IEC IECEE CB SCHEME

Ref. Certif. No.

DE 2-008179-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	Computer
Name and address of the applicant Nom et adresse du demandeur	Advantech Co., Ltd. No.1, Alley 20, Lane 26 Rueiguang Road, 114 Neihu, Taipei, Taiwan
Name and address of the manufacturer Nom et adresse du fabricant	Advantech Co., Ltd. No.1, Alley 20, Lane 26 Rueiguang Road, 114 Neihu, Taipei, Taiwan
Name and address of the factory Nom et adresse de l'usine Note: When more than one factory, please report on page 2 Note: Lorsque il y plus d'une usine, veuillez utiliser la 2ème page	☒ Additional Information page 2
Ratings and principal characteristics Valeurs nominales et caractéristiques principales	1) DC 24V; 2.0A max.; Class III; 2) DC 24V; 3.0A max.; Class III
Trade mark (if any) Marque de fabrique (si elle existe)	ADVANTECH
Model/type Ref. Ref. de type	1) POC-S155YXXXXXXXX; 2) POC-S175XXXXXXXX (Y = B or blank for optional built-in battery pack (Y/N); X = any alphanum. character or blank for marketing purpose)
Additional information (if necessary may also be reported on page 2) Les Information complémentaire (si nécessaire, peuvent être indiqués sur la 2ème page)	-add an optional built-in battery pack and modify the model name of POC-S155XXXXXXXX to POC-S155YXXXXXXXX; -add alternative source of motherboard (for all models); -see also test report ref. no. 21116995 001
	PUBLICATION **EDITION**
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 60601-1:1988+A1+A2 for national deviations 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	21116995 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 Product Safety GmbH
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Phone + 49 221 806-1400
Fax + 49 221 806-2095
Mail: cert-validity@de.tuv.com
Web: www.tuv.com

TÜV Rheinland Product Safety GmbH · Zertifizierstelle

Date: 11.05.2006

Signature: Dipl.-Ing. H.-J. Beck

IEC IECEE CB SCHEME

Ref. Certif. No.
DE 2-008179-M1

1. Advantech Co., Ltd. Fl.5, No.1,Lane 169, Kang-Ning St., Xi Zhi, Taipei Hsien 221 Taiwan	2. Beijing Yan Hua Xing Ye Elec. Science & Technology Co., Ltd. 7, 6th Street, Shang Di Zone Haidian District, Beijing, China
3. Superior Co., Ltd. Tiensong Area, Qingxing Town Dongguan, Guangdong China	4. Advantech Co., Ltd. No. 600 Han-Pu Road, Yu-Shan Kun-Shan, Jiangsu China
5. Advantech Co., Ltd. 3F, No. 10, Lane 130 Ming Chuan Rd., Hsin-Tien City 231 Taipei Hsien, Taiwan	

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

TÜV Rheinland Product Safety GmbH
Zertifizierungsstelle

Date: 11.05.2006

Signature:

Dipl.-Ing. H.-J. Beck

TEST REPORT

IEC 601 -1

Medical electrical equipment
Part 1: General requirements for safety

Report reference No. ..... :	21116995 002
Compiled by (+ signature) ..... :	Thomas Illing
Reviewed by (+ signature)..... :	Ralf Krauß
Approved by (+ signature) ..... :	C. Rüther
Date of issue..... :	April 30th, 2006
Testing laboratory..... :	TÜV Rheinland Product Safety GmbH
Address ..... :	Am Grauen Stein, Konstantin Wille-Str. 1, Cologne, Germany
Testing location ..... :	TÜV Rheinland Product Safety GmbH, Cologne, Germany
Applicant..... :	Advantech Co., Ltd.
Address ..... :	No. 1, Alley 20, Lane 26, Rueiguang Road, 114 Neihu, Taipei, Taiwan.
Standard ..... :	IEC 60601-1: 1988 + A1:1991 + A2:1995 EN 60601-1 : 1990 + A1:1993 + A2:1995 +A13:1996 AS/NZS 3200-1-0, CAN/CSA 22.2, SI 1011, UL 2601-1
Test Report Form No..... :	I601-1_C/97-04
TRF Originator..... :	Underwriters Laboratories Inc.
Master TRF..... :	dated 97-04
Copyright blank test report ..... :	the bodies participating in the Committee of Certification Bodies (CCB). This report is based on a blank test report that was prepared by KEMA using information obtained from the TRF originator.
Test procedure ..... :	CB Scheme
Procedure deviation..... :	Australia, Austria, Belgium, Brazil, Canada, The Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, India, Israel, Italy, Korea, Netherlands, Norway, Poland, Portugal, Russian Federation, Slovenia, Slovakia, Sweden, Switzerland, Turkey, United Kingdom, U.S.A.
Non-standard test method..... :	N/A
Type of test object ..... :	Computer
Trademark ..... :	ADVANTECH
Model/type reference..... :	1) POC-S155YXXXXXXXX; 2) POC-S175XXXXXXXX (Y = B or blank; X = any alphanumeric character or blank)
Manufacturer ..... :	Same as applicant
Address ..... :	Same as applicant
Rating ..... :	1) DC 24V, 2.0A max; 2) DC 24V, 3.0A max

The construction of the Computer, models POC-S155XXXXXXXX and POC-S175XXXXXXXX (X = any alphanumeric character or blank), has been modified as follows:

1. Add an optional built-in battery pack and modify the model name POC-S155XXXXXXXX to POC-S155YXXXXXXXX (Y = B or blank; X = any alphanumeric character or blank).
   In the model name "X" is used for marketing purposes and "Y" represents design difference as below:
   - Y = B: a built-in battery pack is provided
   - Y= blank: a built-in battery pack is not provided
2. Add alternative source of motherboard (for all models).

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

Modification	Testing	Comments	Result
1 – 3	• Input test • Heating test • Abnormal test • Limited Power Source test (for the on-board USB connectors) • EMC re-evaluation	The model POC-S155BXXXXXXXX is supplied only by power adaptor model PCM80PS24 (XPIQ). The model POC-S155XXXXXXXX is supplied by both models of power adaptors previously approved for this model. Refer to page 3 for the label marking. The battery pack is used for models POC-S155BXXXXXXXX and POC-S175XXXXXXXX. For test results refer to the appended tables 7, 42, 52 and additional tests table. For source details refer to appended table 56.1. The built-in DC-DC step-down converter transforms the DC 24 supply voltage to lower voltages (DC 12V, DC 5V, DC 3.3V)	**P**

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.

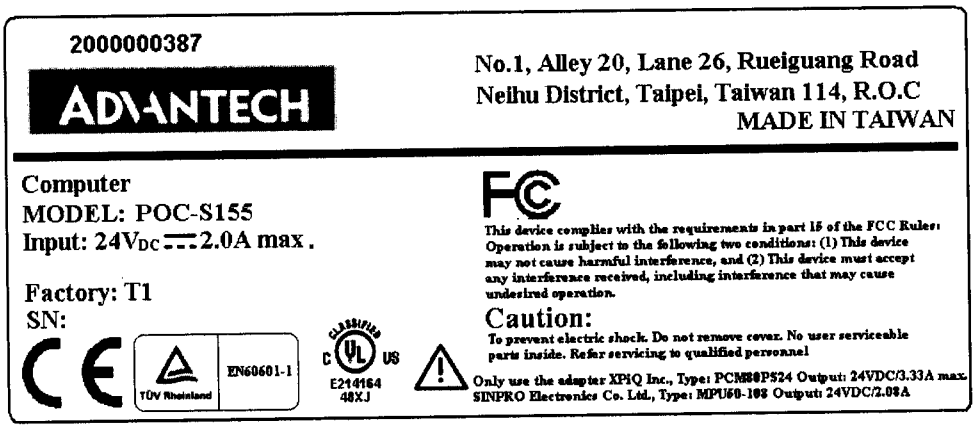
Factories:

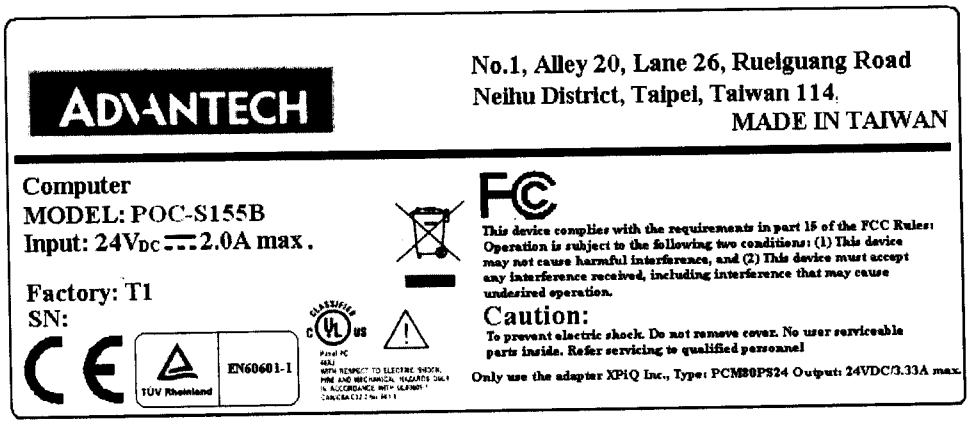
1. Advantech Co., Ltd.
   5F, No. 1, Lane 169, Kang-Ning Street, Xi-Zhi, Taipei Hsien 221, Taiwan
2. Advantech Co., Ltd.
   3F, No. 10, Lane 130, Ming Chuan Rd., Hsin Tien City, Taipei Hsien 231,Taiwan
3. Superior Co., Ltd.
   Tiensong Area, Qingxing Town, Dongguan, Guangdong, P.R. China
4. Advantech Co., Ltd.
   No. 600, Han-Pu Road, Yu-Shan, Kun-shan, Jiangsu, P.R. China
5. Beijing Yan Hua Xing Ye Elec. Science & Technology Co., Ltd.
   7, 6th Street, Shang Di Zone, Haidian District, Beijing, P.R. China

History of amendments and modifications:

Ref. No. 21116995 001, dated February 2nd, 2005 (original test report)
Ref. No. 21116995 002, dated April 30th, 2006 (modification)

Copy of the marking plate:





IEC 601+ Am. 1 & 2			
Clause	Requirement + Test	Result - Remark	Verdict
36.	ELECTROMAGNETIC COMPATIBILITY		P
	Equipment complies wit IEC 60601-1-2	The computer passed the EMC testing according to the requirements of IEC 60601-1-2.	P

7	TABLE: power input				P
Operating condition	Voltage (V)	Frequency (Hz)	Current (A)	Power (W)	Remarks
Model POC-S175 powered by adaptor model PCM80PS24 (XPIQ)					
Normal operation 1)	90	47	0.92	81	
Normal operation 1)	90	63	0.91	82	
Normal operation 1)	100	47	0.80	80	
Normal operation 1)	100	63	0.81	81	
Normal operation 1)	240	47	0.36	79	
Normal operation 1)	240	63	0.37	81	
Normal operation 1)	264	47	0.33	81	
Normal operation 1)	264	63	0.34	81	
Model POC-S155 powered by adaptor model MPU50-108 (Sinpro)					
Normal operation 1)	90	47	0.97	54	
Normal operation 1)	90	63	0.98	54	
Normal operation 1)	100	47	0.89	53	
Normal operation 1)	100	63	0.90	53	
Normal operation 1)	240	47	0.47	48	
Normal operation 1)	240	63	0.47	50	
Normal operation 1)	264	47	0.45	50	
Normal operation 1)	264	63	0.45	52	
Model POC-S155B powered by adaptor model PCM80PS24 (XPIQ)					
Normal operation 1)	90	47	0.68	60	
Normal operation 1)	90	63	0.68	61	
Normal operation 1)	100	47	0.60	60	
Normal operation 1)	100	63	0.61	60	
Normal operation 1)	240	47	0.28	62	
Normal operation 1)	240	63	0.28	62	
Normal operation 1)	264	47	0.25	62	
Normal operation 1)	264	63	0.26	61	
Normal operation 1)	DC 24	--	2.2	--	Rated output of adaptor: 3.33A

Supplementary information:

1) Maximum normal load defined as full white pattern for the LCD display, built-in drive (HDD) continuous accessing, maximum audio output and each USB port loaded at their maximum rated value (2.5W).

42	TABLE: normal temperature		P
Supply voltage .....:	A. 90V-10%/63Hz B. 240V+10%/47Hz	Test Condition: Condition A (see appended table 7.1)	
Ambient temperature : See below			
Measuring location		Measured temperature [°C]	Remarks (allowed Tmax [°C])
For model POC-S175, battery discharge mode (battery enclosure not accessible)			
Cell 1		61	--
Cell 2		63	--
Cell 3		58	--
Thermal cut-off		68	--
Q1 body		65	90
Q2 body		65	90
U37 body		51	90
Enclosure inside		37	--
Enclosure outside		31	--
Ambient temperature		25	--
For model POC-S155, battery discharge mode (battery enclosure not accessible)			
Cell 1		40	--
Cell 2		43	--
Cell 3		45	--
Thermal cut-off		44	--
Q1 body		44	90
Q2 body		44	90
U37 body		64	90
Ambient temperature		25	--

Supplementary information:

The maximum specified ambient temperature is 40°C.

The maximum absolute temperatures Tmax (in °C) are calculated as follows:

Capacitors or components having:

- maximum temperature of 105°C → Tmax = 105 – (40-25) = 90

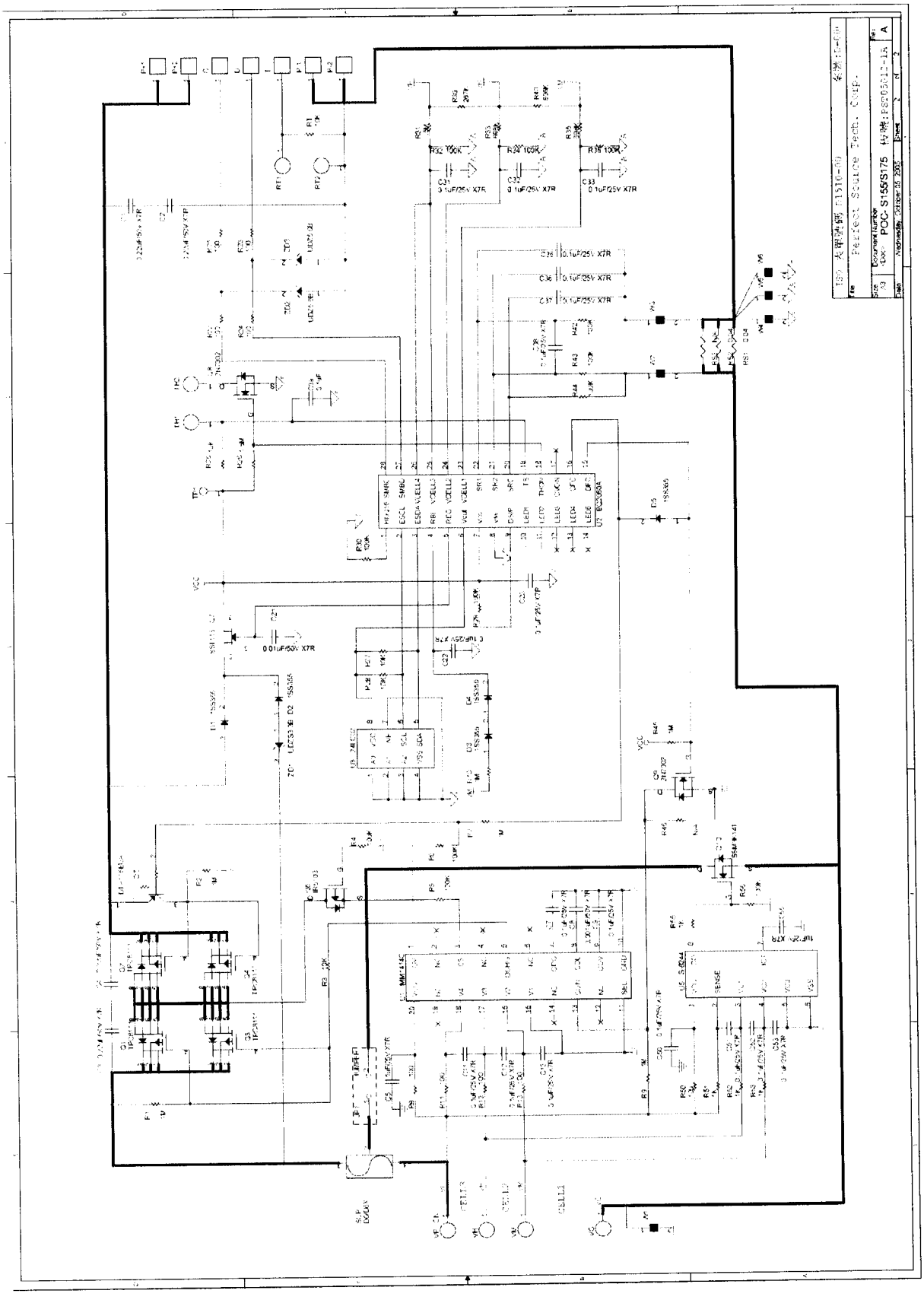
52	TABLE: abnormal operation	P
Test type, condition and clause reference	Observed results	Remarks
D14 short circuit (in charger)	Normal operation, no hazards	Charge mode for 7 hours
U37 short circuit (in charger)	Charge circuit shutdown, no hazards Cell body = 51°C, Thermal cut-off = 52°C, Ambient = 24°C	Charge mode for 7 hours
D11 short circuit (in charger)	Normal operation, no hazards	Charge mode for 7 hours
R356 short circuit (in charger)	Normal operation, no hazards. The resistance of the component is 33mΩ.	Charge mode for 7 hours
Q1 (D – S) short circuit (in battery)	Normal operation till full discharge, no hazards. The test is performed under normal load for the monitor, the currents drown from the battery remain as under normal load condition.	Discharge mode for 7 hours
Q2 (D – S) short circuit (in battery)	Normal operation, no hazards. The currents supplied from the charger circuit do not change. The battery charger ensures stable CC-CV charge mode.	Charge mode for 7 hours
Reversed charge (in battery)	Battery shutdown immediately, no hazards.	Charge mode
Supplementary information: Supply voltage for the apparatus = DC 24V		

56.1	TABLE: lists of critical component parts				P
object/part No.	manufacturer/ trademark	type/model	technical data	standard	mark(s) of conformity
PTC used for the USB circuit (F1, F2, F3)	Polytronics Technology Corp.	SMD1812P110 TS	DC 6V, 1.1A	IEC/EN 60730-1	TÜV, UL
	Polytronics Technology Corp.	SMD1812P260 TS	DC 6V, 2.6A	IEC/EN 60730-1	TÜV, UL
	Polytronics Technology Corp.	SMD0805P050 TS	DC 6V, 0.5A	IEC/EN 60730-1	TÜV, UL
Components for the battery pack (optional component)					
PCB	Various	Various	V-1, 105°C min.	UL 94	--
Battery cell (Li-Ion type) 3S2P	Samsung	ICR18650-22	DC 3.7V, 2200mAh typical	UL 1642	--
Connector	Various	Various	250V min., 1A min.	UL 1977	--
Thermal cut-out (SCP1)	Uchiya Thermostat Co. Ltd.	BPF2	80°C, 15A	EN 60730-2-9, UL 873	TUV, UL

Thermal Protector (located between the charge/discharge control transistors)	NEC Schott Components Corp.	D6	139°C, 10A	EN 60691, UL 1020	TUV, UL
	NEC Schott Components Corp.	D6X	139°C, 12A	EN 60691, UL 1020	TUV, UL
[1]) an asterisk indicates a mark which assures the agreed level of surveillance					

	TABLE: additional tests		P
Clause	Test type and condition	Remarks and observed results	Verdict
2.5 of IEC 60950-1: 2001	Limited power source measurement according to the requirements of IEC 60950-1:2001. The test is performed for the USB port Compliance with the requirements is ensured by the usage of PTC devices provided in the power lines of those ports.	U_{OC}=4.97V I_{SC}= 3.76A Maximum power = 6.72W, limit = 25W	Pass
Supplementary information: Supply voltage for the apparatus = DC 24V, tested with the PTC source with highest rated current.			

Attachment 1



Battery pack circuit diagram