



# The Hong Kong Standards and Testing Centre Ltd.

## TEST REPORT

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Date: 1998-10-30

No.: WM1266A/504

APPLICANT: (CODE : 017107)

STD MANUFACTURING LTD.

Unit F-J, 5/F, Block 2, Kwai Tak Ind. Centre, 15-33 Kwai Tak Street, Kwai Chung, N.T., Hong Kong.

DATE OF SAMPLES RECEIVED: 1998.08.04.

DATE OF TESTING: 1998.08.26 & 1998.08.31.

### DESCRIPTION OF SAMPLE(S):

A sample of product said to be:

Product: V4 FX Racing Wheel  
Manufacturer: STD Manufacturing Ltd.  
Model Number: SV-283  
Brand Name: STD  
Origin: China

The AC/DC adapter used for the tests was supplied by the applicant, the details of adapter as follows :  
Malaysia AC - DC adapter, model no.: MULD57201500, input : 120V a.c., 60Hz, 38W, output : 20V d.c., 1500mA

### INVESTIGATIONS REQUESTED:

Measurement to the relevant clauses of F.C.C. Rules and Regulations Part B - Unintentional Radiators. The results obtained are to compare with the class B digital device limit.

REMARKS: This product was tested as a system using the Ancillary Equipment listed & Photographs

in Appendix B. (WM1266/504)

The test report supersedes our previous test report No. WM1266/504 (Page 1 to 7) issued on 1998-08-31 which is hereby deemed null and void.

RESULTS: Please see attached sheet(s).

### CONCLUSION:

From the measurement data obtained, the tested sample was considered to have COMPLIED with the requirement for the relevant clauses of Federal Communications Commission Rules for Class B digital device.

TEST EQUIPMENT AUDIT: Please see Appendix A. (WM1266/504)

Testing Engineer

Verify by

Patrick Wong  
for Managing Director

#### Conditions in issuance of Test Report

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### TEST SUMMARY

(A) Measurement of Radiated Emission

Result -- Satisfactory  
Data -- See the attached data

(B) Measurement of Line-Conducted Voltage Test

Result -- Satisfactory  
Data -- See the attached data



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Date: 1998-10-30  
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### (A) Measurement of Radiated Interference

TEST REFERENCE: FCC Rules Part 15 Subpart B Section 15.109(a)  
(Class B)

TEST CONDITION: Worst case Monitor Power supplied by computer & separately

TEST DATE : 1998.08.31.

Emission Frequency MHz	Meter Reading dB( $\mu$ V)	Polarization (including antenna factor)	Field Strength (at 3m) $\mu$ V/m	FCC Limit $\mu$ V/m
85.006	20.0	H	10.0	100
197.072	19.4	V	9.3	150
*214.779	37.1	H	71.6	150
253.600	14.9	V	5.6	200
272.217	18.8	H	8.7	200
310.020	26.6	H	21.4	200
400.900	27.8	H	24.5	200
633.300	34.3	V	51.9	200

- End -

### SUMMARY

All data is within limits

Broad-band Antennas were used and both polarizations of emissions were measured.  
polarizations at highest reading indicated as:

H -- Horizontal V -- Vertical

Quasi-peak measurements were performed if the maximised measurements  
were less than 6dB below the quasi-peak limit line.

Quasi-peak measurements are denoted by \* in the table above



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### NOTES FOR THE RADIATION MEASUREMENT

#### (1) Test site facility:

Open field test site located at Taipo (Hong Kong) with a metal ground plane in compliance with the requirements of ANSI C63.4:1992.

#### (2) Test Equipment

HP 8572A EMI receiver was set to CISPR quasi-peak mode and the bandwidth of the receiver was set to 100KHz or 1MHz depending on the type of signal. A biconical log-periodic antenna was used for frequency range from 30MHz to 1000MHz.

#### (3) Test Set-Up:

The EUT and support equipment are placed in accordance with ANSI C63.4.

#### (4) Measuring Procedure:

An initial pre-scan measurement was performed in a semi-anechoic chamber using a 25dB gain pre-amplifier. The receive antenna in the chamber was 1.5m above the groundplane and 3m from the sample. The sample was placed 0.8m above the groundplane. Measurements in both horizontal and vertical polarities were performed. All emissions recorded during the prescan were subsequently remeasured on the open field test site (described in 1 above) using the following procedure: The ambient noise scanning was made before powering on the EUT and support equipment to identify the emissions from the environment. During the test, each emission was maximized by: having the V4 FX RACING WHEEL continuously working by running a special test program (PCB.exe) supplied by the customer, arranging and manipulating interconnecting cables, rotating turntable and varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The frequency range tested is from 30MHz to 1000MHz and the worst-case emissions are shown in Test Results.

#### (5) Measuring Uncertainty:

The calculated uncertainty for measurement performed at 3M test distance are:-  
30MHz to 200MHz =  $\pm 3.7$ dB, 200MHz to 1000MHz =  $+ 3.0$ dB/-2.7dB.

Remark : Purpose of this test is to provide the Applicant with the necessary test data of their device for the submission to FCC with application for Equipment Authorization under FCC's Equipment Authorization Program. This test itself is not an Approval Test.



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### (B) Measurement of Line-Conducted Voltage onto AC Power Line

TEST REFERENCE : FCC Rules Part 15 Subpart B Section 15.107(a)  
(Class B)

TEST CONDITION : Worst case Monitor Power supplied by computer & separately

TEST DATE : 1998.08.26.

#### (1) Between "Live" and "Ground"

Frequency Range of Emission		Maximum Measured Radio Noise		FCC Limit (Class B)
	MHz	dB(µV)	µV	µV
0.45	-	0.8	0.00	1.00
0.8	-	1.6	0.00	1.00
1.6	-	3.0	22.66	13.58
3.0	-	5.0	38.70	86.10
5.0	-	7.0	30.68	34.20
7.0	-	9.0	31.82	38.99
9.0	-	11.0	29.13	28.61
11.0	-	13.0	28.13	25.50
13.0	-	15.0	26.67	21.55
15.0	-	17.0	19.15	9.07
17.0	-	19.0	0.00	1.00
19.0	-	21.0	42.51	133.51
21.0	-	23.0	0.00	1.00
23.0	-	25.0	0.00	1.00
25.0	-	27.0	29.06	28.38
27.0	-	30.0	28.32	26.05

- End -

#### SUMMARY

All data is within limits



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### (B) Measurement of Line-Conducted Voltage onto AC Power Line

TEST REFERENCE : FCC Rules Part 15 Subpart B Section 15.107(a)  
(Class B)

TEST CONDITION : Worst case Monitor Power supplied by computer & separately

TEST DATE : 1998.08.26.

#### (1) Between "Neutral" and "Ground"

Frequency Range of Emission		Maximum Measured Radio Noise		FCC Limit (Class B)
	MHz	dB(µV)	µV	µV
0.45	-	0.8	0.00	1.00
0.8	-	1.6	0.00	1.00
1.6	-	3.0	24.49	16.77
3.0	-	5.0	40.27	103.16
5.0	-	7.0	31.96	39.63
7.0	-	9.0	33.19	45.66
9.0	-	11.0	30.48	33.42
11.0	-	13.0	29.64	30.34
13.0	-	15.0	29.25	29.01
15.0	-	17.0	22.69	13.63
17.0	-	19.0	0.00	1.00
19.0	-	21.0	43.91	156.86
21.0	-	23.0	0.00	1.00
23.0	-	25.0	0.00	1.00
25.0	-	27.0	22.93	14.01
27.0	-	30.0	18.30	8.22

- End -

----- SUMMARY -----  
All data is within limits



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### NOTES FOR THE CONDUCTED POWER-LINE MEASUREMENT

- (1) LISN (Line Impedance Stabilization Network) used :  
50  $\mu$ H LISN in accordance with Section of ANSI C63.4:1992.
- (2) Measurement Instrumentations:  
CISPR quasi-peak type radio noise meter (9 KHz - 30 MHz), 6 dB bandwidth set at 9 KHz for measurement between 150KHz & 30MHz.
- (3) Frequency range scanned :  
The frequency range form 450 KHz to 30 MHz had been searched. Reading of the highest emissions relating to the limit were reported as above.
- (4) Configuration of EUT  
Connection of equipment and operation conditions were same as those in the Radiation measurement.
- (5) Measurement procedure :  
In accordance with the relevant sections of ANSI C63.4:1992 "FCC Methods of measurement of Radio Noise Emissions from Computing Devices".
- (6) Measuring Uncertainty:  
The calculated uncertainty for conducted power-line measurement is =  $\pm 2.3$ dB.

#### Remark :

Purpose of this test is to provide the Applicant with the necessary test data of their device for the submission to FCC with application for Equipment Authorization under the FCC's Equipment Authorization Program. This test itself is not an Approval Test.

\*\* End of document \*\*



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## APPENDIX A

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### TEST EQUIPMENT AUDIT

#### Pre-scan

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM131	PORTABLE SPECTRUM ANALYSER	HEWLETT PACKARD	8595EM	3710A00155	27/10/97
EM016	ANTENNA	ARA INC.	LPB-2513/A	1047	05/08/98
EM034	PRE-AMPLIFIER	HP	8447F OPT 1664	2944A04240	25/06/98
EM082	ANECHOIC CHAMBER	FELJAS & MASSON	N/A	N/A	05/06/98

#### Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM007	SPECTRUM ANALYZER	HP	HP85660B	3144A21192	29/05/98
EM008	SPECTRUM ANALYZER DISPLAY	HP	HP85662A	3144A20514	29/05/98
EM009	QUASI PEAK ADAPTOR	HP	HP85650A	3303A01702	29/05/98
EM010	RF PRESELECTOR	HP	HP85685A	3221A01410	29/05/98
EM011	ATTENUATOR/SWITCH	HP	HP11713A	2508A10595	29/05/98
EM012	PRE-AMPLIFIER	HP	HP8449B	3008A00262	29/05/98
EM013	CONTROLLER (COMPUTER), COLOR MONITOR, KEYBOARD & MOUSE FLOPPY DRIVE	HP HP HP	HP9000 HPA1097C HP9133L	6226A60314 3151J39517 2623A02468	CM
EM017	ANTENNA	ARA INC.	LPB-2513/A	1069	31/12/97
EM072	SIGNAL GENERATOR	HP	8640B	1948A11892	30/03/98
EM083	HKSTC OPEN AREA TEST SITE	HKSTC	N/A	N/A	16/02/98

#### Line Conducted

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL
EM003	SIGNAL GENERATOR	R & S	SMS	871603/529	CM
EM117	IMPULSE LIMITER	R & S	ESH3Z2	0357.8810.52	05/02/98
EM002	LISN	EMCO	3825-2	9005-1657	20/06/98
EM120	EMI TEST RECEIVER	R & S	ESHS10	1004.0401.10	02/07/98
EM081	SMALL SCREENED ROOM	MIKO INST HK	N/A	N/A	TBD

#### ABBREVIATIONS:

CM = Corrective Maintenance

N/A = Not Applicable

TBD = To Be Determined



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### ANCILLARY EQUIPMENT

ITEM NO.	DESCRIPTION	MODEL NO.	FCC ID	REMARK
1	AST COMPUTER	AST PREMIUM II 486/33	DJKASTPII486-33	1.92m SVT SHIELDED CABLE
2	SVGA MONITOR	CM6P	GDRCM6P	RESOLUTION : 720*400 (DURING TESTING) 1.0M UNSHIELDED POWER CORD CONNECTED TO THE COMPUTER 1.8M SHIELDED CABLE CONNECTED TO THE COMPUTER
3	AST KEYBOARD	KB-101	AQ6MEMB-74004	1.8 SHIELDED COILED CABLE CONNECTED TO THE COMPUTER
4	MOUSE	PS12	FSUGMZC8	2.4M UNSHIELDED CABLE CONNECTED TO THE COMPUTER
5	SERIAL PROGRAM PAD (EUT)	SV-284	KYISV-284	2.6M SHIELDED CABLE CONNECTED TO COMPUTER KEYBOARD SOCKET 2.3M SHIELDED CABLE CONNCTED TO SOUND CARD SOCKET OF THE COMPUTER
6	PARALLEL PRINTER	DMP3000	DE2850CDMP3000	1.8M UNDHIELDED POWER CORD 2.8M SHIELDED CABLE (BUNDLED TO 1M) CONNTCTED TO THE COMPUTER
7	SERIAL PRINTER	N/A	N/A	SAME AS PARALLELD PRINTER



高標準製造廠有限公司  
STD MANUFACTURING LTD.



The Hong Kong Standards and Testing Centre Ltd  
10 Dai Wang Street  
Taipo Industrial Estate  
Taipo, NT  
HONG KONG

Attn : Mr Patrick Wong

Dear Sir,

Re : Letter of Attestation

This equipment has been tested in accordance with the requirements contained in the appropriate Commission regulations. To the best of my knowledge, these tests were performed using measurement procedures consistent with industry or Commission standards and demonstrate that the equipment complies with the appropriate standards. Each unit manufactured, imported or marketed, as defined in the Commission's regulations, will conform to the samples tested within the variations that can be expected due to quantity production and testing on a statistical basis. I further certify that the necessary measurements were made by the Hong Kong Standards and Testing Centre Ltd. 10 Dai Wang Street, Taipo Industrial Estate, Taipo, NT, Hong Kong.

Yours sincerely,

  
David Ng  
Engineering Vice President



香港標準及檢定中心

The Hong Kong Standards and Testing Centre Ltd

Date : November 20, 1998

Federal Communications Commission  
EQUIPMENT APPROVAL SERVICES  
P.O.BOX 358315  
Pittsburgh, PA 15251-5315  
U S A

Dear Sirs,

Re: Application for Equipment Authorization (CERTIFICATION)

On behalf of "STD MANUFACTURING LTD.", we have the Pleasure in submitting the application for Equipment Authorization for their following product:

DESCRIPTION : Class B digital Device - Peripheral  
V4 Fx Racing Wheel

MODEL NUMBER : SV-283

FCC ID : KYISV-283

Your kind attention and prompt processing of this application will be much appreciated.

Yours sincerely,

Patrick Wong  
EED Manager

Encls.





香港標準及檢定中心  
The Hong Kong Standards and Testing Centre Ltd

Date : November 20, 1998

FCC ID: KYISV-283

LIST OF DOCUMENTS

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- A. A bank-draft of the amount of US\$940.00 as fee for application
- B. FCC Form 151 and 731 - completed and signed
- C. Letter of Appointment submitted by the Applicant
- D. Exhibits submitted with applications:
  - 1. Technical Report (including the User's Manual)
  - 2. Expository Statement
  - 3. Photographs of the Device
  - 4. Drawing of the FCC ID label and position of where the label will be put on the device
  - 5. Report of Measurement (Report Number WM1266A/504)
  - 6. Letter of Attestation

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