

CE TEST CERTIFICATION

according to

**European Standard EN 61000-6-4:2007
EN 61000-3-2: 2000, EN 61000-3-3:1995/A1:2001
and EN 61000-6-2:2001 (IEC 61000-4-2:1995/A1:1998,
IEC 61000-4-3:1995/A1:1998, IEC 61000-4-4:1995,
IEC 61000-4-5:1995, IEC 61000-4-6:1996,
IEC 61000-4-8:1993, IEC 61000-4-11:1994)**

EQUIPMENT : 5 Digital Panel Meter

MODEL NO. : DC5S-A, DC5S-R, DC5S-T, DC5S-C

APPLICANT : **Song Yih Technology Co., Ltd.**
1F, No. 38, Lane 214, Yu-Min Road, Tu-Cheng District,
New Taipei City, Taiwan, 236

I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **EUROPEAN COUNCIL DIRECTIVE 2004/108/EC**. The equipment was *passed* the test performed according to **European Standard EN 61000-6-4:2007, EN 61000-3-2:2000, EN 61000-3-3:1995/A1:2001 and EN 61000-6-2:2001 (IEC 61000-4-2:1995/A1:1998, IEC 61000-4-3:1995/A1:1998, IEC 61000-4-4:1995, IEC 61000-4-5:1995, IEC 61000-4-6:1996, IEC 61000-4-11:1994)**.

The test was carried out on **Mar. 31, 2006** at SPORTON INTERNATIONAL INC. LAB.

Reviewed by:



Jack Deng
Engineering Manager

Approved by:



Alex Chen
Q.A Dept. Director

SPORTON INTERNATIONAL INC.

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ISSUED DATE: Dec. 20, 2012

APPENDIX A. GENERAL DESCRIPTION OF EQUIPMENT UNDER TEST

A.1. APPLICANT

Song Yih Technology Co., Ltd.

1F, No. 38, Lane 214, Yu-Min Road, Tu-Cheng District, New Taipei City, Taiwan, 236

A.2. BASIC DESCRIPTION OF EQUIPMENT UNDER TEST

Equipment : 5 Digital Panel Meter
Model No. : DC5S-A, DC5S-R, DC5S-T, DC5S-C
Trade Name : DCbox
Power Supply Type : Switching
AC Power Cord : Non-Shielded, 1.8m, 2pin

A.3. FEATURE OF EQUIPMENT UNDER TEST

Please refer to user manual

APPENDIX B. GENERAL INFORMATION OF TEST

B.1. TEST FACILITY

<EMI>

Test Site Location : No. 30-2, Lin 6, Diing-Fwu Tsuen, Lin-Kou-Hsiang,
Taipei Hsien, Taiwan, R.O.C.
TEL : 886-2-2601-1640
FAX : 886-2-2601-1695

Test Site No. : CO01-LK, OS05-LK

<EMS>

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,
Kwei-Shan Hsiag, Tao Yuan Hsien, Taiwan, R.O.C.
TEL : 886-3-327-3456
FAX : 886-3-318-0055

B.2. Test Voltage

230V/50Hz

B.3. STANDARD FOR METHODS OF MEASUREMENT

EMI Test (Conduction and Radiation) : European Standard EN 61000-6-4
Harmonics Test : European Standard EN 61000-3-2.
Voltage Fluctuations Test : European Standard EN 61000-3-3.
EMS Test : European Standard EN 61000-6-2
(ESD: IEC 61000-4-2, RS: IEC 61000-4-3, EFT: IEC 61000-4-4, Surge: IEC 61000-4-5,
CS: IEC 61000-4-6, Power Frequency Magnetic Field: IEC 61000-4-8, Dips: IEC 61000-4-11)

B.4 .TEST IN COMPLIANCE WITH

EMI Test (Conduction and Radiation) : European Standard EN 61000-6-4
Harmonics Test : European Standard EN 61000-3-2.
Voltage Fluctuations Test : European Standard EN 61000-3-3.
EMS Test : European Standard EN 55024
(ESD: IEC 61000-4-2, RS: IEC 61000-4-3, EFT: IEC 61000-4-4, Surge: IEC 61000-4-5,
CS: IEC 61000-4-6, Power Frequency Magnetic Field: IEC 61000-4-8, Dips: IEC 61000-4-11)

B.5. FREQUENCY RANGE INVESTIGATED

- a. Conducted emission test: from 150 KHz to 30 MHz
- b. Disturbance power test: from 30 MHz to 1,000 MHz
- c. Radio frequency electromagnetic field immunity test: from 80 MHz to 1,000 MHz.

B.6. TEST DISTANCE

- a. The test distance of radiated emission test from antenna to EUT is 10 M.
- b. The test distance of radio frequency electromagnetic field immunity test from antenna to EUT is 3 M.

APPENDIX C. TEST RESULT

C.1. CONDUCTED POWERLINE

Frequency (MHz)	Line or Neutral	Meter Reading		Limits		Margin	
		Q.P. (dBuV)	A.V. (dBuV)	Q.P. (dBuV)	A.V. (dBuV)	Q.P. (dB)	A.V. (dB)
0.155	L	72.45	45.12	79.00	66.00	-6.39	-20.72

C.2. RADIATED EMISSION

Frequency (MHz)	Polarity	Limits (dBuV/m)	Emission (dBuV/m)	Margin (dB)	Antenna Hight	TurnTable Degree
40.430	V	40.00	32.47	-7.53	1m	225°

C.3. HARMONICS

As specified on clause 7 of EN 61000-3-2:2000, the limits are not specified for equipment with a rated power of 75W or less.

The EUT meets the above condition, so it conforms to EN 61000-3-2.

C.4. VOLTAGE FLUCTUATIONS AND FLICKER

Urms = 228.5V Freq = 50.000 Range: 0.25 A
 Irms = 0.017A Ipk = 0.100A cf = 5.794
 P = 1.595W Pap = 3.934VA pf = 0.406

Test - Time : 1 x 10min = 10min (100 %)

LIN (Line Impedance Network) : SLIN 0.24ohm +j0.15ohm N:0.16ohm +j0.10ohm

Limits : Plt : 0.65 Pst : 1.00
 dmax : 4.00 % dc : 3.30 %
 dtLim: 3.30 % dt>Lim: 500ms

Test completed, Result: PASSED

Plt = 0.072

	Pst	P50s	P10s	P3s	P1s	P0.1s	dmax [%]	dc [%]	dt>Lim [ms]
1	0.072	0.010	0.010	0.010	0.010	0.010	0.000	0.000	0.000

C.5. ELECTROSTATIC DISCHARGE IMMUNITY TEST (ESD)

- FINAL TEST RESULT : PASS
- Pass Performance Criteria : A
- Required performance criteria: B
- Observation : Normal

C.6. Radio Frequency Electromagnetic Field Immunity Test (RS)

- FINAL TEST RESULT : **PASS**
- Pass Performance Criteria : A
- Required performance criteria : A
- Observation : Normal

C.7. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST (EFT/BURST)

- FINAL TEST RESULT : PASS
- Pass Performance Criteria : B
- Required performance criteria: B
- Observation : During testing, the EUT was interfered. After the test, the equipment continued to operate as intended without operator intervention.

C.8. SURGE IMMUNITY TEST

- FINAL TEST RESULT : PASS
- Pass Performance Criteria : A
- Required performance criteria: B
- Observation : Normal.

C.9. CONDUCTED DISTURBANCES INDUCED BY RADIO-FREQUENCY FIELD IMMUNITY TEST (CS)

- FINAL TEST RESULT : PASS
- Pass Performance Criteria : A
- Required performance criteria: A
- Observation : Normal

C.10. Power Frequency Magnetic Field immunity tests

- FINAL TEST RESULT : **PASS**
- Pass Performance Criteria : A
- Required performance criteria : A
- Observation : Normal

C.11. Voltage Dips and Voltage Interruption Immunity Tests

- FINAL TEST RESULT : PASS
- Pass performance Criteria : C for voltage interruption, A for voltage dips
- Required performance criteria: C for voltage interruption, B/C for voltage dips
- Observation : After the interruption, the power of EUT reset automatically.

APPENDIX D. TEST INSTRUMENT

D.1. EMI

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Receiver	R&S	ESCS 30	8368581024	9 kHz - 2.75 GHz	Jul. 20, 2005	Conduction (CO01-LK)
LISN	Rolf Hoine	NNB-2/16Z	98087	9 kHz - 30 MHz	Sep. 12, 2005	Conduction (CO01-LK)
LISN	Rolf Hoine	NNB-2/16Z	98009	9 kHz - 30 MHz	Sep. 21, 2005	Conduction (CO01-LK)
RF Cable-CON	Suhner Switzerland	RG223/U	CB017	9 kHz - 30 MHz	Dec. 17, 2004	Conduction (CO01-LK)
Open Area Test Site	SPORTON	OATS-10	OS05-LK	30 MHz - 1 GHz 10m, 3m	Aug. 08, 2005	Radiation (OS05-LK)
Amplifier	HP	8447D	2944A08242	0.1 MHz - 1.3 GHz	May 03, 2005	Radiation (OS05-LK)
Spectrum Analyzer	ADVANTEST	R3261C	71720606	9 kHz - 2.6 GHz	Apr. 26, 2005	Radiation (OS05-LK)
Receiver	R&S	ESCS 30	847793/003	9 kHz - 2.75 GHz	Aug. 11, 2005	Radiation (OS05-LK)
Bilog Antenna	SCHAFFNER	CBL6112B	2890	30 MHz - 2 GHz	Apr. 09, 2005	Radiation (OS05-LK)
Antenna Mast	EMCO	2075	9806-2160	1m - 4m	N/A	Radiation (OS05-LK)
Turn Table	EMCO	2080	9806-2070	0° - 360°	N/A	Radiation (OS05-LK)
RF Cable-R10m	BELDEN	RG8/U	CB013	30 MHz - 1 GHz	Jul. 25, 2005	Radiation (OS05-LK)

Calibration Interval of instruments listed above is one year.

CE TEST CERTIFICATION

D.2. EMS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
ESD Simulator	KEYTEK	MZ-15/EC	9503213	Air: 0 kV - 15 kV Contact: 0 kV - 8 kV	Jun. 14, 2005	ESD
Antenna	FRANKONIA	BTA-L	02002L	26 MHz - 1 GHz	Nov. 01, 2005	RS
Field Strength Monitoring Antennas (Probe)	AR	FP3000A	16077	0.1 MHz - 1 GHz	Aug. 26, 2005	RS
RS immunity Test system	HP	EMS test System	2062	80 MHz - 1 GHz 3V/m, 10v/m	Nov. 23, 2005	RS
Amplifier	AR	100W 1000M3	16060	80 MHz - 1 GHz	Nov. 23, 2005	RS
Power Meter	EMC Automation	438A	3513U04050	100 kHz - 4.2 GHz	Nov. 23, 2005	RS
Signal Generator	HP	8648A	3426A00771	100 kHz - 1 GHz	Nov. 23, 2005	RS
Power Sensor	HP	8481D	3318A13140	100 kHz - 1 GHz	Nov. 23, 2005	RS
Power Sensor	HP	8482A	3318A26464	100 kHz - 1 GHz	Nov. 23, 2005	RS
Attenuator	HP	8491A	53603	100 kHz - 1 GHz	Nov. 23, 2005	RS
EFT Generator	EMC -PARTNER	TRANSIENT -2000	TRA2000-376	0 kV - 4.4 kV	Jul. 04, 2005	EFT
Harmonic/Flicker Test System	EMC PARTNER	Harmonics -1000	HAR1000-41	4000VA 16A PEAK	Nov. 22, 2005	Harmonics, Flicker
SURGE Generator	EMC -PARTNER	TRANSIENT -2000	TRA2000-376	0 kV - 6 kV/2 0 kV - 500 kV/12	Jul. 04, 2005	SURGE
Conducted Immunity Test System	FRANKONIA	CIT-10/75	1999010443	100 kHz - 266 MHz	Apr. 06, 2005	CS
Conducted Immunity Test System Amplifier	A.R	75A220	16980	15 - 230 MHz FM 1 kHz 80 % 75W	Apr. 26, 2005	CS
Coupling and Decoupling Network	SCHAFFNER	CDN M016	16672	150 kHz - 230 MHz	Apr. 12, 2005	CS
Magnetic field Immunity Loop	FCC (KEYTEK)	F-1000-4-8/9/10-L-1 M	03004	30A//CONTINUOUS 100A/2Hrs 230A/30SEC	Aug. 03, 2005	Magnetic
Magnetic Generator	FCC (KEYTEK)	F-1000-4-8-G--125A	9830	30A//CONTINUOUS 100A/2Hrs 230A/30SEC	Aug. 03, 2005	Magnetic
DIP Generator	EMC -PARTNER	TRANSIENT -2000	TRA2000-376	230VA/50Hz/60Hz 0%Open/5S 0%Short/5S 40%/0.10S 70%/0.01S	Jul. 04, 2005	DIP

Calibration Interval of instruments listed above is one year.