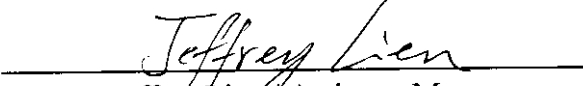


MEASUREMENT/TECHNICAL REPORT

APPLICANT: PROCOMP INFORMATICS LTD.

MODEL NO.: PM-S273

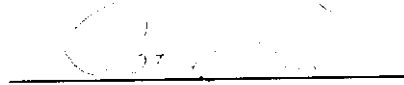
FCC ID: MAA8S273007

This report concerns (check one) :	Original Grant <input checked="" type="checkbox"/>	
	Class II Change <input type="checkbox"/>	
Equipment type:	Sound Card	
Deferred grant requested per 47CFR 0.457(d)(1)(ii)? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, defer until: _____ (date) We, the undersigned, agree to notify the Commission by (date) _____ / _____ / _____ of the intended date of announce ment of the product so that the grant can be issued on that date.		
Transiyion Rules Request per 15.37? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If no, assumed Part 15, Subpart B for unintentional radiator the new 47 CFR (10-1-90 Edition) provision.		
Report Prepared		
by Testing House :	Neutron Engineering Inc.	
for Company :		
	Name PROCOMP INFORMATICS LTD.	
	Address 5F, No. 69-10, Chung Cheng E. Rd. Sec. 2, Tamshui, Taipei Hsien Taiwan, R.O.C.	
Applicant Signature :	 Jeffrey Lien / Assistant Manager	

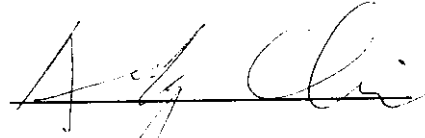
CERTIFICATION**We hereby certify that:**

The test data , data evaluation , test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (1992)/CISPR 22(1996) and the energy emitted by the sample EUT tested as described in this report is in compliance with CLASS B conducted and radiated emission limits of FCC Rules Part 15 , Subpart B/CISPR 22(1996).

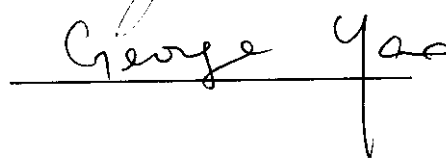
Prepared by : Cathy Wu



Reviewed by : Andy Chiu



Approved by : George Yao



Issued Date : May 11, 1998

Report No. : NEI-FCCB-98033

Company Stamp : _____

NEUTRON ENGINEERING INC.

20, Alley 50, Lane 119, Dong Hwu Rd.,

P.O. Box 6-158, Nei Hwu,

Taipei, Taiwan

TEL : (02) 2633-6872 FAX : (02) 2633-4578

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1. GENERAL INFORMATION

1-1. Product Description

The Procomp Informatics Ltd. model PM-S273 (referred to as the EUT in this report) is a 8-bit , ISA a plug and play bus interface , stereo sound card. It integrates a single chip, ALS 120, which designed for the purpose of enhancing a PC into a perfect audio subsystem for IDE CD-ROM interface incorporates the following functions:

- Subsystem control logic
- Built-in 3D Sound Effect Processor
- Digital to analog and analog to digital conversions
- Mixer functions
- Digital to analog conversion for the synthesizer
- Enhanced Game/MIDI port support
- IDE CD-ROM controller

It has a built-in microphone amplifier and jacks (MIC In and Line-In) allow user to record or digitize any kind of sound by using a normal microphone.

It also comes with a built-in stereo power amplifier that can drive speakers or headset directly.

Finally, it comes with a stanard joystick port and built-in MIDI interface.

1-2. Related Submittal(s) / Grant (s)

1-2-1. Models Covered

Models covered in this test report for FCC ID filing is: PM-S273

1-2-2. Models Difference

N/A

1-3. Tested System Details

The FCC IDs for all equipments, plus descriptions of all cables used in the tested system (including inserted cards, which have grants) are:

Model No.	FCC ID	Equipment	Cable
PM-S273	MAA8S273007	Sound Card	Add-On Card , Cableless
PRESARIO7222	EJH3326	PC	Shielded Power Cord
4500DC-E(80K)	GWGMULTI82	Monitor	Shielded Data Cable ⁽²⁾ Un-Shielded Power Cord
HP2225C+	DSI6XU2225	Printer, Parallel I/F	Shielded Parallel Data Cable Un-Shielded Power Cord
AT-1200CK	E2O5OV1200CK	Modem, Serial I/F	Shielded Serial Data Cable Un-Shielded Power Cord
6311	FVI6311-K	Keyboard	Shielded Data Cable
KT-V860	N/A	Walkman	Un-Shielded Audio Singal Cable
KA-309K	N/A	Microphone	
GRS-455	N/A	Speakers	
8257	N/A	Joystick	Shielded Data Cable
SERIES.2-7S	DZL6QBS2	Mouse	Shielded Data Cable

Notes:

(1) EUT submitted for grant.

(2) Monitor's attached video cable without ferrite core.

1-4. Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (1992)/CISPR 22(1996). Radiated testing was performed at an antenna to EUT distance 10 meters.

1-5. Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the address of No. 5, All 2, Lane 220, Kang Lo St., Nei Hwu, Taipei, Taiwan, R.O.C. of NEUTRON ENGINEERING INC. This site has been fully described in report dated Feb.4,1998 Submitted to your office, and accepted in a letter dated March 28, 1998 (31040/SIT-1300F2).

3. System Test Configuration

3-1. Justification

The system was configured for testing in a typical fashion (as a customer would normally use it). The Sound Card system was connected to support equipment-personal computer. Peripherals of PC such as monitor, keyboard, mouse, modem, printer were contained in this test system to be configured a minimum 2S1P application in addition to the EUT peripherals such as microphone, speakers, walkman, and joystick were contained in this system in order to comply with the ANSI C63.4/CISPR 22(1996) Rules requirement. The PC operated at 133MHz processor clock speed and in the default 640x480/31.5KHz VGA graphic mode. This operating condition was tested and used to collect the included data.

3-2. 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 COM 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.

3-3. Special Accessories

Not available for this EUT intended for grant.

3-4. Equipment Modifications

In order to achieve in compliance with Class B levels, the following change(s) were made by NEUTRON test house during the compliance testing.

Please refer to the next page as the modifications described and cross reference of photos of tested EUT.

The above modifications will be implemented in all product models of this equipment.

Applicant Signature :

Jeffrey Lien
Jeffrey Lien

Date :

March 06 '98

Type/Printed Name :

Jeffrey Lien

Position :

Assistant Manager



Modification Report

Company: PROCOMP INFORMATICS LTD.

Model No.: PM-S273

Page 1 of 1

FCC ID: MAA8S273007

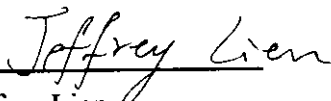
Date: MAY. 11, 1998

- A. Add Capacitors on the output of CN1.

- B. Add Capacitors on the output of PH4, PH5 and PH8.

All the above modification will be implemented and relayout in the mass production to meer the FCC Class B requirements.

PROCOMP INFORMATICS LTD.


Jeffrey Lien
Assistant Manager

9.A

3.5 Configuration of Tested System

The configuration of tested system is described as the block diagram shown in next page Figure 3.1 and details information of I/O cable and power cord connection are tabulated as Table A and B. The monitor is powered from a floor mounted receptacle (referred to as the wall outlet in the previous described) was tested.

TABLE A - Test Equipment

Item	Equipment	Mfr.	Model/Type No.	I/O Port	FCC ID	Remark
E-1	Sound Card	Procomp	PM-S273	Card Slot	MAA8S273007	EUT
E-2	PC	COMPAQ	PRESARIO7222		EJH3326	
E-3	Monitor	Optquest	4500DC-E(80K)	VGA Port	GWGMULTI82	
E-4	Printer, Parallel I/F	HP	HP2225C+	Printer Port	DSI6XU2225	
E-5	Modem, Serial I/F	Datatronics	AT-1200CK	Com Port	E2O5OV1200CK	
E-6	Keyboard	ACER	6311	PS/2 Port	FVI6311-K	
E-7	Walkman	N/A	KT-V860	LINE IN	N/A	
E-8	Microphone	N/A	KA-309K	MIC IN	N/A	
E-9	Speakers	N/A	GRS-455	SPK OUT	N/A	
E-10	Joystick	N/A	8257	Game Port	N/A	
E-11	Mouse	Logitech	SERIES.2-7S	PS/2 Port	DZL6QBS2	

Remark:

- (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 supporting equipment(s) to the tested system.

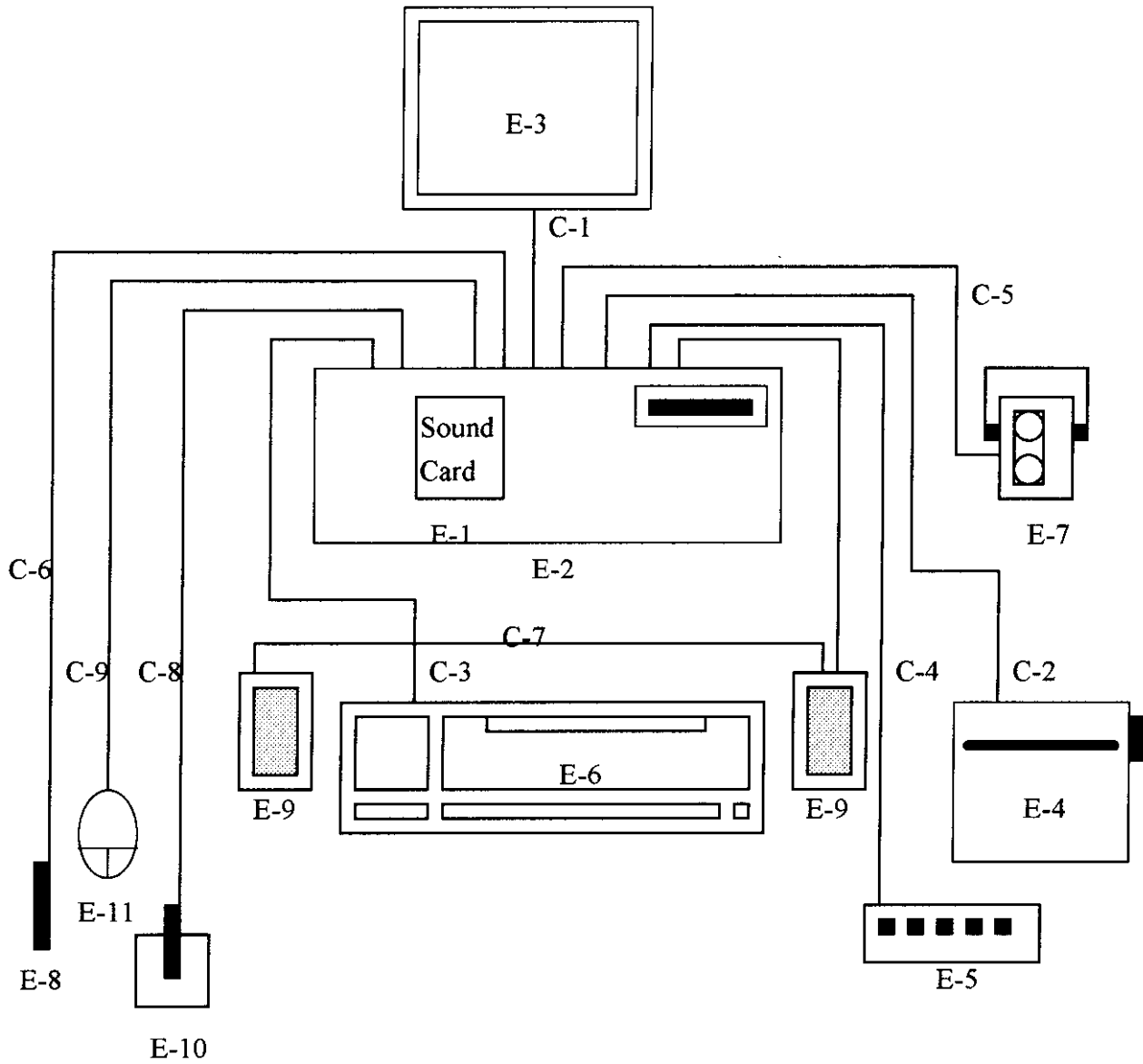
Table B. - Informations Cable Information

Item	I/O Cable	Device Connected	Shielded	Ferrite Core	Detachable/Permanently	Length	Note
C-1	Video Cable	PC-Monitor	Yes	No	Permanently attached	150cm	
C-2	Centronics Cable	PC-Printer	Yes	No	Detachable type	200cm	
C-3	Keyboard Cable	PC-Keyboard	Yes	No	Permanently attached	200cm	
C-4	RS-232 Cable	PC-Modem	Yes	No	Detachable type	120cm	
C-5	Walkman Cable	EUT-Walkman	No	No	Detachable type	180cm	
C-6	Microphone Cable	EUT-Microphone	No	No	Permanently attached	600cm	
C-7	Speaker Calbe	EUT-Speakers	No	No	Permanently attached	120cm	
C-8	Joystick Cable	EUT-Joystick	Yes	No	Permanently attached	100cm	
C-9	Mouse Cable	PC-Mouse	Yes	No	Permanently attached	280cm	

Note:

- (1) Unless otherwise marked as ※ in 「Remark」 colum, Neutron consigns the supporting equipment(s) to the tested system.

Figure 3.1 Configuration of Tested System



6. Conducted Emission Datas

6.1 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 following data page, and these signals are then quasi-peaked.

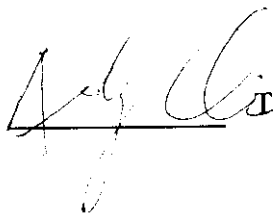
Judgement: Passed by **-8.57 dB** in mode of **Neutral** terminal **0.42 MHz**

Freq. (MHz)	Terminal L/N	Measured(dBuV)		Limits(dBuV)		Safe Margins	
		QP-Mode	AV-Mode	QP-Mode	AV-Mode	(dBuV)	Note
0.20	Line	46.38	44.90	63.65	53.65	- 8.75	(QP)
0.26	Line	38.07	39.80	61.43	51.43	-11.63	(QP)
0.30	Line	33.83	31.10	60.33	50.33	-19.23	(QP)
0.33	Line	31.84	39.20	59.48	49.48	-10.28	(QP)
0.36	Line	30.71	38.80	58.71	48.71	- 9.91	(QP)
0.20	Neutral	46.61	44.90	63.82	53.82	- 8.92	(QP)
0.26	Neutral	39.66	39.80	61.43	51.43	-11.63	(QP)
0.29	Neutral	35.77	31.10	60.41	50.41	-19.31	(QP)
0.36	Neutral	33.33	39.20	58.71	48.71	- 9.51	(QP)
0.42	Neutral	30.83	38.80	57.37	47.37	- 8.57	(QP)

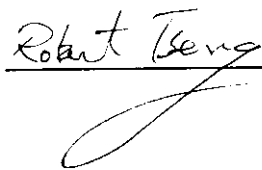
Remark :

- (1) Reading inwhich 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 inwhich 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 colum of 『Note』 . If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemd 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 colum of Interference Voltage Measured ◦
- (3) Measuring frequency range from 150KHz to 30MHz ◦

Review :



Test Personnel :



Date:

March 06, 1998

7. Radiated Emission Datas

7.1 The following data lists the significant emission frequencise, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, as well as the limit. Explanation of the Correction Factor is given in paragraph 7.2.

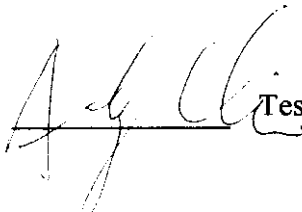
Judgement: Passed by **-4.73 dB** in polarity of **Horizontal 179.10 MHz**

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
47.90	V	11.40	11.82	23.22	30.00	- 6.78	
51.90	H	10.50	11.55	22.05	30.00	- 7.95	
147.60	H	10.00	12.76	22.76	30.00	- 7.24	
150.20	V	10.70	13.02	23.72	30.00	- 6.28	
178.90	H	5.10	18.03	23.13	30.00	- 6.87	
179.10	V	7.20	18.07	25.27	30.00	- 4.73	
203.20	V	12.10	12.30	24.40	30.00	- 5.60	
203.20	H	10.10	12.30	22.40	30.00	- 7.60	
219.20	V	13.40	11.79	25.19	30.00	- 4.81	
219.20	H	8.70	11.79	20.49	30.00	- 9.51	
257.60	V	17.30	14.16	31.46	37.00	- 5.54	
266.40	H	9.90	14.68	24.58	37.00	-12.42	

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 ◦

Review :



Test Personnel. :



Date:

Mar. 06, 1998

7-2. 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:

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

Where **FS = Field Strength**

RA = Receiver Amplitude

AF = Antenna Factor (1)

CF = Cable Attenuation Factor (1)

AG = Amplifier Gain (1) (2)

Remark :

(1) The Correction Factor = AF + CF - 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 dBuV and a Cable Factor of 1.1 dBuV. Then:

1. The Correction Factor will be calculated by

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

as shown in the data tables' Correction Factor column.

2. The Field Strength will be calculated by

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

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:

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

7-3. Correction Factor VS Frequency

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30.00	11.10	0.20
35.00	10.80	0.00
40.00	11.20	0.40
45.00	11.50	0.40
50.00	11.30	0.90
55.00	10.50	0.00
60.00	9.90	0.00
65.00	8.70	0.20
70.00	7.60	0.00
75.00	6.40	0.50
80.00	6.10	0.10
85.00	7.00	0.80
90.00	8.00	0.30
95.00	10.00	0.40
100.00	11.20	0.60
110.00	12.60	0.60
120.00	13.00	0.60
130.00	12.50	0.50
140.00	12.00	0.20
150.00	12.00	1.00
160.00	13.20	1.20
170.00	14.80	1.60
180.00	16.30	1.90
190.00	17.00	1.90
200.00	17.30	1.40
225.00	10.50	1.10
250.00	11.70	2.00
275.00	12.80	2.40
300.00	14.50	2.40
325.00	14.00	1.90
350.00	14.20	2.40
375.00	14.60	2.90
400.00	15.10	2.70
450.00	16.20	3.20
500.00	17.60	3.70
550.00	17.80	3.90
600.00	18.40	4.30
650.00	19.50	4.00
700.00	20.80	4.10
750.00	20.50	5.30
800.00	21.10	5.90
850.00	22.40	5.80
900.00	23.50	5.50
950.00	24.00	6.30
1000.00	24.80	5.20

8. Photos of Tested EUT:

1. Photo # 1. Front View
2. Photo # 2. Side View
3. Photo # 3. Rear View