



Ref. Certif. No.

JPTUV-008099-M1

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST  
CERTIFICATES FOR ELECTRICAL EQUIPMENT  
(IECEE) CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE  
CERTIFICATS D'ESSAIS DES EQUIPEMENTS  
ELECTRIQUES (IECEE) METHODE OC

## CB TEST CERTIFICATE CERTIFICAT D'ESSAI OC

Product  
Produit

Flat Panel Monitor

Name and address of the applicant  
Nom et adresse du demandeur

Advantech Co., Ltd.  
4F, No. 108-3, Ming Chuan Rd.  
Hsin Tien City, Taipei Hsien 231 Taiwan

Name and address of the manufacturer  
Nom et adresse du fabricant

Advantech Co., Ltd.  
4F, No. 108-3, Ming Chuan Rd.  
Hsin Tien City, Taipei Hsien 231 Taiwan

Name and address of the factory  
Nom et adresse de l'usine

(See appendix for factories information)

Rating and principal characteristics  
Valeurs nominales et caractéristiques principales

DC 12V; 4A; Class III

Trade mark (if any)  
Marque de fabrique (si elle existe)

ADVANTECH

Model/type Ref.  
Ref. de type

FPM2150XXXXXXXXX  
(X may be any alphanumeric character or blank)

Additional information (if necessary)  
Information complémentaire (si nécessaire)

For model differences, refer to the test report.  
Re-issue of JPTUV-008099 dated 12.04.2004,  
due to first modification.

A sample of the product was tested and found  
to be in conformity with  
Un échantillon de ce produit a été essayé et a été  
considéré conforme à la

IEC 60950:1999  
inclusive CENELEC Common Modifications  
National differences see test report

As shown in the Test Report Ref. No. which forms part  
of this Certificate  
Comme indiqué dans le Rapport d'essais numéro de  
référence qui constitue une partie de ce Certificat

12007634 002

This CB Test Certificate is issued by the National Certification Body  
Ce Certificat d'essai OC est établi par l'Organisme National de Certification



TÜV Rheinland Group

TÜV Rheinland Japan Ltd.  
Shin Yokohama Daini Center Bldg.  
3-19-5, Shin Yokohama, Kohoku-ku  
Yokohama 222-0033 Japan  
Phone + 81 45 470-1850  
Fax + 81 45 473-5221  
Mail: info@jpn.tuv.com  
Web: www.tuv.com

Date: 18.11.2004

Signature:

Yoshihiro Takahata

**Name and address of the manufacturer**

Advantech Co., Ltd.  
4F, No. 108-3, Ming Chuan Rd.  
Hsin Tien City, Taipei Hsien 231  
Taiwan

**Name and address of the factory(ies)**

Advantech Co., Ltd.

Fl.5, No.1, Lane 169, Kang-Ning St.  
Xi-Zhi, Taipei Hsien 221  
Taiwan

ADVANTECH CO., LTD.

3rd FL, NO. 10  
LANE 130, MING CHUAN RD  
HSIN-TIEN, TAIPEI HSIEN, 231  
Taiwan

SUPERIOR CO., LTD.

TIENSONG AREA, QINGXING TOWN  
DONGGUAN GUANGDONG  
P.R. China

ADVANTECH CO., LTD.

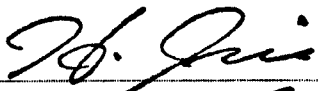

NO. 600, HAN-PU ROAD, YU-SHAN  
KUN-SHAN JIANGSU  
P.R. China

Beijing Yan Hua Xing Ye Electronic Science & Technology Co., Ltd

No.7, 6th Street, Shang Di Zone  
Haidian District, Beijing  
P.R. China

Date: 18.11.2004

  
Yoshihiro Takahata

<b>TEST REPORT FOR AN ADDITIONAL APPROVAL</b> <b>IEC 60950 and/or EN 60950</b> <b>Safety of information technology equipment</b>	
Report reference No .....	<12007634 002>
Tested by (printed name and signature) .....	H. Irie 
Approved by (printed name and signature) .....	M. Kera 
Date of issue .....	November 17, 2004
Testing Laboratory Name .....	TÜV Rheinland Japan Ltd., Yokohama Laboratory
Address .....	Festo Bldg. 5F, 1-26-10 Hayabuchi, Tsuzuki-ku, Yokohama 224-0025, Japan
Testing location .....	CBTL <input checked="" type="checkbox"/> CCATL <input type="checkbox"/> SMT <input type="checkbox"/> TMP <input type="checkbox"/>
Address .....	Same as above
Applicant's Name .....	Advantech Co., Ltd.
Address .....	4F, No. 108-3, Ming Chuan Rd., Hsin Tien City, Taipei Hsien 231, Taiwan
<b>Test specification</b>	
Standard .....	IEC 60950:1999 + Corr. Jan. 2000 EN 60950:2000 + Corr. Feb. 2002 CAN/CSA C22.2 No. 60950/UL 60950 third edition, J60950 (H14), K60950, UL 60950
Test procedure .....	CB-scheme
Procedure deviation .....	Argentina, Australia, Austria, Belgium, Brazil, Canada, China, Czech Republic, Denmark, Finland, France, Germany, Hungary, Ireland, Israel, Italy, Japan, Korea, Malaysia, The Netherlands, Norway, Poland, Portugal, Russian Federation, Singapore, Slovakia, Slovenia, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, United States
Non-standard test method .....	N.A.
Test Report Form No.....	IECEN60950A (CBADD60950_3 Rev B)
TRF originator .....	SGS FIMKO Ltd (modified for additional approvals by TÜV Rheinland)
Master TRF .....	Dated 2003-03
Test item description .....	Flat Panel Monitor
Manufacturer .....	Same as applicant
Trademark .....	ADVANTECH
Model and/or type reference .....	FPM2150XXXXXXX (X may be any alphanumeric character or blank)
Serial number .....	Pre-production sample without serial number
Rating(s) .....	12Vdc, 4A

**The construction of Flat panel monitor model FPM-2150XXX-XXX was modified as follows:**

1. Change the model from FPM-2150XXX-XXX to FPM2150XXXXXXXXX (X may be any alphanumeric character or blank for marketing purpose).
2. Alternative source of LCD panel type G150XG01 (AU Optronics).
3. Alternative source of DC/AC inverter type LV-1501-FX (Lecerf).

**For the above described modification(s) the following testing was considered to be necessary:**

Modification	Testing	Comments	Result
1.	- N/A	New model FPM2150XXXXXXXXX is identical to approved model FPM-2150XXX-XXX except for model designation. See next page for marking label and sub-clause 1.7.1 for details.	<b>P</b>
2, 3.	- Input test - LCC measurement - Heating test - Abnormal test	See appended tables for test results and table 1.5.1 for alternative sources.	<b>P</b>

**Remark:**

This test report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE02.

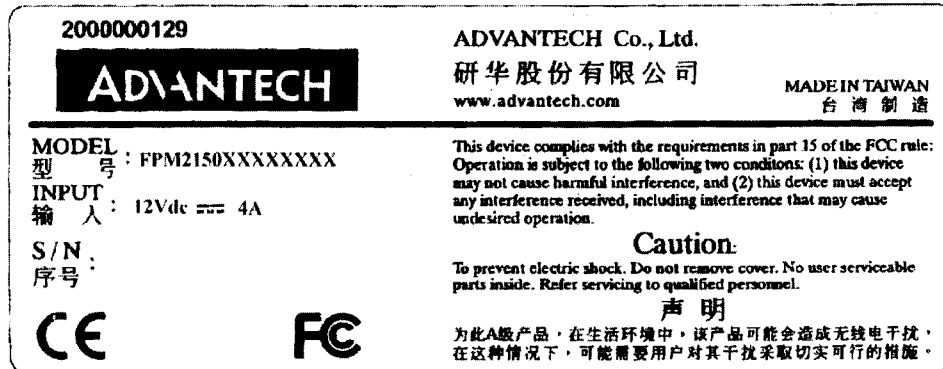
Factories:

1. Advantech Co., Ltd.  
Fl. 5, No. 1, Lane 169, Kang-Ning Street, Xi-Zhi, Taipei Hsien 221, Taiwan
2. ADVANTECH CO., LTD.  
3rd FL, No. 10, LANE 130, MING CHUAN RD., HSIN-TIEN, TAIPEI HSIEN 231, Taiwan
3. SUPERIOR CO., LTD.  
TIENSONG AREA, QINGXING TOWN, DONGGUAN GUANGDONG, P.R. China
4. ADVANTECH CO., LTD.  
No. 600, HAN-PU RD., YU-SHAN, KUN-SHAN JIANGSU, P.R. China
5. Beijing Yan Hua Xing Ye Electronic Science & Technology Co., Ltd.  
No. 7, 6th Street, Shang Di Zone, Haidian District, Beijing, P.R. China

History of amendments and modifications:

Ref. No. 12007634 001, dated April 7, 2004 (original test report)  
Ref. No. 12007634 002, dated November 17, 2004 (modification)

Copy of marking plate(s):



IEC 60950 / EN 60950			
Clause	Requirement – Test	Result – Remark	Verdict
1.7.1	Power rating	See below.	<b>P</b>
	Rated voltage(s) or voltage range(s) (V) .....	12Vdc. (no direct connection to the AC mains supply)	<b>N</b>
	Symbol for nature of supply for d.c. ....	No direct connection to the AC mains supply.	<b>N</b>
	Rated frequency or frequency range (Hz) .....	No direct connection to the AC mains supply.	<b>N</b>
	Rated current (A) .....	4A (no direct connection to the AC mains supply)	<b>N</b>
	Manufacturer's name/Trademark .....	ADVANTECH Co., Ltd./ ADVANTECH	<b>P</b>
	Type/model .....	FPM2150XXXXXXXXX (X may be any alphanumeric character or blank)	<b>P</b>
	Symbol of Class II .....	Class III equipment.	<b>N</b>
	Other symbols .....	Additional symbols or markings do not give rise to misunderstanding.	<b>P</b>
	Certification marks .....	See copy of the marking plate.	<b>N</b>

1.5.1	TABLE: list of critical components					P
Object/part no.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity <sup>1</sup>	
LCD Panel	AU Optonics	G150XG01	15", TFT type	--	--	
DC/AC Inverter	Lecerf	LV-1501-FX (X = A-Z, 0-9 or blank)	i/p: 13.0Vdc max., 1400mA max.; o/p: 1600Vrms max., 8.5mA max.	--	--	
▪ Transformer (T1, T2)	Lecerf	X03	105°C	--	--	
Note(s):						
1. An asterisk indicates a mark that assures the agreed level of surveillance.						

1.6.2	TABLE: electrical data (in normal conditions)					P
Fuse #	Irated (A)	U (V)	P (W)	I (A)	Ifuse (A)	Condition/status
--	4	12Vdc	15	1.2	--	Maximum normal load

2.4.2	TABLE: limited current circuit measurement					P
Location	Voltage (V)	Current (mA)	Freq. (kHz)	Limit (mA)	Comments	
normal condition						
CN3 pin 1 – Earth	42.4	21.2	45	31.5		
CN3 pin 2 – Earth	8.4	4.2	46	32.2		
CN3 pin 1 – 2	26	13.0	44	30.8		
T1 pin 7 – Earth	84.0	42.0	119	70.0		
T1 pin 7 – 9	84.0	42.0	118	70.0		
single fault condition (C3 short)						
CN3 pin 1 – Earth	86	43.0	118	70.0		
CN3 pin 2 – Earth	8.6	4.3	46	32.2		
CN3 pin 1 – 2	26.4	13.2	118	70.0		
T1 pin 7 – Earth	84	42	118	70.0		
T1 pin 7 – 9	84	42	117	70.0		
single fault condition (Q3 short)						
CN3 pin 1 – Earth	0	0	--	--	Unit shutdown.	

CN3 pin 2 – Earth	0	0	--	--	Unit shutdown.
CN3 pin 1 – 2	0	0	--	--	Unit shutdown.
T1 pin 7 – Earth	0	0	--	--	Unit shutdown.
T1 pin 9 – Earth	0	0	--	--	Unit shutdown.
T1 pin 7 – 9	0	0	--	--	Unit shutdown.
single fault condition (L1 short)					
CN3 pin 1 – Earth	58.2	29.1	47	32.9	
CN3 pin 2 – Earth	8	4.0	38	26.6	
CN3 pin 1 – 2	41.6	20.8	46	32.2	
T1 pin 7 – Earth	86.0	43.0	99	69.3	
T1 pin 7 – 9	86.0	43.0	101	70.0	
single fault condition (Q1 Pin D-S short)					
CN3 pin 1 – Earth	46	23.0	45	31.5	
CN3 pin 2 – Earth	9	4.5	46	32.2	
CN3 pin 1 – 2	46	23.0	45	31.5	
T1 pin 7 – Earth	84.0	42.0	118	70.0	
T1 pin 7 – 9	84.0	42.0	119	70.0	
single fault condition (R3 open)					
CN3 pin 1 – Earth	41.6	20.8	45	31.5	
CN3 pin 2 – Earth	3.16	1.58	51	35.7	
CN3 pin 1 – 2	8.6	4.3	45	31.5	
T1 pin 7 – Earth	84.0	42.0	119	70.0	
T1 pin 7 – 9	84.0	42.0	119	70.0	
single fault condition (D7 short)					
CN3 pin 1 – Earth	0	0	--	--	Unit shutdown.
CN3 pin 2 – Earth	0	0	--	--	Unit shutdown.
CN3 pin 1 – 2	0	0	--	--	Unit shutdown.
T1 pin 7 – Earth	0	0	--	--	Unit shutdown.
T1 pin 9 – Earth	0	0	--	--	Unit shutdown.
T1 pin 7 – 9	0	0	--	--	Unit shutdown.
single fault condition (R13 short)					
CN3 pin 1 – Earth	40.8	20.4	43	30.1	
CN3 pin 2 – Earth	4.3	2.1	49	34.3	
CN3 pin 1 – 2	7.8	3.9	44	30.8	
T1 pin 7 – Earth	78.4	39.2	119	70	
T1 pin 7 – 9	76.8	38.4	119	70	



single fault condition (R19 short)					
CN3 pin 1 – Earth	40	20	44	30.8	
CN3 pin 2 – Earth	3.0	1.5	50	35.0	
CN3 pin 1 – 2	8.8	4.4	43	30.1	
T1 pin 7 – Earth	77.6	38.8	119	70	
T1 pin 7 – 9	77.2	38.6	119	70	
Output measured with a 2k $\Omega$ non-inductive resistor as load.					

4.5.1	TABLE: temperature rise measurements			P	
	test voltage (V) .....	+12Vdc		—	
	t1 (°C) .....	--		—	
	t2 (°C) .....	--		—	
Rise dT of part/at:		$\Delta T$ (K)		Allowed $\Delta T$ (K)	
Ambient (°C)		24.3		--	
T1 coil (on inverter)		38.9		55	
T1 core (on inverter)		36.4		55	
L1 coil (on inverter)		27.2		55	
DC inlet body (on main board)		11.8		--	
PWB under U601 (on main board)		32.5		55	
C605 body (on main board)		23.2		35	
L600 body (on main board)		30.5		55	
PWB under U400 (on main board)		32.7		55	
Panel body		16.4		--	
Metal Enclosure outside near inverter		8.9		20	
Temperature rise $\Delta T$ of winding:		$R_1$ ( $\Omega$ )	$R_2$ ( $\Omega$ )	$\Delta T$ (K)	allowed $\Delta T$ (K)
Comments:					
The temperatures were measured under worst case normal mode defined in 1.2.2.1 and as described in 1.6.2 at voltages as described above.					
With maximum of 50°C ambient temperature specified the max. temperature rise is calculated as follows:					

Electrolyte capacitor or components with:

- max. absolute temp. of 85°C →  $\Delta T_{\text{max}} = (85 - 50) \text{ K} = 35\text{K}$
- max. absolute temp. of 105°C →  $\Delta T_{\text{max}} = (105 - 50) \text{ K} = 55\text{K}$

Surface of equipment which may be touched:

- metal →  $\Delta T_{\text{max}} = 45 - (50 - 25) \text{ K} = 20\text{K}$

5.3		TABLE: fault condition tests					P
		ambient temperature (°C) .....			25°C, if no other specified.		—
		model/type of power supply .....			--		—
		manufacturer of power supply .....			--		—
		rated markings of power supply .....			--		—
No.	Component no.	Fault	Test voltage (V)	Test time	Fuse no.	Fuse current (A)	Result
01	T1 Pin 7-9	s-c	12Vdc	10 min	--	--	Unit shutdown, no hazards.
Note: In fault column, s-c=short-circuited.							