SKT

SK TECH CO., LTD.

Certificate of Compliance

Test Report No.:	**SKTOS-01058**		
NVLAP CODE :	**200220-0**		
Applicant:	**SEJIN ELECTRON INC.**		
Applicant Address:	60-19, KASAN-DONG, KEUMCHON-KU, SEOUL, KOREA		
Product:	**Receiver**		
FCC ID:	**GJJSWR-1027F1**	**Model No.:**	N/A
Receipt No.:	SKE20010205-091	**Date of receipt:**	Feb. 05, 2001
Date of Issue:	May. 02, 2001		
Testing location:	**SK TECH CO., LTD.** 820-2, Wolmoon-Ri, Wabu-Up, Namyangju-Si, Kyunggi-Do, Korea		
Test Standards:	**ANSI C63.4 / 1992**		
Rule Parts:	**FCC part 15 Subpart B**		
Equipment Class :	**Class B Digital Device Peripheral**		
Test Result:	The above mentioned product has been tested and passed.		

Prepared by: *E.K. Seong*	**Tested by**:*K.W.Song/Engineer*	**Approved by**: *J.Y.Hyun /Lab.Manager*
E. K. Seong		J. Y. Hyun
Signature *Date*	*Signature* *Date*	*Signature* *Date*

Other Aspects :	
Abbreviations :	**· OK, Pass = passed · Fail = failed · N/A = not applicable**

- **This test report is not permitted to copy partly without our permission.**
- **This test result is dependent on only equipment to be used.**
- **This test result is based on a single evaluation of one sample of the above mentioned.**
- **This test report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S Government.**
- **We certify that this test report has been based on the measurement standards that is traceable to the national or International standards.**

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NVLAP Lab. Code: 200220-0

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1. General

This equipment has been shown to be capable of compliance with the applicable technical standards and was tested in accordance with the measurement procedures as indicated in this report.

We attest to the accuracy of data. All measurements reported herein were performed by SK Tech Co., Ltd. and were made under Chief Engineer's supervision.
We assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

2. Test Site

SK TECH Co., Ltd.

2.1 Location

820-2, Wolmoon Ri, Wabu-Up, Namyangju-Si, Kyunggi-Do, Korea

The test site is in compliance with ANSI C63.4/1992 for measurement of radio interference.

2.2 List of Test and Measurement Instruments

Table 1 : List of Test and Measurement Equipment

- **Conducted Emissions**

Kind of Equipment	Type	S/N	Calibrated until
EMI Receiver	ESHS10	862970/019	04.2001
Artificial Mains Network	KNW-407	M63284	07.2001
EMI Receiver	ESHS10	385871/002	11.2001
Artificial Mains Network	ESH3-Z5	836679/018	11.2001
Conducted Cable	N/A	N/A	07.2001

- **Radiated Emissions**

Kind of Equipment	Type	S/N	Calibrated until
EMI Receiver	ESVS 10	825120/013	04.2001
Spectrum Analyzer	R3361A	11730187	07.2001
Amplifier	8447F	3113A05153	05.2001
Log Periodic Antenna	UHALP9107	91071238	04.2001
Biconical Antenna	BBA9106	N/A	04.2001
Open Site Cable	N/A	N/A	07.2001
Antenna Mast	5907	N/A	N/A
Antenna & Turntable controller	5906	91X519	N/A
Amp & Receiver connection cable	N/A	N/A	07.2001
Amp & Spectrum connection cable	N/A	N/A	07.2001
50Ω Switcher	MP59B	M93083	07.2001

2.3 Test Date

Date of Application : Feb. 05, 2001

Date of Test : Apr. 02, 2001~ Apr. 06, 2001

2.4 Test Environment

See each test item's description.

3. Description of the tested samples

The EUT is Receiver.

3.1 Rating and Physical Characteristics

- Connector : Two PS/2 port connector
- 8M WIRE

3.2 Submitted Documents

N/A

4. Measurement Conditions

The operating voltage of EUT is supplied by the PC.
(The PC Input Voltage is AC 120V, 60Hz)

4.1 Modes of Operation

The EUT was in the following operation mode during all testing;
The EUT is connected with the PC.
The EUT is received signal from the keyboard and the mouse .
Test is made on the mode of displaying “H” pattern on the monitor screen.

4.2 List of Peripherals

Description	Manufacturer	Model Name	Serial No.	FCC ID
Monitor	Samsung	SyncMaster750P	PG17HS9U/ADC	Doc
PC	H.P	Brio BA 600/650	SG03603357	Doc
Printer	H.P	2225C	3132S00310	DSI6XU2225
Mouse 1	Logitech	M-BE55	LZE02551778	Doc
Mouse 2	A4 Tech	AM-5E	951237243	H8GAM555C
Mouse 3	NitGen	MFDP02-C1	N/A	Doc
Mouse 4	Sejin Electronics	SMB-200F1	N/A	N/A
Keyboard	Sejin Electronics	SWR-1027F1	N/A	N/A
Joystick	Logitech	J-ZA10	LZS01651404	Doc
Speaker	FAN HAI DIAN	DMK660	N/A	N/A
Mic	LG Electronics	N/A	N/A	N/A

4.3 Type of Used Cables

Description	Length	Type of shield	Manufacturer	Remark
PC power cable	1.8m	Non-Shield	None	
Monitor power cable	1.8m	Non-Shield	None	
Printer power cable	1.5m	Non-Shield	None	
Mouse 1 interface cable	1.2m	Non-Shield	Logitech	
Mouse 2 interface cable	1.2m	Non-Shield	A4 Tech	
Mouse 3 interface cable	1.2m	Non-Shield	NitGen	
Printer interface cable	1.6m	Shield	H.P	
Video interface cable	1.6m	Shield	Samsung	
Speaker interface cable	1.8m	Shield	DMK660	
Joystick interface cable	2.0m	Shield	Logitech	
Mic interface cable	2.0m	Shield	LG Electronics	
Receiver interface cable	1.0m	Non-Shield	Sejin Electronics	For EUT

4.4 Test Setup

The test setup photographs showed the external supply connections and interfaces.

4.5 Uncertainty

1) Radiated disturbance

Uc (Combined standard Uncertainty) = ± 1.9dB

Expanded uncertainty U = KUc

K = 2

∴ U = ± 3.8dB

2) Conducted disturbance

Uc = ± 0.88dB

U = KUc = 2xUc = ± 1.8dB

5. EMISSION Test

5.1 Conducted Emissions

Result: **Pass**

The line-conducted facility is located inside a 2.0M x 3.6M x 7.2M shielded enclosure.
The shielding effectiveness of the shielded room is in accordance with MIL-Std-285 or NSA 604-05.
A 1m x 1.5m wooden table 80cm. high is placed 40cm. away from the vertical wall and 1.5m away from the side wall of the shielded room. ROHDE & SCHWARZ Model ESH3-Z5 (10kHz-30MHz) 50ohm/50 uH Line-Impedance Stabilization Networks(LISNs) are bonded to the shielded room.
The EUT is powered from the ROHDE & SCHWARZ LISN and the support equipment is powered from the ROHDE & SCHWARZ LISN. Power to the LISNs are filtered by a high-current high-insertion loss Lindgren enclosures power line filters (100dB 14kHz-10GHz).
The purpose of the filter is to attenuate ambient signal interference and this filter is also bonded to the shielded enclosure.
All electrical cables are shielded by braided tinned copper zipper tubing with inner diameter of 1/2".
If the EUT is a DC-powered device, power will be derived from the source power supply it normally will be powered from and this supply lines will be connected to the ROHDE & SCHWARZ LISN.
All interconnecting cables more than 1 meter were shortened by non-inductive bundling (serpentine fashion) to a 1-meter length.
Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The RF output of the LISN was connected to the spectrum analyzer to determine the frequency producing the maximum EME from the EUT.
The spectrum was scanned from 450kHz to 30MHz with 100msec. sweep time.
The frequency producing the maximum level was reexamined using EMI/field Intensity Meter (ESHS 10) and Quasi-Peak adapter. The detector function was set to CISPR quasi-peak mode.
The bandwidth of the receiver was set to 10kHz. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each EME emission.
Each emission was maximized by: switching power lines; varying the mode of operation or resolution; clock or data exchange speed; if applicable; whichever determined the worst-case emission.
Photographs of the worst-case emission can be seen in photograph of conducted test.
Each EME reported was calibrated using self-calibrating mode.

Figure 1 : Spectral Diagram, LINE - PE (16.410MHz)

RECEIVER 02 Apr 2001 16:34

CONDUCTED DISTURBANCE

EUT: SWR-1027F1
Manuf:
Op Cond:
Operator:
Test Spec:
Comment: LINE-PE
Operating Frequency : 16.410 MHz

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450kHz	30MHz	10kHz	10kHz	PK	100msec	Auto	OFF	60dB

Prescan Measurement: Detector: X PK
Meas Time: see scan settings
Peaks: 8
Acc Margin: 25 dB

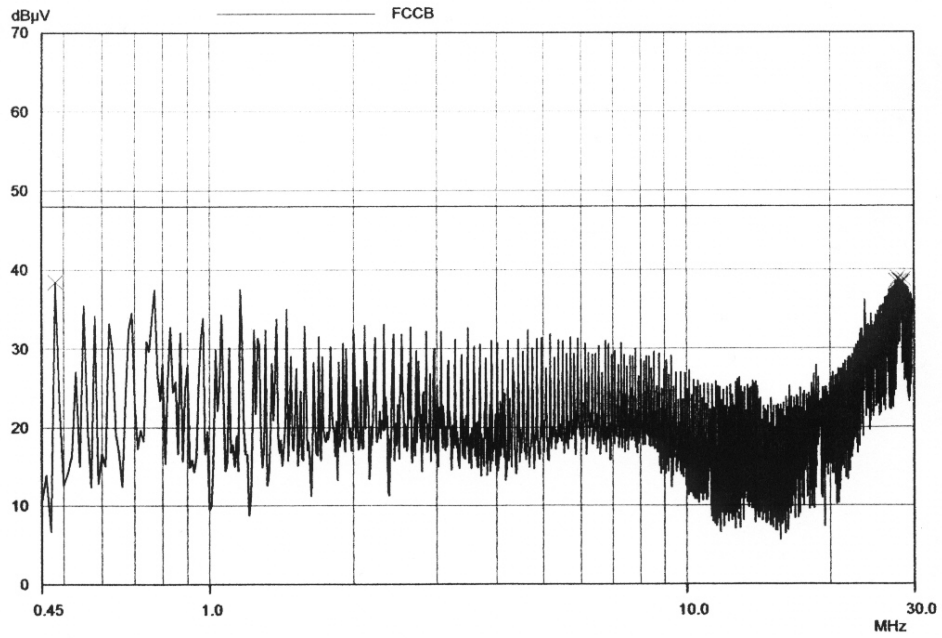

Figure 2 : Spectral Diagram, NEUTRAL – PE (16.410 MHz)

RECEIVER 02 Apr 2001 16:22

CONDUCTED DISTURBANCE

EUT: SWR-1027F1
Manuf:
Op Cond:
Operator:
Test Spec:
Comment: NEUTRAL-PE
Operating Frequency : 16.410 MHz

Scan Settings (1 Range)

Frequencies			Receiver Settings					
Start	Stop	Step	IF BW	Detector	M-Time	Atten	Preamp	OpRge
450kHz	30MHz	10kHz	10kHz	PK	100msec	Auto	OFF	60dB

Prescan Measurement: Detector: X PK
Meas Time: see scan settings
Peaks: 8
Acc Margin: 25 dB

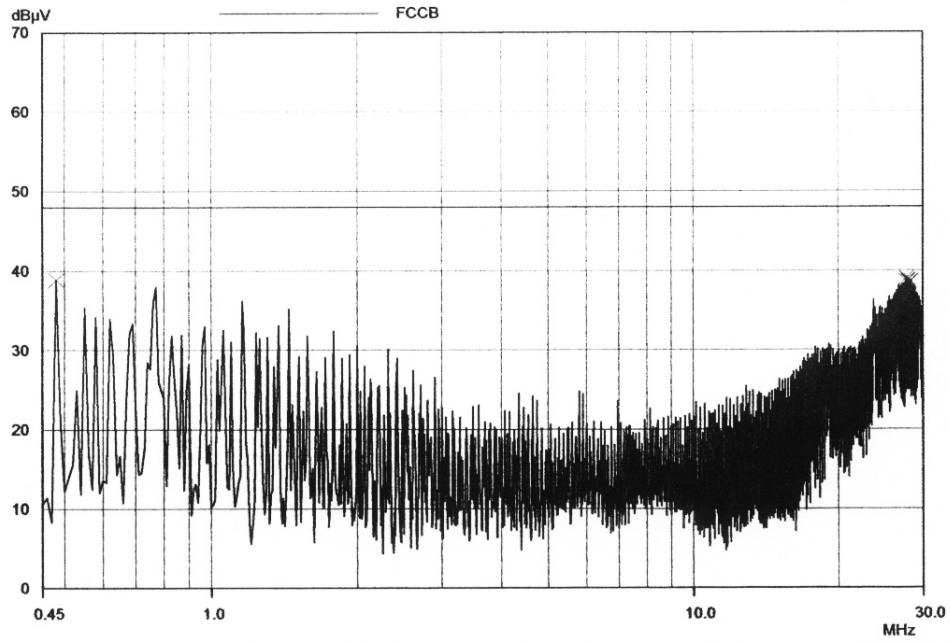

Table 2: Test Data, Conducted Emissions (16.410MHz)

Frequency (MHz)	(1)Reading (dBμV)	Line	(2)C/F (dB)	(3)C/L (dB)	(4)Actual (dBμV)	(5)Limit (dBμV)	(6)Margin (dB)
0.480	37.86	A	0.1	0.1	38.06	48.0	9.94
0.770	38.90	B	0.1	0.1	39.10	48.0	8.90
23.70	36.80	A	0.6	0.7	38.10	48.0	9.90
28.08	37.99	B	0.5	0.8	39.29	48.0	8.71

NOTES:

1. All modes of operation were investigated
   and the worst-case emission are reported.
2. All other emissions are non-significant.
3. All readings are calibrated by self-mode in receiver.
4. Measurements using CISPR quasi-peak mode.
5. Line A = LINE-PE, Line B = NEUTRAL-PE
6. C/F = Correction Factor
7. C/L = Cable Loss

♠ **Margin Calculation**

(6)Margin = (5)Limit - (4)Actual

[(4)Actual = (1)Reading + (2)C/F + (3)C/L]