IEC | IECEE CB SCHEME

Ref. Certif. No.

JPTUV-011039-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	Air conditioner indoor unit
Name and address of the applicant Nom et adresse du demandeur	Electra Air-conditioning (Shenzhen) Co., Ltd. 2 WUHE AVENUE S., BANTIAN, BUJI, Shenzhen,Guangdong, P.R. China
Name and address of the manufacturer Nom et adresse du fabricant	Electra Air-conditioning (Shenzhen) Co., Ltd. 2 WUHE AVENUE S., BANTIAN, BUJI, Shenzhen,Guangdong, P.R. China
Name and address of the factory Nom et adresse de l'usine	Electra Air-conditioning (Shenzhen) Co., Ltd. 2 WUHE AVENUE S., BANTIAN, BUJI, Shenzhen,Guangdong, P.R. China
Rating and principal characteristics Valeurs nominales et caractéristiques principales	AC 220-240V; 50Hz; Class I 1) 32W; 2) 40W; 3) 56W; 4) 59W; 5) 105W IP20 (Indoor unit only) Refrigerant: R410A
Trade mark (if any) Marque de fabrique (si elle existe)	ELECTRA
Model/type Ref. Ref. de type	1) WNG25 DCI, 2) WNG35 DCI, 3) WNG50 DCI, 4) WNG60 DCI 5) WNG 80 DCI
Additional information (if necessary) Information complémentaire (si nécessaire)	For model differences, refer to the test report. Re-issue of JPTUV-011039 dated 26.05.2005, 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 60335-2-40:1995+A1 IEC 60335-1:1991+A1+A2
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	12011466 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 **TÜV Rheinland Group**

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Date: 26.08.2005

Signature: Yoshihiro Takahata

10/061-1 4.03

TEST REPORT

IEC 60335-2-40

Safety of household and similar electrical appliances Part 2: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers

Report Reference No.	12011466 002
Compiled by (+ signature)	S. Kischka
Approved by (+ signature)	M. Kera
Date of issue	2005-07-26

CB Testing laboratory Name	TÜV Rheinland Japan Ltd., Yokohama Laboratory
Address	4-25-2 Kita-Yamata, Tsuzuki-ku, Yokohama 224-0021, Japan
Testing location/procedure	CBTL ☒ SMT ☐ TMP ☐
Address	Same as above
Applicant's Name	Electra Air-Conditioning (Shenzhen) Co.,Ltd.
Address	2 Wuhe Avenue S., Bantian, Buji, Shenzhen, Guangdong, P. R. China
Test specification	
Standard	IEC 60335-2-40:1995 + A1:2000 used in conjunction with IEC 60335-1:1991 + A1:1994 + A2:1999
Test procedure	CB
Non-standard test method	N.A.
Test Report Form No.	IEC60335_2_40C
TRF originator	AENOR
Master TRF	Dated 2002-02

Test item description	Air conditioner indoor unit
Trademark	ELECTRA
Model and/or type reference	WNG 80 DCI
Manufacturer	Same as applicant
Factory	Same as applicant
Rating(s)	Rated voltage: 220-240V~ 50Hz Rated power: 105W Refrigerant: R410A IP20

Copy of the marking plate:

ELECTRA	MODEL: WNG 80 DCI		
PROD NO.:	Fuse: 20A(G)*	Cooling capacity:7800(1500-8800)W*	
TYPE:	COSφ=0.97	Heating capacity:8500(1500-9500)W*	
220-240V~ 50Hz	IP20 Rev.A	Dehumidification: 3.0 l/h	
R-410A:	Prated:105W	PS:6.3MPa	Ps: 0.8MPa
*is applied to single refrigerant circuit only		Temp.Class: T1	Weight: 18.5kg

Summary of testing:

1. All tests performed on WNG 80 DCI;
2. Input test, heating test and abnormal tests made in a test chamber, which can imitate the most severe condition in normal use.

Test items particulars:

Serial Number ..... : Prototype samples

Additional information ..... : N(.A.)

..... :

..... :

Test case verdicts

Test case does not apply to the test object..... : N(.A.)

Test item does meet the requirement ..... : P(ass)

Test item does not meet the requirement ..... : F(ail)

Testing

Date of receipt of test item ..... : 2005-05-20

Date(s) of performance of test..... : 2005-05-20—2005-05-30

General remarks

This 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 IECEE 02.

This test report shall not be reproduced except in full, without the written approval of the issuing testing laboratory.

Clause numbers between brackets refer to clauses in IEC 60335-1

"(see Enclosure #)" refers to an additional information appended to the report.

"(see appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

History of amendments and modifications:

Ref.No.12011466 001, dated 2005-05-17(original report);

Description of modification:

- The new model WNG 80 DCI is identical with issued model WNG 25 DCI except for:
  - The fan motor is changed as: YDK-4J-50, mfg: Zhejiang Aoli, the corresponded capacitor is changed to 3μF.
  - The size of heating exchanger, by which different cooling and heating capacity are achieved.
  - some components are changed, please refer to table 24.1 for details.

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
7	**MARKING**		P
7.1	Rated voltage or voltage range (V) ..... :	220-240V	P
	Symbol for nature of supply including number of phases, unless for single phase operation (IEC 60335-2-40:1995)	~	P
	Rated frequency or frequency range (Hz) ..... :	50Hz	P
	Rated input or rated current	See rating label.	P
	Manufacturer's or responsible vendor's name, trademark or identification mark	ELECTRA	P
	Model or type reference	See rating label	P
	Symbol for Class II	Class I appliance	N
	Symbol for degree of protection against ingress of water, other than IPX0 (IEC 60335-2-40:1995)	IP20	N
	Mass of the refrigerant or of each refrigerant in a blend (except for azeotropic type (IEC 60335-2-40:1995)		N
	Refrigerant identification (IEC 60335-2-40:1995)	R410A	P
	Permissible excessive operating pressure in pascals for sanitary hot water heat pumps (IEC 60335-2-40:1995)		N
	Excessive operating pressure of the refrigerant circuit for suction and discharge, if they differ (IEC 60335-2-40:1995)	See rating label	P
	The maximum operating pressure for the heat exchanger (IEC 60335-2-40/A1:2000)	See rating label	P
	Separate marking of the appliances with all the rated characteristics of the supplementary heaters (IEC 60335-2-40:1995)		N
	Marking of the direction of the fluid flow (IEC 60335-2-40:1995)		N
10	**POWER INPUT AND CURRENT**		P
10.1	Power input at rated voltage and normal operating temperature not deviating from rated input by more than shown in table; measured power input (W); rated input (W); deviation ..... :	(See appended table)	P
10.2	Current at normal operating temperature not deviating from rated current by more than shown in table; measured current at rated voltage under normal operation (A); rated current (A); deviation ..... :	Not marked on rating label.	N
11	**HEATING**		P
11.8	Monitored temperatures not exceeding the values of Table 3 (IEC 60335-2-40:1995)	(see appended table)	P
	Protective devices do not operate		P

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	Sealing compound not flowing out		P
	Temperature of the air in the outlet duct not exceeding 90 °C (IEC 60335-2-40:1995)		N
13	**LEAKAGE CURRENT**		P
13.1	Leakage current not excessive and electric strength adequate		P
13.2	Leakage current measured by means of circuit described in Annex G (IEC 60335-2-40:1995)		P
	Leakage current measurements	(See appended table)	P
13.3	Electric strength test of insulation. See Note in Interpretation Sheet I-SH 02, August 1994	(See appended table)	P
	No breakdown during the test		P
16	**LEAKAGE CURRENT AND ELECTRIC STRENGTH**		P
16.3	Electric strength tests (values in table 5). See Note in Interpretation Sheet I-SH 02, August 1994	(See appended table)	P
17	**OVERLOAD PROTECTION OF TRANSFORMERS AND ASSOCIATED CIRCUITS**		P
	No excessive temperatures in transformer or associated circuits in event of short-circuits likely to occur in normal use		P
	Appliance supplied with 1,06 or 0,94 times rated voltage and the most unfavourable short-circuit or overload likely to occur in normal use applied	The SPS transformer short secondary circuits, the appliance can't work normally, no hazards occurred.	P
	Temperature rise of insulation of the conductors of safety extra-low voltage circuits not exceeding the relevant value specified in table 3 by more than 15 K		N
	Temperature of the winding not exceeding the value specified in table 6	40K	P
	Except fail-safe transformer complying 15.5 of IEC 61558-1 (IEC 60335-1/A2:1999)	Not fail-safe transformer	N
19	**ABNORMAL OPERATION**		P
19.2	Test of appliance with motor rotors, other than motor-compressors, operated for 15 days (360 h) or until a protection device opens the circuit (IEC 60335-2-40:1995)		P
	Insulation of motor windings (IEC 60335-2-40:1995) ..... :	(See appended table)	P
	Temperature of enclosure does not exceed (°C) (IEC 60335-2-40:1995) ..... :	(See appended table)	P

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	Temperature of the windings does not exceed the values shown in the table; temperature (°C) (IEC 60335-2-40:1995) ..... :	(See appended table)	P
	Electric strength test as specified in 16.3, 72 h after the beginning of the test (IEC 60335-2-40:1995)	(See appended table)	P
	A 30 mA residual current device does not open (IEC 60335-2-40:1995)	(See appended table)	P
	At the end, the leakage current between the windings and the enclosure does not exceed 2 mA (IEC 60335-2-40:1995)	(See appended table)	P
19.11	Electronic circuits, compliance checked by evaluation of the fault conditions specified in 19.11.2 for all circuits or parts of circuits, unless they comply with the conditions specified in 19.11.1		P
	Windings temperature not exceeding values shown in Table 6 (IEC 60335-2-40:1995)		P
	Appliance shall comply with the conditions of 19.14 (IEC 60335-2-40:1995)		P
	Appliance withstands the test: a conductor becomes open circuited and three conditions are met (IEC 60335-2-40:1995)		P
19.11.2	Fault conditions applied one at a time, the appliance operated under conditions specified in Cl. 11, but supplied at rated voltage, the duration of the tests as specified:		P
	a) short circuit of creepage distances and clearances between live parts of different potential, if these distances are less than the values specified in 29.1, unless the relevant part is adequately encapsulated	The Cl/Cr measured not less than the values specified in 29,1.	N
	b) open circuit at the terminals of any component	(See appended table)	P
	c) short circuit of capacitors, unless they comply with IEC 60384-14 or 14.2 of IEC 60065	(See appended table)	P
	d) short circuit of any two terminals of an electronic component, other than integrated circuits. This fault condition is not applied between the circuits of an optocoupler	(see appended table)	P
	e) failure of triacs in the diode mode		N
	f) failure of an integrated circuit. In this case the possible hazardous situations of the appliance are assessed to ensure that safety does not rely on the correct functioning of such a component		N
	Short-circuit of low-power circuits (IEC 60335-2-40:1995)		N
	The duration of the tests (IEC 60335-2-40:1995):		P

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	- as specified in 11.7 but only for one operating cycle (in case the fault cannot be recognised by user) IEC 60335-2-40:1995)		N
	- as specified in 19.2, if fault can be recognised by user (IEC 60335-2-40:1995)		P
	- until steady conditions are established (IEC 60335-2-40:1995)		N
	Test ended if interruption of supply occurs within the appliance (IEC 60335-2-40:1995)		P
	Fault condition f) applied to encapsulated or similar components (IEC 60335-2-40:1995)		N
	PTC's, NTC's and VDR's resistors not short-circuited if used as specified by manufacturer (IEC 60335-2-40:1995)		P
19.14	No flames, molten metal, poisonous or ignitable gas or deformed enclosures (IEC 60335-2-40:1995)		P
	Temperatures rise shall not exceed the values shown in Table 7 (IEC 60335-2-40:1995)		P
	The electric strength test, the test voltage being:		P
	- basic insulation: 1000 V		P
	- supplementary insulation: 2750 V		P
	- reinforced insulation: 3750 V		P
24	**COMPONENTS**		P
24.1	Components comply with safety requirements in relevant IEC standards	Respective safety relevant components complying with international standards or equivalent national version. See appended table	P
	Motor-compressors not tested according to IEC 60335-2-34 (not necessary to meet all requirements of IEC 60335-2-34) (IEC 60335-2-40:1995)		N
24.1.5	Voltage across capacitors in series with a motor winding does not exceed 1,1 times rated voltage, when the appliance is supplied at 1,1 times rated voltage under minimum load	The voltage across indoors fan motor capacitor: 347V. Supply mains: 264V	P
	Capacitors for which 30.2.3. is applicable and permanently connected in series with a motor shall be class P1 or P2 of IEC 60252 (IEC 60335-1/A2:1999)		P
	List of components	(See appended table)	P
29	**CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH INSULATION**		P

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
29.1	Creepage distances and clearances not less than specified in table 13	(See appended table)	P
	Values increased by 4 mm in case of reinforced insulation when resonance voltage		N
	Creepage distances and clearances for circuits with voltages greater than 250 V r.m.s. (345 V peak) comply with table (IEC 60335-2-40:1995)	Voltage across the fan capacitor	P
	For motor-compressors with working voltages ≤ 250 V, 29.1 of IEC 60335-2-34 applies (IEC 60335-2-40:1995)		N
	Creepage distances and clearances for motor-compressors with working voltages > 250 V r.m.s. and ≤ 600 V r.m.s. not less than stated in Table 101 (IEC 60335-2-40:1995)		N
30	**RESISTANCE TO HEAT, FIRE AND TRACKING**		P
30.1	See Annex H		P
	Relevant external parts of non-metallic material		P
	Parts supporting live parts and parts providing supplementary or reinforced insulation sufficiently resistant to heat		P
	Ball-pressure test with a force of 20 N, diameter of impression not exceeding 2 mm:	(see appended table)	P
	External parts: at 75 °C	Enclosure	P
	Parts supporting live parts: at 125 °C	Terminal block, PCB Transformer bobbin	P
	Parts providing supplementary or reinforced insulation: temperature (°C):.....		P
30.2	Relevant parts of non-metallic material adequately resistant to ignition and spread of fire		P
30.2.1	Possible burning test of relevant parts according to Annex J		N
	Glow-wire test of Annex K made at temperature 550 °C		N
30.2.3	Appliances operated while unattended, possible bad-connection test according to Annex L		N
	Glow-wire test of Annex K made at 850 °C	Terminal block, PCB Transformer bobbin	P
	Possible needle-flame test according to Annex M		N
30.2.4	Parts of non-metallic material within a distance of 50 mm from parts not withstanding the tests of 30.2.2 or 30.2.3, subjected to the needle-flame test of Annex M		N
30.3	Relevant insulating material have adequate resistance to tracking	(see appended table)	P

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict
	Tracking test at 175 V according to Annex N	Terminal block, PCB Transformer bobbin	P
	Tracking test at 250 V according to Annex N		N
	No hazard other than fire, tracking test at 175 V according to Annex N, and in addition needle-flame test of surrounding parts according to Annex M		N
	Possible needle-flame test of non-metallic material		N

10.1	TABLE: input power and current						P
	Operation mode	Cooling mode: Indoor(DB/WB ºC): 32/23 Heating mode: Indoor(DB/WB ºC): 27/24					P
	Test voltage (V)	230V					—
Model		Rated cooling (W)	Rated heating (W)	Measured cooling (W)	Measured heating (W)	Deviation cooling	Deviation heating
WNG 80 DCI		105	105	110	113	4,8%	7,6%

11.8	TABLE: TEMPERATURE RISE MEASUREMENTS					P
WNG 80 DCI	Operation mode	Cooling mode: Indoor: 32/23 Heating mode: Indoor: 27/24				P
	t1 (°C)	30				—
	t2 (°C)	See remark				—
	Test voltage (V)	254V				—
Temperature T of part:		Measured temperature (°C)			Limit temperature (°C)	
Enclosure of indoor fan motor		97,1			150	
Surface of fan motor capacitor		32,8			T70	
Surface of transformer 1(on PCB)		37,9			90	
Filter capacitor		36,3			T70	
PCB		31,9			Material test	
Terminal block		27,8			Material test	
	Winding temperature rise measurements:					P
	K = 234,5 for copper windings .....:	Copper winding				-
	K = 225 for aluminum windings .....:	N/A				-
	Insulation class .....:	See below				-
Model		R1	R2	T(°C)	Limited T(°C)	Class
YDK-4J-50		104/109	135/141	108/107	115	E
Remark 1: The heating test was performed at the high speed and low speed of fan motor, the highest value was listed.						

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict

13.2	TABLE: LEAKAGE CURRENT AT OPERATING TEMPERATURE		P
	At 1,15 times rated input (W) .....:	N/A	-
	At 1,06 times rated voltage (V) .....:	254V	-

Measured between:	Measured (mA)	Limit (mA)
L/N to earthed metal parts	0,88	3,5
L/N to outside enclosure (class II construction)	0,071	0,25

13.3	TABLE: ELECTRICAL INSULATION AT OPERATING TEMPERATURE	P

Test voltage applied between:	Test voltage (V)	Result
L/N- GND	1000	No
L/N - enclosure of indoor unit (with aluminum foil)	3750	No

16.3	TABLE: ELECTRIC STRENGTH TESTS	P

Test voltage applied between:	Test voltage (V)	Result
L/N – GND	1250	No
L/N - enclosure of indoor unit (aluminium foil)	1250	No
Point where motor winding connected with capacitor-protective earth	1900	No
Point where compressor winding connected with capacitor-protective earth	1900	No

19.2	TABLE: lock motor test, temperature rise measurements				P
Test procedure	Supplied with rated voltage (240V)				-
Duration	15 days, after 3 days HV test performed				P
Ambient temperature [°C]	25				-
Measured samples	Insulation class	Enclosure temperature [°C]	Winding temperature [°C]	HV test performed with 1250V	Leakage current [mA]
YDK-4J-50	E	135	154(protector operated within 1h)	P	0,017
Remark: the test was performed on three different protectors and highest value was listed.					

19.11.2	TABLE: fault condition tests		P
	Ambient temperature (°C)	Cooling:32/23(IU) Heating:27/-(IU)	-
	Test voltage (V)	240V	-

Fault condition	Phenomenon	Hazard

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict

1. SC indoor fan motor capacitor (cooling)	The appliance can operated continuely.	No
2. OC indoor fan motor capacitor (cooling)	The appliance can operated continuely with power input decreased.	No
3. SC indoor fan motor capacitor (heating)	The appliance can operated continuely.	No
4. OC indoor fan motor capacitor (heating)	The appliance can operated continuely with power input decreased.	No
Remark1: the “SC” means “short-circuited” ,“OC” means “ open-circuited”		

24.1	TABLE: COMPONENTS				P
Object/part No.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity
Remark 1: For thermal cut-outs, thermal links of fan motors and transformers which have been approved according to relevant IEC standards, the manufacturer, types and characters not listed in the CDF but should be in this scope authorized by original certification bodies.					
Built-in components with windings: (motors, transformers, magnetic coils etc.)					
Fan Motor	Zhejiang Aoli Motor Stock Co., Ltd.	YDK-4J-50	Main: 125±10% Ω Aux: 120±10% Ω Class E	IEC 60335-2-40	Tested with appliance
Swing motor	ChangZhou Leili	20BYJ46	200±7%Ω Class A	IEC 60335-2-40	Tested with appliance
Transformer of Switch Power Supply	Jing Quan Hua	401034651	EEL16 Class A Pri: pin 1,2,3,4 Sec: pin 5,7 Pri: 310-340V (1-2), 12V (3-4) Sec: 12V	IEC 60335-2-40	Tested with appliance
Alternate	TENWELL	886854	EEL16 Class A Pri: pin 1,2,3,4 Sec: pin 5,7 Pri: 310-340V (1-2), 12V (3-4) Sec: 12V	IEC 60335-2-40	Tested with appliance
Safety components					
E.S.F.	Shandong Xue sheng	DJQ-13	DC12±2V 100mA	IEC 60335-2-40	Tested with appliance
Ionzier	EHK	G1	DC12V	IEC 60335-2-40	Tested with appliance
Alternate	Shandong Xue sheng	G1	DC12V	IEC 60335-2-40	Tested with appliance

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict

Ionzier power box	EHK	ION POWER BOX	Input voltage: DC12V Output voltage : DC6-12V	IEC 60335-2-40	Tested with appliance
Alternate	Shandong xue sheng	ION POWER BOX	Input voltage: DC12V Output voltage: DC6-12V	IEC 60335-2-40	Tested with appliance
Controller	EHK	DCI-WNG	--	IEC 60335-2-40	Tested with appliance
Fuse in controller	Optional	“T” Type	T 3,15A/250VAC	IEC 60127	TUV or any CENELEC
Run capacitor for fan motor	Optional	Optional	450V 3μF±5%, T70 or above	IEC 60252-1	TUV or any CENELEC
Protector for fan motor	Wu Jin	BW Series	250V 100°C	IEC 60730-1	VDE
Main indoor terminal block	Huangzhong	ET16-6	450V 4,0mm^2	IEC 60335-1	Tested with appliance
Alternate	Jiangsu Changheng	JX-W-6	380V 2,5mm²	IEC 60335-1	Tested with appliance
Varistor	Thinking	TVR14561KS42D	AC350V	CECC42000	VDE (5944)
Alternate	Nippon(Marcon)	TNR14V561K	AC350V	CECC42000	VDE (118623)
Alternate	LITTELFUSE INC	V350LA20	AC350V	CECC42000	UL (E75961)
Filter capacitor X2 (C97,C98)	Iskra	KNB1530 series	0,1μF/275VAC Temp 85°C or above	IEC 60384-14	VDE (139447)
Alternate	Tenta	MEX series	0,1μF/275VAC Temp 85°C or above	IEC 60384-14	VDE (119119)
Alternate	Iskra	KNB1560 series	0,1μF/275VAC Temp 85°C or above	IEC 60384-14	VDE (139106)
Alternate	Evox Rifa	PHE840M series	0,1μF/275VAC Temp 85°C or above	IEC 60384-14	VDE (122222)
Alternate	Okaya	RE series	0,1μF/275VAC Temp 85°C or above	IEC 60384-14	VDE (094750X)
Filter capacitor X2 (C43)	Iskra	KNB1530 series	10nF/275VAC Temp 85°C or above	IEC 60384-14	VDE (139447)
Alternate	Tenta	MEX series	10nF/275VAC Temp 85°C or above	IEC 60384-14	VDE (119119)
Alternate	Iskra	KNB1560 series	10nF/275VAC Temp 85°C or above	IEC 60384-14	VDE (139106)

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict

Alternate	Evox Rifa	PHE840M series	10nF/275VAC Temp 85°C or above	IEC 60384-14	VDE (122222)
Alternate	Okaya	RE series	10nF/275VAC Temp 85°C or above	IEC 60384-14	VDE (094750X)
Filter capacitor X2 (C34,C56)	Iskra	KNB1530 series	0,22µF/275VAC Temp 85°C or above	IEC 60384-14	VDE (139447)
Alternate	Tenta	MEX series	0,22µF/275VAC Temp 85°C or above	IEC 60384-14	VDE (119119)
Alternate	Iskra	KNB1560 series	0,22µF/275VAC Temp 85°C or above	IEC 60384-14	VDE (139106)
Alternate	Evox Rifa	PHE840M series	0,22µF/275VAC Temp 85°C or above	IEC 60384-14	VDE (122222)
Alternate	Okaya	RE series	0,22µF/275VAC Temp 85°C or above	IEC 60384-14	VDE (094750X)
Filter capacitor Y2 (C48,C49,C51)	Iskra	KNB2520 series	1nF/250VAC Temp 85°C or above	IEC 60384-14	VDE (139722)
Alternate	TDK	CS series	1nF/250VAC Temp 85°C or above	IEC 60384-14	VDE (138559)
Alternate	JYA-NAY CO.	JY series	1nF/250VAC Temp 85°C or above	IEC 60384-14	VDE (122120)
Filter capacitor Y1 (C52)	TDK	CD series	4,7nF/250VAC Temp 85°C or above	IEC 60384-14	VDE (138526)
Alternate	JYA-NAY CO.	JN series	4,7nF/250VAC Temp 85°C or above	IEC 60384-14	VDE (122699)
PCB	KIN WONG	Type 5	1,6mm 94V-0	--	UL (E243951)
Alternate	Shenzhen Hengbaoshi	BF-5	1,6mm 94V-0	--	UL (E200704)
Alternate	Jiangmen Glory Faith	GF201	1,6mm 94V-0	--	UL (E230374)
Alternate	TAT CHUN	TC-2B	1,6mm 94V-0	--	UL (E131175)
Alternate	Shunde Junda	JD-D	1,6mm 94V-0	--	UL (E173873)
Alternate	Jiangmen Glory Faith	GF103	1,6mm 94V-0	--	UL (E230374)

29.1	TABLE: MINIMUM CREEPAGE DISTANCES AND CLEARANCES				P
creepage (cr) and clearance (cl) distance (mm):		Class III appliances	Other appliances, working voltage:		Remark
			< 130 V	130-250 V	250-440 V	

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict

	cr	cl	cr	cl	cr	cl	cr	cl	
Between live parts of different potential									
-if protected against deposition of dirt	1,0	1,0	1,0	1,0	***3,1***	***3,1***	2,0	2,0	P
-if not protected against deposition of dirt	2,0	1,5	2,0	1,5	***4,0***	***4,0***	***4,0***	***3,0***	P
-if lacquered or enameled windings	1,0	1,0	1,5	1,5	***4,0***	***4,0***	3,0	3,0	P
- for positive temperature coefficient (PTC) resistors including their connecting wires, if protected against deposition of moisture or dirt	—	—	1,0	1,0	1,0	1,0	—	—	N
Cl and Cr measured between: ***1. L and N on PCB;*** ***2. L and N on terminal block;*** ***3. Input of transformer;*** ***4. Winding of fan motor.*** ***The shortest value is considered.***									
Between live parts and other metal parts over basic insulation:									
- if protected against deposition of dirt:									N
- if of ceramic material, pure mica and similar material	1,0	1,0	1,0	1,0	2,5	2,5	—	—	N
- if of other material	1,5	1,0	1,5	1,0	3,0	2,5	—	—	N
- if not protected against deposition of dirt	2,0	1,5	2,0	1,5	***4,0***	***4,0***	—	—	P
- if the live parts are lacquered or enamelled windings	1,0	1,0	1,5	1,5	***4,0***	***4,0***	—	—	P
- at the end of tubular sheathed-type heating elements	—	—	1,0	1,0	1,0	1,0	—	—	N
Cl and Cr measured between: ***1. Live part on PCB and earting metal part;*** ***2. Live part on terminal and earthing metal part;*** ***3. Winding of transformer/fan motor and enclosure/body;*** ***4. Live part on PCB and lower voltage parts;*** ***The shortest value is considered.***									
Between live parts and other metal parts over reinforced insulation									
- if the live parts are lacquered or enamelled windings	—	—	6,0	6,0	6,0	6,0	—	—	N
- for other live parts	—	—	8,0	8,0	***10,0***	***10,0***	—	—	P
Cl and Cr measured between: ***1. Test finger and internal live part through the gap of enclosure.*** ***The shortest value is considered.***									

IEC 60335-2-40			
Clause	Requirement - Test	Result - Remark	Verdict

between metal parts separated by supplementary insulation	—	—	4,0	4,0	4,0	4,0	—	—	N
between live parts in recesses in the mounting face of the appliance and the surface to which it is fixed	2,0	2,0	6,0	6,0	6,0	6,0	—	—	N

30. 1	TABLE: material test				P
Part name/No.	Ball-pressure test		Glow-wire test		Tracking test (V)
	Temp.(°C)	Diameter (mm)	Temp. (°C)	Burning time(s)	
Enclosure	75	1,3	550	0	/
Terminal block	125	1,2	850	0	175
Transformer bobbin	125	1,8	850	0	175
PCB	125	0,8	850	0	175
Remark: the test was performed on all terminal blocks, PCB materials and transformer bobbins and highest value was listed.					

--End of report--

Picture 1

Picture 2

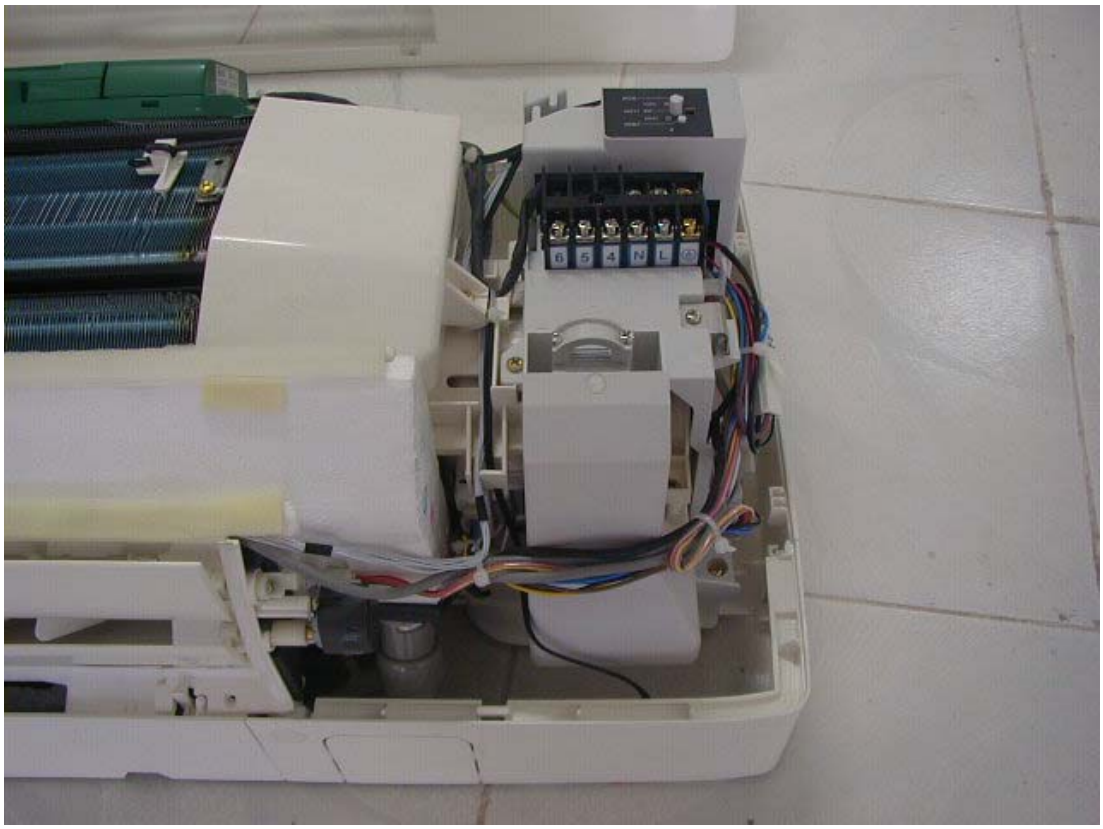
Picture 3

Picture 4

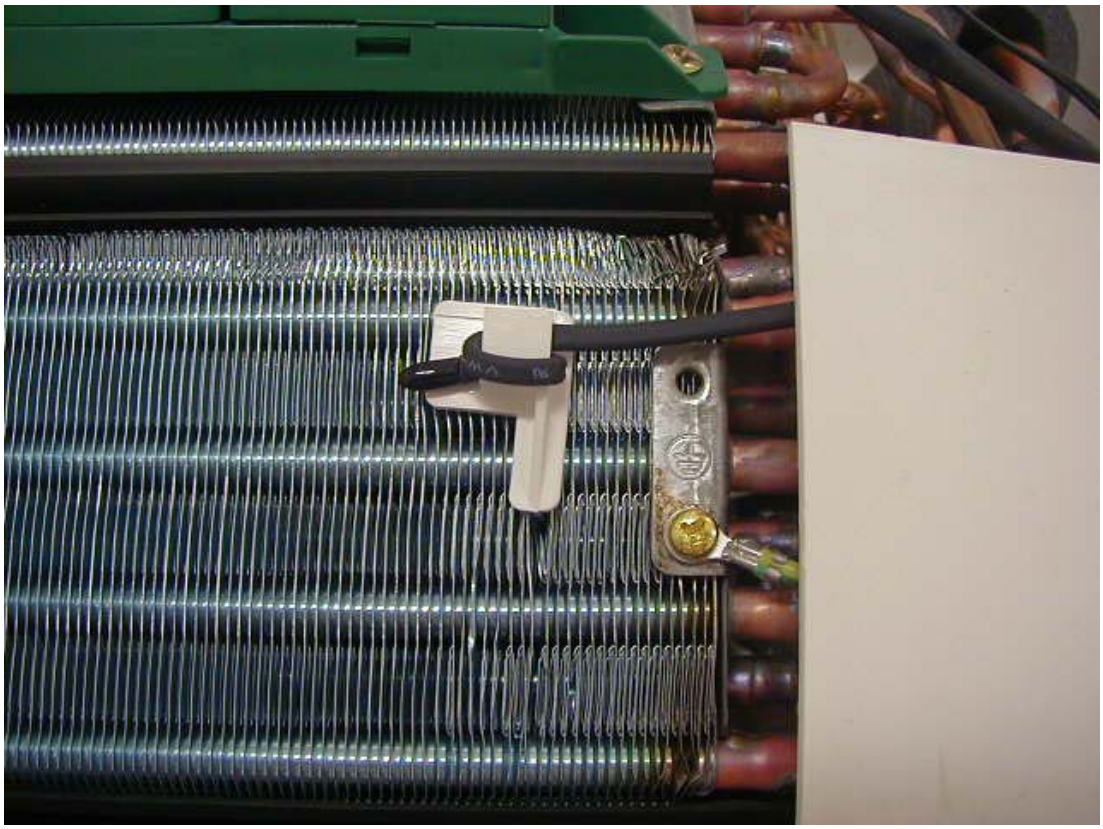
Picture 5

Picture 6

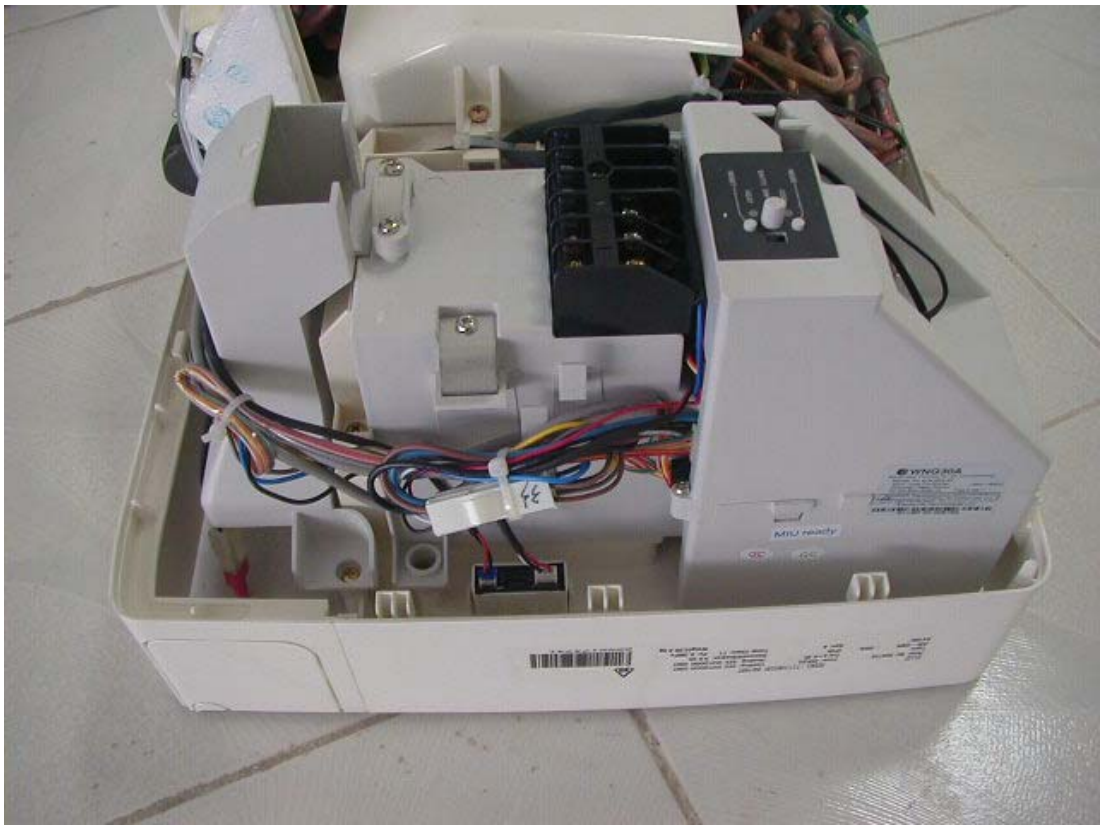
Picture 7



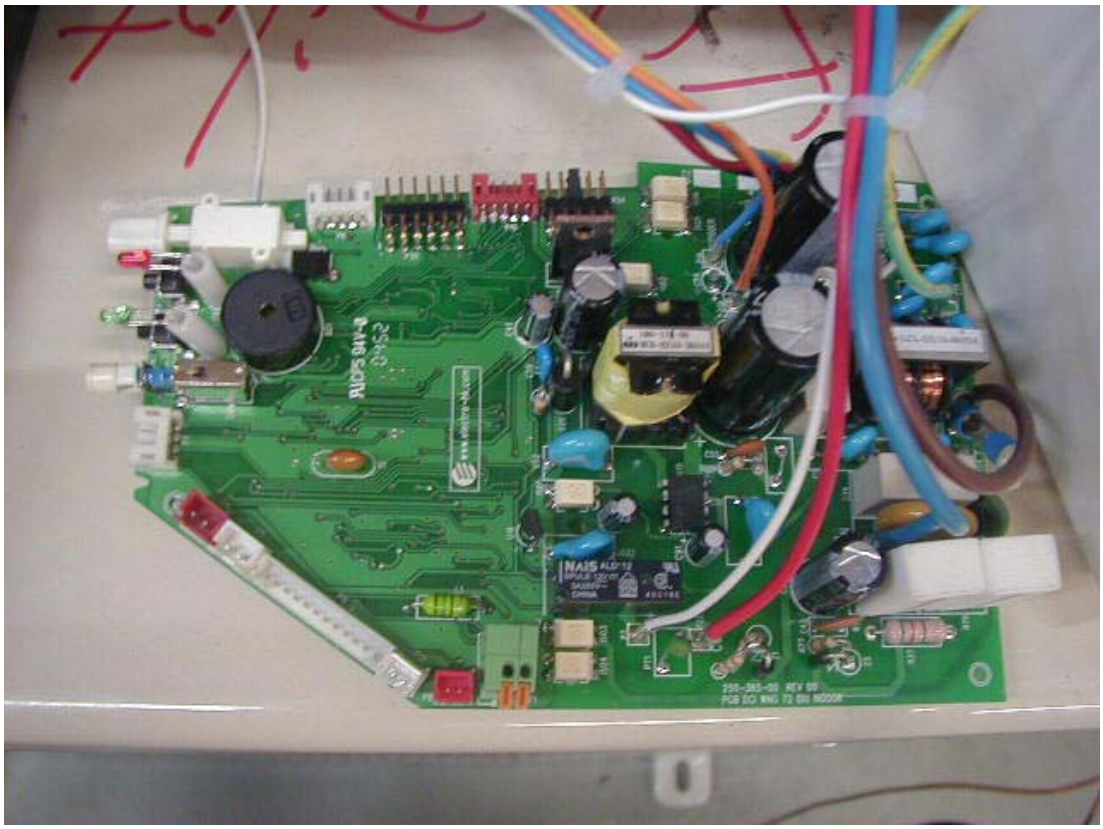
Picture 8



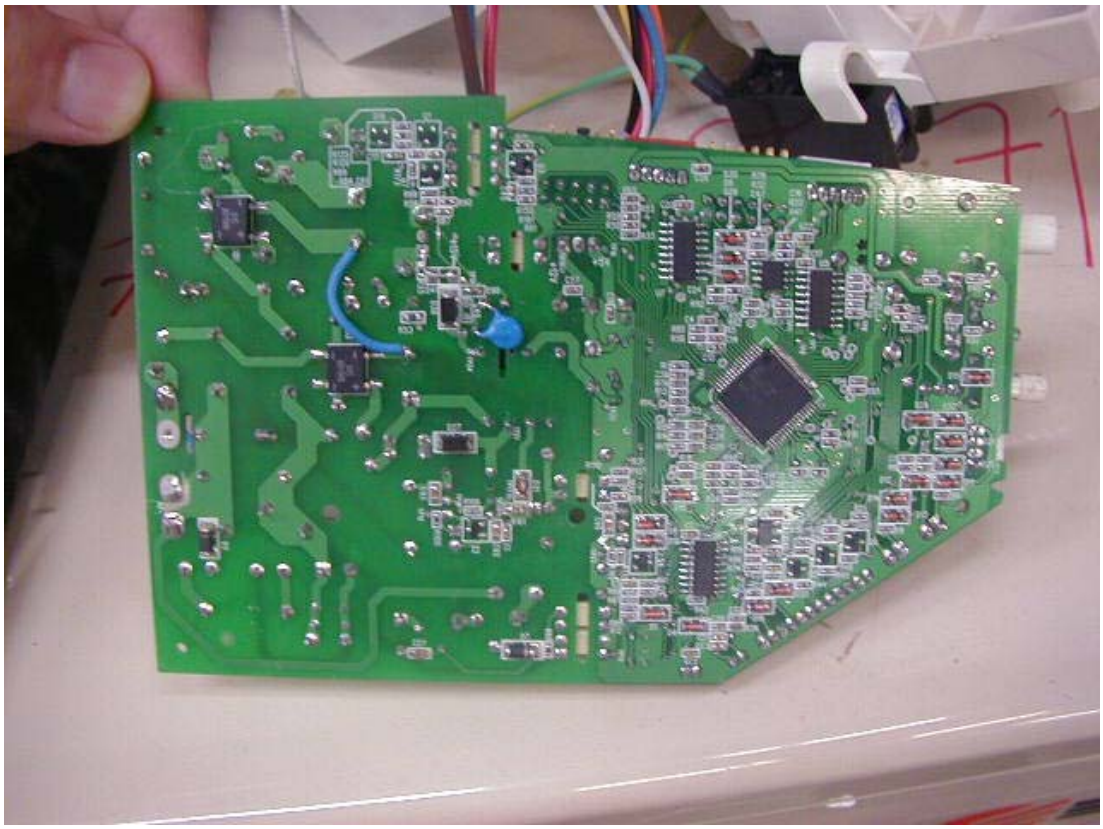
Picture 9



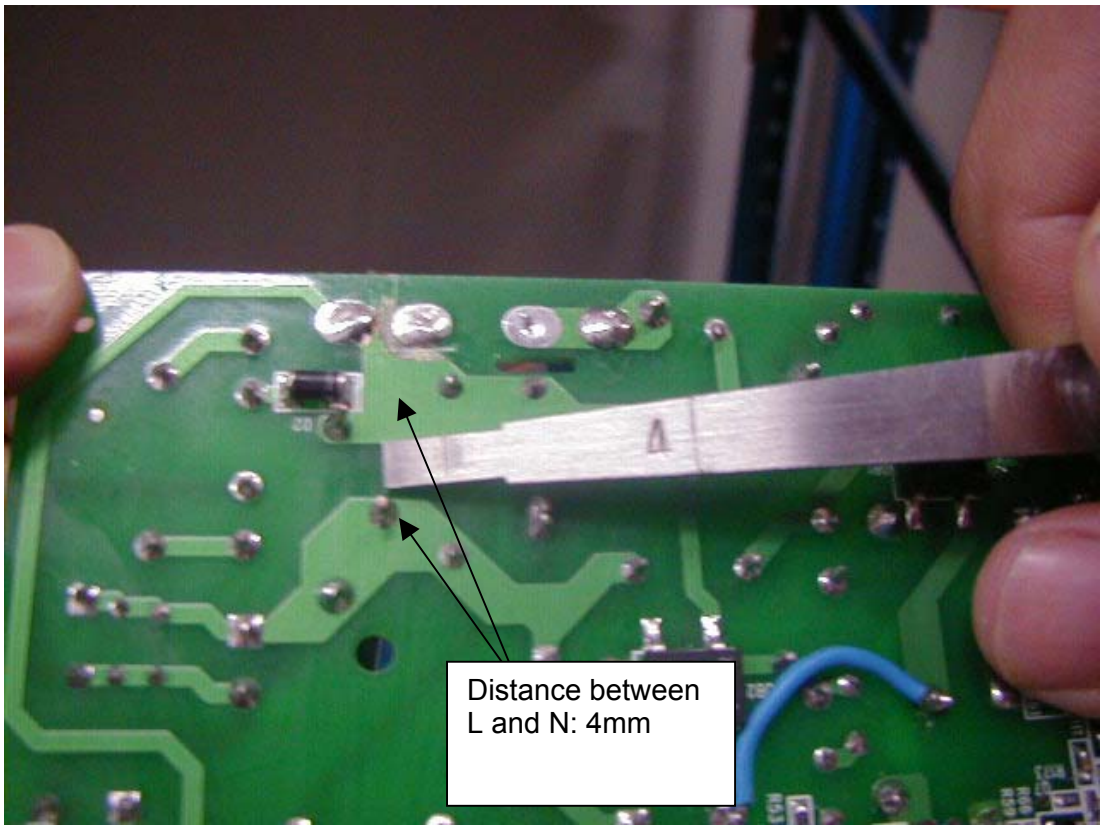
Picture 10



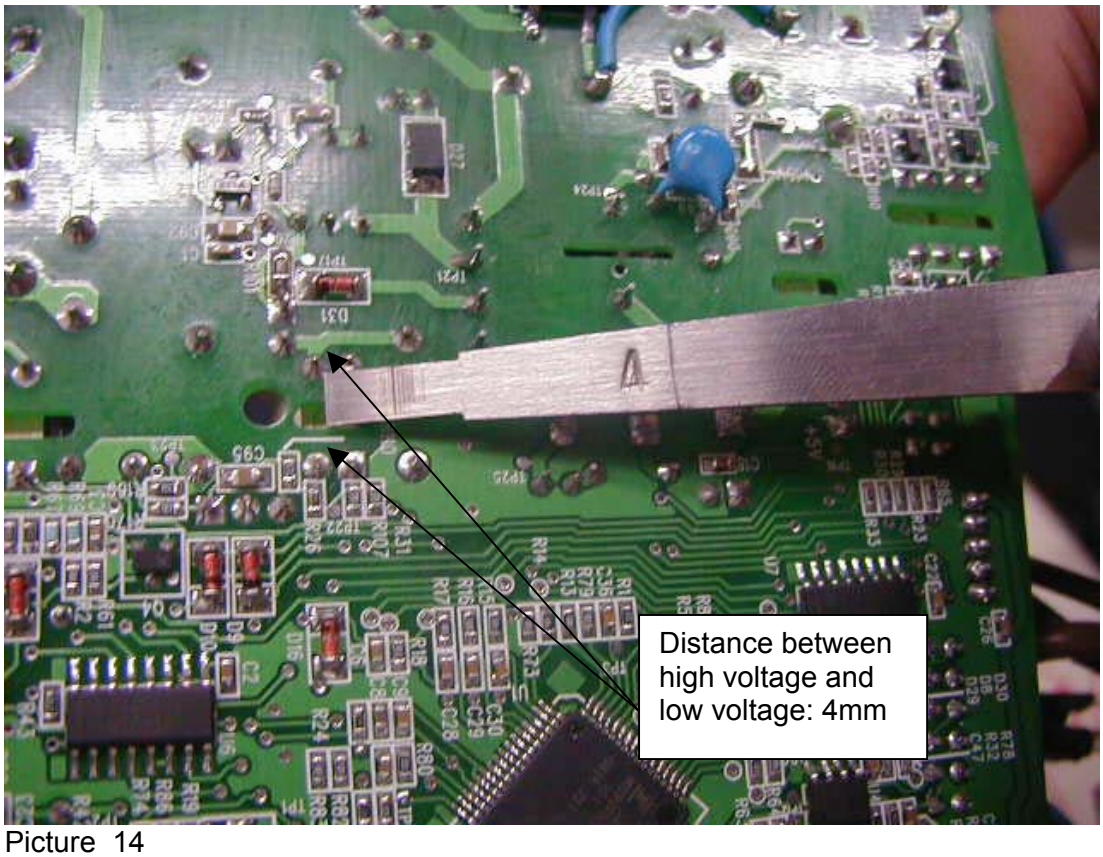
Picture 11



Picture 12



Picture 13



Picture 14