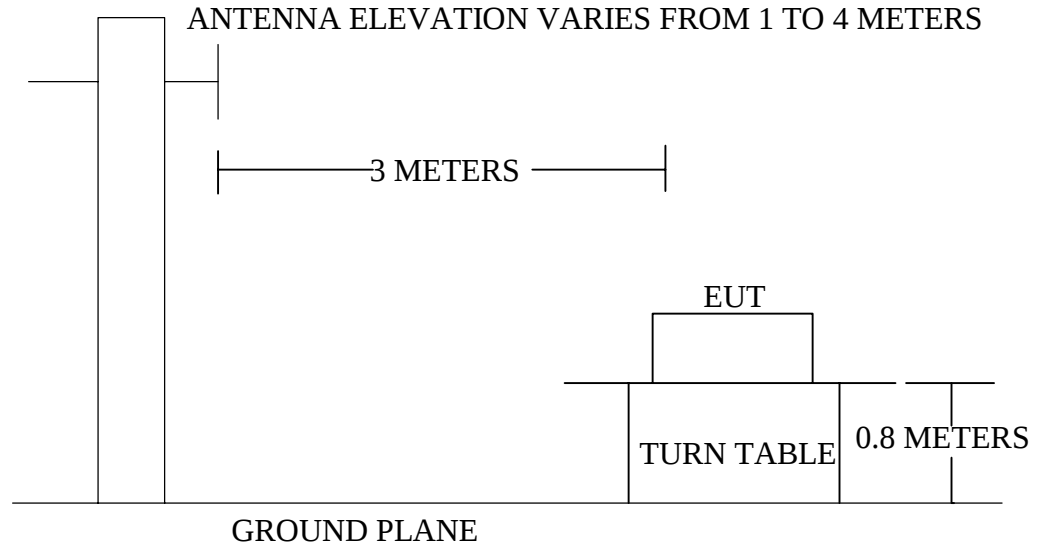
3.2. Block Diagram of Test Setup

3.2.1. Block diagram of connection between the EUT and simulators



3.2.2. In Anechoic Chamber Test Setup Diagram

ANTENNA TOWER



3.3. Radiated Emission Limit

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0

- Remark
- (1) Emission level $(\text{dB})\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$
 - (2) The smaller limit shall apply at the cross point between two frequency bands.
 - (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

3.4. EUT Configuration on Test

The following equipment are installed on Radiated Emission Test to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

3.4.1. Keyboard (EUT)

Model Number : SK-1689
 Serial Number : F2000011101
 Manufacturer : Yet Foundate Limited

3.4.2. Support Equipment : As Tested Supporting System Detail, in Section 1.2..

3.5. Operating Condition of EUT

1. Setup the EUT as shown in Section 3.2..
2. Let the EUT work in test mode (Running) and test it.

3.6. Test Procedure

The EUT and its simulators are placed on a turn table, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission levels. The EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission levels. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna are set on measurement.

The bandwidth of the EMI test receiver (R&S ESVS20) is set at 120KHz.
The frequency range from 30MHz to 1000MHz is checked.

The test mode (Running) is tested in Anechoic Chamber, and all the scanning waveforms are attached in Appendix II.

3.7. Radiated Emission Test Result

PASS.

The frequency range from 30MHz to 1000MHz is investigated. Please see the following page.

Date of Test :	Jan. 26, 2000	Temperature :	22
EUT :	Keyboard	Humidity :	50
Model No. :	SK-1689	Test Mode :	Running
Test Engineer:	Rees Zeng		

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dBμV	Emission Level Horizontal dBμV/m	Over Limits dBμV/m	Limits dBμV/m
200.721	13.66	3.76	16.78	34.20	-9.30	43.50
336.529	19.91	4.53	14.47	38.90	-7.10	46.00
674.082	24.37	5.55	9.68	39.60	-6.40	46.00
701.251	24.79	5.61	11.90	42.30	-3.70	46.00

Remark: 1. All readings are Quasi-Peak values.

2. Emission Level = Antenna Factor + Cable Loss + Meter Reading

Date of Test :	Jan. 26, 2000	Temperature :	22
EUT :	Keyboard	Humidity :	50
Model No. :	SK-1689	Test Mode :	Running
Test Engineer:	Rees Zeng		

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Vertical dBμV	Emission Level Vertical dBμV/m	Over Limits dBμV/m	Limits dBμV/m
36.790	16.84	1.25	18.21	36.30	-3.70	40.00
208.486	15.98	3.81	14.01	33.80	-9.70	43.50
468.440	22.47	5.01	11.61	39.10	-6.90	46.00
701.247	25.30	5.61	9.29	40.20	-5.80	46.00

Remark: 1. All readings are Quasi-Peak values.

2. Emission Level = Antenna Factor + Cable Loss + Meter Reading

Reviewer :

Martin Lu

