# MEASUREMENT/TECHNICAL REPORT

**APPLICANT:** GVC Media Technology Inc.

**MODEL NO.:** SW3Ø4

**FCC ID:** M4CSØØ38

This report concerns ( check one ) : **Original Grant** _____
**Class II Change** ✓

**Equipment type:** Sound Card

Deferred grant requested per 47CFR 0.457(d)(1)(ii)?
Yes _____ No ✓ 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 _____ No ✓
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** GVC Media Technology Inc.

**Address** 6F, No. 11, Park Ave. 2, Science-Based Industrial Park, Hsin-Chu, Taiwan, R.O.C.

**Applicant Signature** : Steven Shen
**Steven Shen / Supervisor**

# Table of Contents

# 1. GENERAL INFORMATION

## 1-1. Product Description

The GVC Media Technology Inc. Model: SW3Ø4 (referred to as the EUT in this report)is an ISA slot Base, 16-bit, stereo sound music card. It integrates a lot of circuitry which designed for the purpose of enhancing a PC into a perfect sound/music workstation.

It has a built-in microphone amplifier and two jacks(microphone and Line-In jack) 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 standard joystick port and built-in MIDI interface.

Detail product features please refer to the user's manual attached.

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

This submittals is intended for filling a class II permissive change for the certified FCC ID : M4CSØØ38(data of grant January 30, 1998)

Modifications(difference) between the current version and the initial certified version is the Wave Table circuit block.This functional block(Wave Table circuit)has been deleted in current version.(please refer to the block diagram and/or photos of previous application)

The change(s) will be mode only in those units produced after the change is authorized.

## 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 |
|---|---|---|---|
| SW3Ø4(1) | M4CSØØ38 | Sound Card | refer to next P.11. |
| Vectra VL 5/75 Series3 | K4UVECTRAVL5 | PC | Un-Shielded Power Cord |
| NE64 | KFBNE64 | Monitor | Shielded Data Cable(2)<br>Un-Shielded Power Cord |
| HP2225C+ | DSI6XU2225 | Printer, Parallel I/F | Shielded Parallel Data Cable<br>Un-Shielded Power Cord |
| AT-1200CK | E2O5OV1200CK | Modem, Serial I/F | Shielded Serial Data Cable<br>Un-Shielded Power Cord |
| FDA-102A | F4Z4K3FDA-102A | Keyboard | Shielded Data Calbe |
| SERIES.2-7S | DZL6QBS2 | Mouse | Shielded Data Calbe |
| GRS-455 | N/A | Speakers | Un-Shielded Audio Cable |
| KT-V860 | N/A | Walkman | Un-Shielded Audio Cable |
| KA-309K | N/A | Microphone | Un-shielded Audio Cable |
| 8257 | N/A | Joystick | 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)/CISPR22(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 26, 1998 (31040/SIT-1300F2).

# 3. System Test Configuration

## 3-1. Justification

The system was configured for testing in a typical fasion (as a customer would normally use it). The Sound Card was inserted to support equipment-personal computer. Peripherals of PC, such as monitor, keyboard, modem, printer, microphone, speakers, walkman, joystick and mouse were contained in this system in order to comply with the ANSI C63.4/CISPR 22(1996) Rules requirement. The PC operated as 75 MHz 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.

The second serial port(COM2) was tested in addition to the first port(COM1) per ANSI C63.4, second paragraph. The simultaneous testing of this identical port did not take the system out of compliance. Therefore, the final qualification testing was completed with each COM1 port connected by a stand along modem simultaneously.

## 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 from mass storage device (HDD).
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 (Modem1).
5. Repeated from 2 to 4 continuously.

As the Keyboard, Microphone, Walkman, Joystick, 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

N/A

### 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 next page as the modifications described and cross refence of photos of tested EUT.

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

**Applicant Signature** : Steven Shen **Date** : March 10, 1998

**Type/Printed Name** : Steven Shen **Position** : Supervisor

# GVC Media Technology Inc.

6F,No. 11, Park Ave.2, Science-Based Industrial Park, Hsin-Chu, Taiwan R.O.C.

TEL:886-35-788833 FAX:886-35-784289


## Modification Report

Company:

Model No.: SW304 Page 1 of 1

FCC ID:F4CSØØ38 Date: March 23, 1998

---

A Add Capacitors (C=103pf) on the pin 1 、8 、9 of game port

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

Gvc Media Technology Inc.

Steven Shen

Supervisor

### 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 an 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 | GVC | SW3Ø4 | Card Slot | M4CSØØ38 | EUT |
| E-2 | PC | HP | Vectra VL 5/75 Series3 | | K4UVECTRAVL5 | |
| E-3 | Monitor | Chern-Yih | NE64 | VGA Port | KFBNE64 | |
| 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 | Forward | FDA-102A | PS/2 Port | F4Z4K3FDA-102A | |
| E-7 | Mouse | Logitech | SERIES.2-7S | PS/2 Port | DZL6QBS2 | |
| E-8 | Speakers | N/A | GRS-455 | Line OUT | N/A | |
| E-9 | Walkman | N/A | KT-V860 | Line in | N/A | |
| E-10 | Microphone | N/A | KA-309K | Line in | N/A | |
| E-11 | Joystick | N/A | 8257 | Game Port | N/A | |
| | | | | | | |

**Remark:**

(1) Unless otherwise denoted as EUT in 「Remark」 colum , device(s) used in tested system is a support equipment.

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

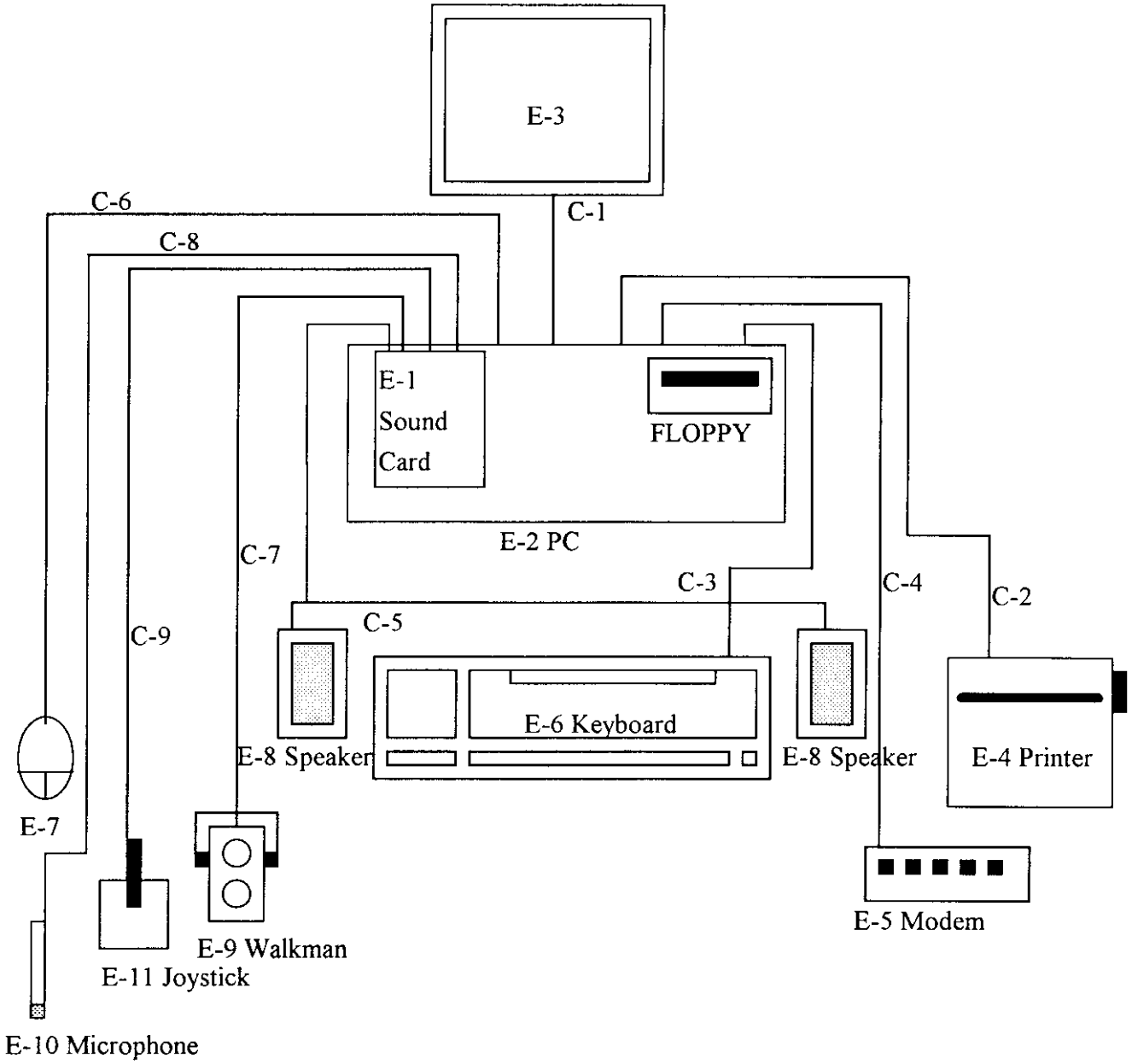
## Table B. - Informations Cable Information

| Item | I/O Cable | Device Connected | Shielded | Ferrite | Detachable / Permanently | Note |
|---|---|---|---|---|---|---|
| C-1 | Video Cable | PC-Monitor | Yes | No | Permanently attached | |
| C-2 | Centronics Cable | PC-Printer | Yes | No | Detachable type | |
| C-3 | Keyboard Cable | PC-Keyboard | Yes | No | Permanently attached | |
| C-4 | RS-232 Cable | PC-Modem | Yes | No | Detachable type | |
| C-5 | Speaker Cable | EUT-Speaker | No | No | Detachable type | |
| C-6 | Mouse Cable | PC-Mouse | Yes | No | Permanently attached | |
| C-7 | Walkman Calbe | EUT-Walkman | No | No | Detachable type | |
| C-8 | Microphone Calbe | EUT-Microphone | No | No | Permanently attached | |
| C-9 | Joystick Cable | EUT-Joystick | Yes | No | Permanently attached | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

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**



## 4. Block Diagram(s)

Figure 4.1 Block diagram of system, Page 13.A

## 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 **-8.3 dB** in mode of **Neutral** terminal **19.65 MHz**

| Freq. | Terminal | Measured(dBuV) | | Limits(dBuV) | | Safe Margins | |
|---|---|---|---|---|---|---|---|
| (MHz) | L/N | QP-Mode | AV-Mode | QP-Mode | AV-Mode | (dBuV) | Note |
| 0.22 | L | 46.40 | 44.10 | 62.82 | 52.82 | - 8.72 | (AV) |
| 0.47 | L | 37.10 | 34.80 | 56.51 | 46.51 | -11.71 | (AV) |
| 2.42 | L | 39.70 | 37.20 | 56.00 | 46.00 | - 8.80 | (AV) |
| 14.39 | L | 43.20 | * | 60.00 | 50.00 | -16.80 | (QP) |
| 14.42 | L | 41.00 | * | 60.00 | 50.00 | -19.00 | (QP) |
| 0.22 | N | 46.10 | 43.90 | 62.82 | 52.82 | - 8.92 | (AV) |
| 0.42 | N | 39.70 | 37.30 | 57.45 | 47.45 | -10.15 | (AV) |
| 2.24 | N | 39.90 | 37.50 | 56.00 | 46.00 | - 8.50 | (AV) |
| 11.98 | N | 44.00 | 41.50 | 60.00 | 50.00 | - 8.50 | (AV) |
| 19.65 | N | 43.80 | 41.70 | 60.00 | 50.00 | - 8.30 | (AV) |

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. : Robert Tseng Date: March 10. 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 **-4.02 dB** in polarity of **Vertical 67.76 MHz**

**Table 5-2 Radiated Emission Data**

| (MHz) | H/V | (dBuV) | (dB) | (dBuV/m) | (dBuV/m) | (dBuV/m) | Note |
|---|---|---|---|---|---|---|---|
| 43.30 | V | 12.80 | 11.80 | 24.60 | 30.00 | - 5.40 | |
| 48.00 | V | 12.60 | 12.08 | 24.68 | 30.00 | - 5.32 | |
| 57.90 | H | 13.70 | 10.15 | 23.85 | 30.00 | - 6.15 | |
| 67.60 | H | 16.50 | 8.22 | 24.72 | 30.00 | - 5.28 | |
| 67.76 | V | 17.80 | 8.18 | 25.98 | 30.00 | - 4.02 | |
| 129.30 | H | 10.20 | 13.05 | 23.25 | 30.00 | - 6.75 | |
| 202.40 | V | 11.50 | 12.32 | 23.82 | 30.00 | - 6.18 | |
| 202.40 | H | 10.30 | 12.32 | 22.62 | 30.00 | - 7.38 | |
| 220.00 | V | 11.40 | 11.76 | 23.16 | 30.00 | - 6.84 | |
| 220.00 | H | 11.70 | 11.76 | 23.46 | 30.00 | - 6.54 | |
| 228.80 | V | 12.00 | 11.92 | 23.92 | 30.00 | - 6.08 | |
| 228.80 | H | 11.80 | 11.92 | 23.72 | 30.00 | - 6.28 | |

Remark :

(1) Reading inwhich 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: Andy Chi Test Personnel. : Robert Tseng Date: March 10. 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 + CL - AG**

**Where** **FS = Field Strength**

**RA = Receiver Amplitude**

**AF = Antenna Factor (1)**

**CL = Cable Attenuation Factor (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 caculated by

   **Correction Factor = AF + CF - AG = 7.2 + 1.1 - 0 = 8.3 (dB)**

   as shown in the data tables' Correction Factor column.

2. The Field Strength will be calculated by

   **FS = RA + Correction Factor = 23.7 + 8.3 = 32 (dBμV/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:

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

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