EXHIBIT B

Test Report

Report No.	T5415369
Specifications Test Method	FCC Part 15.109(g), CISPR 22, Class B ANSI C63.4 1992
Applicant address	DP34, NEWLY DEVELOPED PLOTS, SOUTH PHASE INDUSTRIAL ESTATE, GUINDY, CHENNAI, TAMILNADU, INDIA 600 032
Applicant Items tested Model No.	TVS ELECTRONICS LTD. Printer MSP-345 Classic (Sample # T54369)
Results Date	**Compliance** (As detailed within this report) 09/27/2000 (month / day / year) (Sample received) 10/09/2000 (month / day / year) (Test)
Prepared by	Project Engineer
Authorized by	General Manager (Frank Tsai)
Issue date	*October 16, 2000* (month / day / year)
Modifications	**Appendix C**
Tested by	Training Research Co., Ltd.
Office at	2, Lane 194, Huan-Ho Street, Hsichih, Taipei Hsien 221, Taiwan
Open site at	No. 5-3, Lane 21, Yen Chiu Yuan Rd., Sec. 4, Taipei, Taiwan

Conditions of issue :

(1) ***This test report shall not be reproduced except in full, without written approval of TRC. And the test result contained within this report only relate to the sample submitted for testing.***

(2) ***This report must not be used by the client to claim product endorsement by NVLAP or any agency of U.S. Government.***

★***NVLAP LAB CODE: 200174-0***

★***FCC ID : OSCMSP-345***

Contents

Chapter 1 Introduction

Description of EUT:

This device is printing data equipment. It is designed to connect with a personal computer via parallel port of PC.

Connections of EUT:

(1) The power port of EUT is connected with AC power source.
(2) The parallel port of EUT is connected with the parallel port of PC.

Test method:

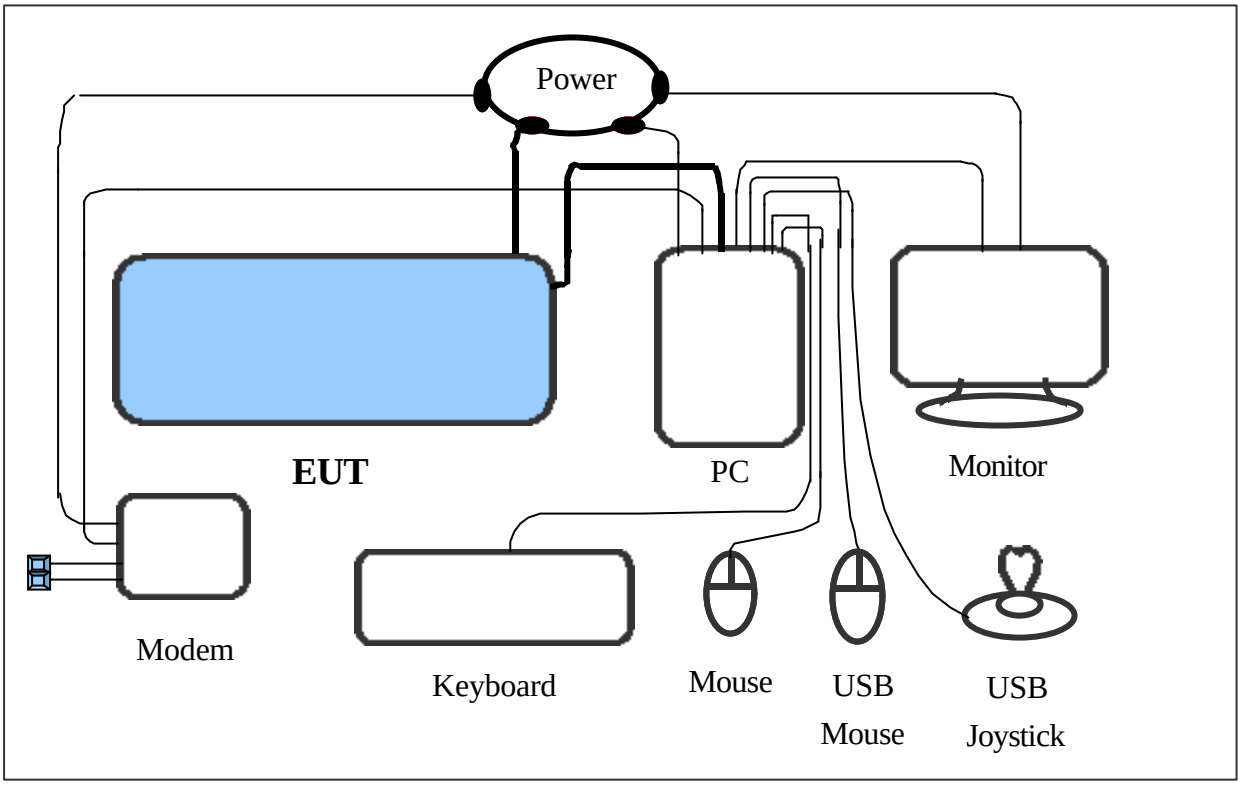
Pretest was found that the emission of operating mode is worse than standby mode. So, The final test is made at the operating mode.

During testing, the EUT was operated at "continuously printing" mode.

The test placement as the photographs showed is the worst case emission placed. (If the emission is close to the ambient, the resolution BW and view resolution will be reduced and the data will be recorded by detection of maximum hold peak mode.)

The testing configuration of test setup is showing in the next page.

Configuration of test setup



Connections:

PC:

*Serial port --- via a 76cm shielded RS-232 cable to an external modem
*Printer port --- **EUT**
*Keyboard port --- a keyboard with 1.7m length data cable
*Mouse port --- a mouse with 1.88m length data cable
*Monitor port --- a monitor with 1.45m long of data cable
*USB port A --- a joystick with 1.5m long, shielded and no ferrite bead data cable
*USB port B --- a mouse with 1.5m long, shielded and no ferrite bead data cable
(Each port on PC is connected with suitable device)

EUT:

*Power Port --- via a 1.75m long, non-shielded, no ferrite bead, power cable
to the AC power source
*Parallel Port --- via a 1.45m long, shielded, no ferrite bead, data cable
to the parallel port of person computer

List of support equipment

Conducted (Radiated) test:

PC	**:**	**HP Brio 85xx 6/350**
Model No.	:	D6928A
Serial No.	:	SG91801535
FCC ID	:	N/A, Doc Approved
檢磁	:	3872H013
Power type	:	100 ~ 230VAC / 50 ~ 60Hz, 5A, Switching
Power cord	:	Non-shielded, 2.30m long, Plastic, No ferrite core
Monitor	**:**	**HP 15' Color Monitor**
Model No.	:	D2827A
Serial No.	:	KR91161719 (KR91161717)
FCC ID	:	C5F7NFCMC1518X
檢磁	:	3872B039
Power type	:	110 ~ 240 VAC / 50 ~ 60 Hz, Switching
Power cord	:	Shielded, 1.83m long, No ferrite core
Data cable	:	Shielded, 1.46m long, with two ferrite cores
Keyboard	**:**	**HP**
Model No.	:	SK-2501K
Serial No.	:	MR80700789 (M990308909)
FCC ID	:	GYUR38SK
檢磁	:	3862A621
Power type	:	By PC
Data cable	:	Shielded, 1.73m long, with ferrite core
Mouse	**:**	**HP**
Model No.	:	M-S34
Serial No.	:	LZB90714106 (LZB90714122)
FCC ID	:	DZL211029
檢磁	:	4862A011
Power type	:	By PC
Power cord	:	Non-shielded, 1.88m long, No ferrite core

Modem	**:**	**ACEEX**
Model No.	:	XDM-9624
FCC ID	:	IFAXDM-9624
Power type	:	220VAC, 50Hz / 9VAC, 1A
Power cord	:	Non-shielded, 1.9m long, No ferrite cord
Data cable	:	RS232, Shielded, 1.2m long, No ferrite core
		RJ11C x 2, 7’ long non-shielded, No ferrite core

USB Mouse	**:**	**Logitech**
Model No.	:	M-BA47
Serial No.	:	LZE92250027
FCC ID	:	N/A, Doc Approved
檢磁	:	4872A220
Power type	:	Powered by PC
Power Cable	:	Shielded, 1.5m long, Plastic hoods, No ferrite bead

USB Joystick	**:**	**Padix**
Model No.	:	QF-305U
Serial No.	:	8100848
FCC ID	:	N/A, Doc Approval
Power type	:	Powered by PC
Power Cable	:	Shielded, 1.5m long, No ferrite bead data cable

Chapter 2 Conducted Emission Test

Test condition and setup:

All the equipment is placed and setup according to the CISPR 22.
The EUT is assembled on a wooden table, which is 80 cm high, is placed 40 cm from the back-wall which is a vertical conducting plane. One LISN is for EUT, the other LISN is for support equipment. They are all placed on the conductive ground. The EUT's LISN connect a line switch box for selecting L1 or L2, then connect to a preamplifier and spectrum.

The spectrum scans from 150KHz to 30MHz. Conducted emission levels are detected at max. peak mode . But if the max. peak mode failed or over average limit, it will be measured by average detection mode.

While testing, there is the worst-emission plot printed at peak detection mode, and there are more than 6 highest emissions relative to limit recorded. The plot is kept as the original data, not included in test report.

List of test Instrument :

				Calibration Date	
Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
Spectrum analyzer	8591EM	H P	3710A01203	01/29/00	01/29/01
Pre-selector (<30MHz)	AMP-01	TRC	REP-001	08/09/00	08/09/01
LISN (EUT)	TRC LISN01	TRC	LISN-01	08/21/00	08/21/01
LISN (Support E.)	LISN01	TRC	9912-01, 02	12/02/99	12/02/00

The level of confidence of 95% , the uncertainty of measurement of conducted emission is ± 2.4 dB .

Test Result : Pass (Appendix A)

Conducted Test Placement : (Photographs)

Chapter 3 Radiated Emission Test

Test condition and setup :

Pretest: Prior to the final test (OATS test), the EUT is placed in a shielded enclosure, and scan from 30MHz to 1GHz. This is done to ensure the radiation is exactly emitted from the EUT.

Final test : Final radiation measurements is made on a **10 – meter,** open-field test site. The EUT is placed on a nonconductive table, which is 0.8m height, the top surface is 1.0 x 1.5 meter. All placement is according to CISPR 22.

The spectrum is examined from 30 MHz to 1000 MHz measured by HP spectrum.

The whole range Antenna is used to measure frequency from 30 MHz to 1GHz.The final test is used the spectrum analyzer.

Measure more than six top marked frequencies generated form pretest by computer step by step at each frequency. The EUT is rotated 360 degrees, and antenna is raised and lowered from 1 to 4 meters to find the maximum emission levels. The antenna is used with both horizontal and vertical polarization.

Appropriated preamplifier which is made by TRC is used for improving sensitivity and precautions is taken to avoid overloading .The spectrum analyzer's 6dB bandwidth is set to 120 K Hz , and the EUT is measured at quasi-peak mode.

If the emission is close to the frequency band of ambient, the tester will recheck the data and the corrected data will be written in the test data sheet. If the emission is just within the ambient, the data from shielded room will be taken as the final data.

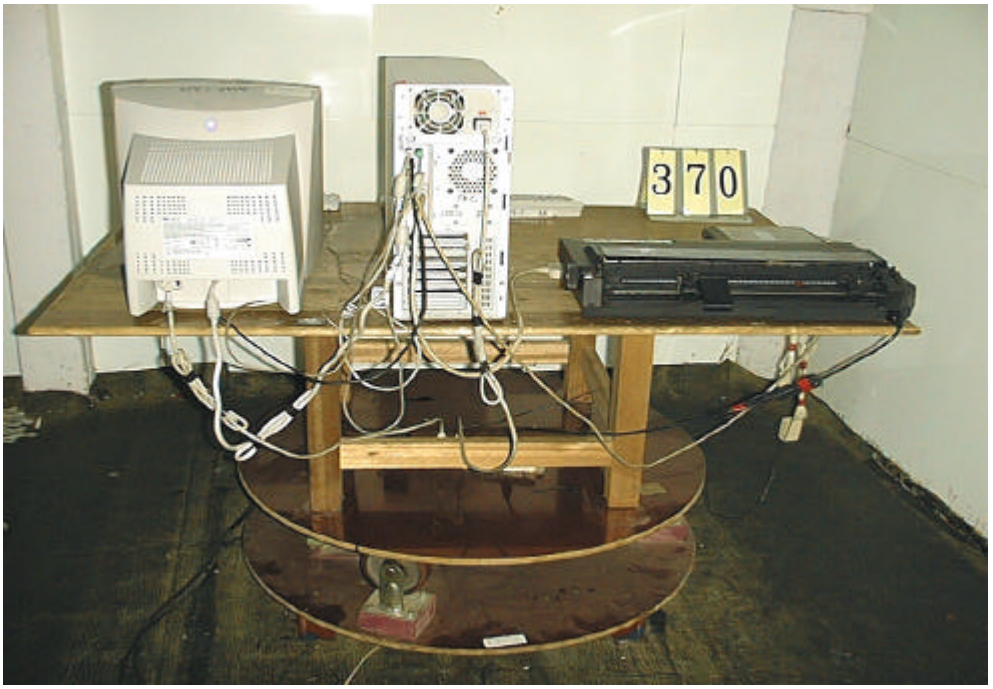
List of test Instrument:

				Calibration Date	
Instrument Name	Model No.	Brand	Serial No.	Last time	Next time
Spectrum analyzer	8591EM	H P	3619A01203	01/29/00	01/29/01
Pre-selector (>30MHz)	AMP-01	TRC	REP-001	10/02/00	10/02/01
Spectrum analyzer	8568B	H P	3004A18617	05/28/00	05/28/01
Quasi-peak Adapter	85650A	H P	2521A00984	05/31/00	05/31/01
RF Pre-selector	85685A	H P	2947A01011	06/01/00	06/01/01
RF Pre-selector	AMP-01	TRC	REP-002	10/02/00	10/02/01
Antenna (30M-1.5GHz)	VULB 9160	M.E .	3064	06/03/00	06/03/01
Antenna (30M-2GHz)	3142	EMCO	9610-1094	10/02/00	10/02/01
Open test side (Antenna, Amplify, cable calibrated together)				05/20/00	05/20/01

The level of confidence of 95% , the uncertainty of measurement of radiated emission is ± 4.96 dB .

Test Result : Pass (Appendix B)

Radiated Test Placement : (Photographs)



Appendix A

Conducted Emission Test Result:

Testing room : Temperature : 27 ° C Humidity : 59 % RH

Line 1

Frequency (KHz)	*READING AMPLITUDE*			*LIMIT*		*Margin (dB)*
	Peak (dBmV/m)	*Quasi-Peak (dBmV/m)*	*Average (dBmV/m)*	*Quasi-Peak (dBmV/m)*	*Average (dBmV/m)*	
1987.00	40.45	***.**	***.**	56.00	46.00	-5.55
3490.00	36.03	***.**	***.**	56.00	46.00	-9.97
3560.00	35.74	***.**	***.**	56.00	46.00	-10.26
4030.00	42.61	***.**	***.**	56.00	46.00	-3.39
4160.00	41.62	***.**	***.**	56.00	46.00	-4.38
4240.00	44.55	***.**	***.**	56.00	46.00	-1.45
4330.00	41.19	***.**	***.**	56.00	46.00	-4.81
4670.00	38.95	***.**	***.**	56.00	46.00	-7.05
4840.00	37.98	***.**	***.**	56.00	46.00	-8.02
24120.00	41.73	***.**	***.**	60.00	50.00	-8.27

Line 2

Frequency (KHz)	*READING AMPLITUDE*			*LIMIT*		*Margin (dB)*
	Peak (dBmV/m)	*Quasi-Peak (dBmV/m)*	*Average (dBmV/m)*	*Quasi-Peak (dBmV/m)*	*Average (dBmV/m)*	
151.00	51.70	***.**	***.**	65.97	55.97	-4.27
155.00	48.40	***.**	***.**	65.86	55.86	-7.46
3630.00	38.65	***.**	***.**	56.00	46.00	-7.35
4000.00	40.31	***.**	***.**	56.00	46.00	-5.69
4160.00	40.75	***.**	***.**	56.00	46.00	-5.25
4300.00	43.29	***.**	***.**	56.00	46.00	-2.71
4540.00	39.52	***.**	***.**	56.00	46.00	-6.48
4670.00	39.67	***.**	***.**	56.00	46.00	-6.33
6460.00	45.48	***.**	***.**	60.00	50.00	-4.52
24120.00	42.75	***.**	***.**	60.00	50.00	-7.25

The reading amplitudes are all under limit.

Appendix B

Radiated Emission Test Result: (Horizontal)

Test Conditions:

Testing room : Temperature : 28 ° C Humidity : 69 % RH

Testing site : Temperature : 31 ° C Humidity : 80 % RH

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class B Limit	Margin
MHz	dBμV	m	degree	dB/m	dBμV/m	dBμV/m	dB
79.970	40.50	4.00	210	-16.77	23.73	30.00	-6.27
85.310	39.80	4.00	302	-15.92	23.88	30.00	-6.12
95.960	42.50	2.55	3	-14.71	27.79	30.00	-2.21
133.290	40.70	4.00	0	-12.07	28.63	30.00	-1.37
138.620	40.20	4.00	198	-11.53	28.67	30.00	-1.33
141.290	39.70	2.55	315	-11.28	28.42	30.00	-1.58
143.950	38.70	4.00	37	-11.06	27.64	30.00	-2.36
146.620	39.10	4.00	0	-10.84	28.26	30.00	-1.74
151.950	39.10	4.00	34	-10.56	28.54	30.00	-1.46
165.280	38.30	4.00	62	-11.00	27.30	30.00	-2.70
173.280	39.20	4.00	225	-11.74	27.46	30.00	-2.54
191.940	40.80	2.55	24	-13.24	27.56	30.00	-2.44
197.270	39.10	4.00	37	-13.47	25.63	30.00	-4.37

Note:

1.Margin = Amplitude - limit, *if margin is minus means under limit.*

2.Corrected Amplitude = Reading Amplitude + Correction Factors

3.Correction factor = Antenna factor + (Cable Loss - Amplitude gain)

(For example : 30MHz correction factor = 15.5 + (–15.26) = 0.24 dB/m)

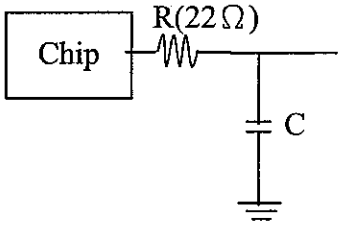
Radiated Emission Test Result: (Vertical)

Frequency	Reading Amplitude	Ant. Height	Table	Correction Factors	Corrected Amplitude	Class B Limit	Margin
MHz	dBμV	m	degree	dB/m	dBμV/m	dBμV/m	dB
31.980	42.20	1.00	257	-15.28	26.92	30.00	-3.08
55.970	37.60	1.00	290	-13.84	23.76	30.00	-6.24
61.310	37.70	1.00	217	-14.10	23.60	30.00	-6.40
63.970	41.50	1.00	61	-14.56	26.94	30.00	-3.06
69.300	38.70	1.00	251	-15.50	23.20	30.00	-6.80
71.970	40.20	1.00	83	-15.85	24.35	30.00	-5.65
79.970	43.20	2.56	78	-16.77	26.43	30.00	-3.57
85.300	39.80	1.00	227	-15.92	23.88	30.00	-6.12
87.960	42.60	1.00	145	-15.49	27.11	30.00	-2.89
95.960	42.70	1.00	128	-14.71	27.99	30.00	-2.01
173.260	32.80	4.00	181	-11.74	21.06	30.00	-8.94
191.920	39.30	2.56	45	-13.23	26.07	30.00	-3.93
197.250	37.20	1.00	167	-13.47	23.73	30.00	-6.27
205.250	38.20	1.00	190	-13.62	24.58	30.00	-5.42
336.000	35.50	1.00	28	-8.00	27.50	37.00	-9.50

Appendix C

List of Modifications:

1. The tin piece of bottom and metal piece must be directing conduction.
2. The ground plan of control panel is added metal piece to bottom cover.
3. The print port direct to outside of metal, inside of metal piece is not necessary. Add the outside of metal of circle diameter is largest, which need changed for small.
4. The long of robber cables is less than original at motor and CN5, CN7 connector which is nearly CN5, CN7 connector. Add the robber cables adding core. (Mfg.: Core Mater, Type: FP-335 x 12 x 65)
5. Replace C6, C12 with 36pF.
6. Replace capacitors of CN5 and CN7 with 0.1 μF.
7. The pin1 of IC13 connect a by-pass capacitor (0.1 μF) to GND, which is nearly IC1.
8. The pin4, pin23, pin67 of IC4 add the resistors (22 ohm) and capacitors (39pF). Those are nearly the chip set. See as below:



9. Remove tin piece of top cover.

Please refer to the photograph of EUT

Statement of Applicant:

I acknowledge that the modifications made to the EUT for compliance during testing will be incorporated into mass production units.

Mfg.: TVS ELECTRONICS LTD.

By : _____ *R.S.N. SWAMINATHAN* *Date: October 9, 2000*

Signature *Printed*