

# CE EMC Test Certification

According to

**European Standard EN 55022:1998/A1:2000/A2:2003 Class A,  
EN 61000-3-2: 2000, EN 61000-3-3:1995/A1:2001 and  
EN 55024:1998/A1:2001/A2:2003 (IEC 61000-4-2:1995/A2:2000,  
IEC 61000-4-3:2002, IEC 61000-4-4:1995/A2:2001,  
IEC 61000-4-5:1995/A1:2000, IEC 61000-4-6:1996/A1:2000,  
IEC 61000-4-8:1993/A1:2000, IEC 61000-4-11:1994/A1:2000 )**

**EQUIPMENT : Meter**

**MODEL NO. : M1.M2.M1A.MF.MMP.MPH.MCM.  
MCM-1.MM2S.MRS.MMR.MMC.MRT.MDFG.MM8A.  
MC24.MC48.MCM726.MR48.MA48.MT24.MA24.  
MR48.MA48.MT24.MA24**

**APPLICANT : AXE Technology Corp.**  
No. 70, Lane 83, Hwa Chen Road,  
Hsing Chuang City, Taipei Hsien

## I HEREBY CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **EUROPEAN COUNCIL DIRECTIVE 89/336/EEC**. The equipment was **passed** the test performed according to **European Standard EN 55022:1998/A1:2000/A2:2003 Class A, EN 61000-3-2:2000, EN 61000-3-3:1995/A1:2001 and EN 55024:1998/A1:2001/A2:2003 (IEC 61000-4-2:1995/A2:2000, IEC 61000-4-3:2002, IEC 61000-4-4:1995/A2:2001, IEC 61000-4-5:1995/A1:2000, IEC 61000-4-6:1996/A1:2000, IEC 61000-4-8:1993/A1:2000, IEC 61000-4-11:1994/A1:2000 )**. The test was carried out on **Jul. 20, 2005** at SPORTON INTERNATIONAL INC. LAB.



Alex Chen  
Manager

## **SPORTON INTERNATIONAL INC.**

6F, No. 106, Sec. 1, Hsin Tai Wu Rd.,  
Hsi Chih, Taipei Hsien, Taiwan, R.O.C.  
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ISSUED DATE: Oct. 26, 2005

## **APPENDIX A. GENERAL DESCRIPTION OF EQUIPMENT UNDER TEST**

### **A.1. Applicant**

AXE Technology Corp.  
No. 70, Lane 83, Hwa Chen Road,  
Hsing Chuang City, Taipei Hsien

### **A.2. Applicant**

Same as 1.1

### **A.3. Basic Description of Equipment under Test**

Equipment : Meter  
Model No. : M1.M2.M1A.MF.MMP.MPH.MCM.  
MCM-1.MM2S.MRS.MMR.MMC.MRT.MDFG.MM8A.  
MC24.MC48.MCM726.MR48.MA48.MT24.MA24.  
MR48.MA48.MT24.MA24  
Trade Name : AXE  
Power Cord : Non-Shielde, 1.8m, 3pin

### **A.4. 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. 3, Lane 238, Kang Lo Street, Nei Hwu District,  
Taipei 11424, Taiwan, R.O.C.  
TEL : 886-2-2631-4739  
FAX : 886-2-2631-9740

Test Site No : CO01-NH, OS01-NH

**< 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 55022  
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.4. Test in Compliance with**

EMI Test (conduction and radiation) : European Standard EN 55022  
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. Radiated emission test: from 30 MHz to 1000 MHz
- c. Radio frequency electromagnetic field immunity test : from 80 MHz to 1000 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. Test of Conducted Powerline

The CONDUCTED EMISSION test was passed at

Model 1 : E9685

Frequency ( MHz )	Line or Neutral	Emission		Limits		Margin	
		Q.P. ( dBuV )	A.V. ( dBuV )	Q.P. ( dBuV )	A.V. ( dBuV )	Q.P. ( dB )	A.V. ( dB )
0.279	L	23.61	17.81	79.00	66.00	-55.39	-48.19

Model 2 : E9687

Frequency ( MHz )	Line or Neutral	Emission		Limits		Margin	
		Q.P. ( dBuV )	A.V. ( dBuV )	Q.P. ( dBuV )	A.V. ( dBuV )	Q.P. ( dB )	A.V. ( dB )
0.535	L	28.87	8.77	73.00	60.00	-44.13	-51.23

### C.2. Test of Radiated Emission

The RADIATED EMISSION test was passed at

Model 1 : E9685

Frequency ( MHz )	Polarity	Limits (dBuV/m)	Emission (dBuV/m)	Margin ( dB )	Antenna High	TurnTable Degree
115.460	V	40.00	19.92	-20.08	1.0m	200°

Model 2 : E9687

Frequency ( MHz )	Polarity	Limits (dBuV/m)	Emission (dBuV/m)	Margin ( dB )	Antenna High	TurnTable Degree
50.070	V	30.00	20.93	-19.07	1.0m	255°

### C.4. HARMONICS

As specified on clause 7 and figure Z1 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.5. VOLTAGE FLUCTUATIONS AND FLICKER

Urms = 228.7V    Freq = 50.000    Range: 0.25 A  
 Irms = 0.012A    Ipk = 0.021A    cf = 1.833  
 P = 1.822W    Pap = 2.680VA    pf = 0.680

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.6. Electrostatic Discharge Immunity Tests (ESD)

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

### C.7. Radio Frequency Electromagnetic Field Immunity Tests (RS)

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

### C.8. Electrical Fast Transient/Burst Immunity Tests (EFT/BURST)

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

**C.9. Surge Immunity Tests**

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

**C.10. Conducted Disturbances Induced by Radio-Frequency Field Immunity Tests ( CS )**

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

**C.11. Power Frequency Magnetic Field Immunity Tests**

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

**C.12. 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 was off. The power of the EUT must be reset by the operator.
- Remark : During the test, the power of EUT was provided from the battery of the notebook.

**APPENDIX D. TEST INSTRUMENT**

**D.1. EMI**

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Monitor	R&S	EZM	894987/011	9kHz – 1.3GHz	Aug. 13, 2004	Conduction (CO01-NH)
Test Receiver	R&S	ESH3	893495/013	9kHz – 30MHz	Aug. 10, 2004	Conduction (CO01-NH)
LISN	FCC	FCC-LISN-50-32-2-01	05002	9kHz – 30MHz	Apr. 04, 2005	Conduction (CO01-NH)
LISN	KYORITSU	KNW-407	8-1010-15	9kHz – 30MHz	Dec. 02, 2004	Conduction (CO01-NH)
Power Filter	CORCOM	MR12030	N/A	30A*2	N/A	Conduction (CO01-NH)
RF Cable-CON	Suhner Switzerland	RG223/U	CB004	9kHz – 30MHz	Dec. 17, 2004	Conduction (CO01-NH)
Open Area Test Site	SPORTON	OATS-10	OS01-NH	30MHz – 1GHz 10m, 3m	Nov. 13, 2004	Radiation (OS01-NH)
Amplifier	HP	8447D	2944A06292	0.1MHz – 1.3GHz	Mar. 22, 2005	Radiation (OS01-NH)
Spectrum Analyzer	R & S	FSP7	838858/038	9kHz – 7GHz	May. 31, 2005	Radiation (OS01-NH)
Receiver	R&S	ESCS 30	838251/002	9kHz – 2.75GHz	Jun. 06, 2005	Radiation (OS01-NH)
Bilog Antenna	SCHAFFNER	CBL6111C	2738	30MHz – 1GHz	Dec. 14, 2004	Radiation (OS01-NH)
Turn Table	EMCO	1060-1.211	9507-1805	0 – 360 degree	N/A	Radiation (OS01-NH)
Antenna Mast	EMCO	1051-1.2	9503-1876	1 m – 4 m	N/A	Radiation (OS01-NH)
RF Cable-R10m	BELDEN	RG8/U	CB001	30MHz – 1GHz	Oct. 11, 2004	Radiation (OS01-NH)

Calibration Interval of instruments listed above is one year.

**D.2. EMS**

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
ESD Simulator	SCHAFFNER	NSG 435	5537	Air: 0 KV –16.5 KV Contact: 0 KV -8KV	Feb. 23. 2005	ESD
Antenna	FRANKONIA	BTA-L	02002L	26 MHz - 1 GHz	Jan. 05, 2005	RS
Field Strength Monitoring Antennas (Probe)	AR	FP3000A	16077	0.1 MHz - 1 GHz	Aug. 12, 2004	RS
RS immunity Test system	HP	EMS test System	2062	80 MHz - 1 GHz 3V/m 10v/m	Jan. 05, 2005	RS
Amplifier	AR	100W 1000M3	16060	80 MHz - 1 GHz	Dec.31, 2004	RS
Power Meter	EMC Automation	438A	3513U04050	100 KHz -4.2 GHz	Dec. 20, 2004	RS
Signal Generator	HP	8648A	3426A00771	100 KHz - 1 GHz	Dec.20, 2004	RS
Power Sensor	HP	8481D	3318A13140	100 KHz - 1 GHz	Dec. 20, 2004	RS
Power Sensor	HP	8482A	3318A26464	100 KHz - 1 GHz	Dec. 20, 2004	RS
Attenuator	HP	8491A	53603	100 KHz - 1 GHz	Dec. 20, 2004	RS
EFT Generator	KEYTEK	EMCPRO	0303194	0 KV - 4.4 KV	Mar. 10, 2005	EFT
Harmonic/Flicker Test System	EMC PARTNER	Harmonics -1000	HAR1000-41	4000VA 16A PEAK	Nov. 02, 2004	Harmonics, Flicker
SURGE Generator	KEYTEK	EMCPRO	0303194	0 KV -6 KV/2 0KV-500V/12	Mar. 10, 2005	SURGE
Conducted Immunity Test System	FRANKONIA	CIT-10	102C3115	100KHz ~ 266MHz	Apr. 06, 2005	CS
Attenuator	EM TEST	75W-DC-250 MHz 06	0004166A	150KHz ~ 230MHz	Apr. 19, 2005	CS
Coupling and Decoupling Network	SCHAFFNER	CDN M016	16672	150KHz ~ 230MHz	Apr. 12, 2005	CS
Magnetic field Immunity Loop	FCC (KEYTEK)	F-1000-4-8/9/1 0-L-1AM	03004	30A//CONTINUOUS 100A/2Hrs 230A/30SEC	Mar. 18, 2005	Magnetic
Magnetic Generator	FCC (KEYTEK)	F-1000-4-8/G- -125A	9830	30A//CONTINUOUS 100A/2Hrs 230A/30SEC	Mar. 18, 2005	Magnetic
PQF Generator	KEYTEK	EMCPRO	0303194	230VA/50Hz/60Hz 0%Open/5S 0%Short/5S 40%0.10S 70%/0.01S	Mar. 10, 2005	DIP

Calibration Interval of instruments listed above is one year.