ECMA

EUROPEAN COMPUTER MANUFACTURERS ASSOCIATION

COMPLIANCE VERIFICATION REPORT

(COVER)

ECMA-129 (I-II) – IEC 950 – EN 60950

ECMA TR/39

2nd Edition – December 1988

FOREWORD

This ECMA Technical Report provides a test protocol for verification of equipment complying with one of the following Reference Documents:

- Standard ECMA-129, first edition, 1988 "Safety of Information Technology Equipment" (Parts I and II);
- IEC Publication 950, first edition, 1986: "Safety of Information Technology Equipment, including electrical business equipment";
- European Norm EN 60950, first edition, 1987, "Safety of Information Technology Equipment, including electrical business equipment".

The Reference Document shall be identified in page I-1.

This report may also be used for later editions or amendments of the above documents, provided that these are clearly identified in page I-1.

This report is presented in the form of a check list for type approval and reflects the results of tests which were carried out in the following logical sequence:

- visual inspection,
- non-destructive testing,
- destructive testing.

This second edition of ECMA TR/39 has been adopted by the General Assembly of 15 December 1988.

Part I

GENERAL INFORMATION

COMPLIANCE VERIFICATION TO

[ ] ECMA-129 (Parts I and II)

[ ] IEC 950 (including amendments listed below)

[ ] EN 60950 (including the special national conditions listed below)

OF _____

[ ] The equipment complies with the Standard

[ ] The equipment does not comply with the Standard

AMENDMENTS AND SPECIAL NATIONAL CONDITIONS

SOURCE ORGANIZATION : _____

Prepared by: _____ _____ _____

(Name) (Title) (Date)

Approved by: _____ _____ _____

_____ _____ _____

_____ _____ _____

PRODUCT SAFETY FEATURES

The following items are examples of information describing how safety is achieved. They are intended to assist the test engineer in verifying compliance of the equipment with the Reference Document indicated in page I-1.

- GENERAL
  - Statement that equipment has been designed and built according to the Reference Document
  - Statement about classification of equipment (electrical, moisture, mobility, etc.)
  - Supply connection (directly or indirectly to supply)

- ELECTRICAL SAFETY
  - How protection from electrical shock and energy hazards are achieved
  - Description of power supply (e.g. insulation system, primary and secondary circuits, etc.)
  - Supply disconnection (mains switch, plug, etc.)
  - Safety interlocks
  - Ground fault circuit interrupters
  - How protection of internal wiring is achieved

- CONSTRUCTION
  - Main points of construction which have product safety implications (eg. mechanical strength, CRT implosion, motors/moving parts, etc.)
  - Enclosure design (e.g. metal or plastic, openings, etc.)
  - Stability
  - Safety interlocks

- FIRE PREVENTION
  - Risk assessment
  - Description of approach chosen (e.g. fault conditions, temperature control, classification of enclosure materials, etc.)

LIST OF DOCUMENTS TO BE PROVIDED WITH THE COMPLIANCE VERIFICATION REPORT

The following documents should be provided with the COVER Report and listed on page I-4:

- General description of the equipment tested
- Description of how safety is achieved (see Page I-2)
- Operator instructions
- Installation instructions
- Service instructions

In addition, the following documentation may be required and, if applicable, should also be listed on page I-4:

- Component data sheets and certification
- Capacitor discharge test results
- Limited current circuit test results
- Wire data sheets
- Interlock test results
- Wire insulation test results
- Stability test results
- Mechanical strength test results
- Flammability test results and/or data sheets
- Enclosure flammability test results and/or material data sheets
- Comparative tracking indices of printing wiring board materials
- Data sheets or test results for cathode ray tubes (CRT)
- Constructional drawings for transformers
- Test results for abnormal operation and fault conditions
- Scale prints of printed wiring boards with primary and secondary hazardous voltages showing all voltages on the tracks
- Circuit schematics and assembly drawings of these printed wiring boards

NOTE: To the discretion of the assigned Product Safety Function, additional information may be required.

DOCUMENTS ATTACHED TO THE REPORT

ITEM No.	DOCUMENT DESCRIPTION	SUB-CLAUSE No.	DOCUMENT No.

COMPLIANCE VERIFICATION

INTRODUCTION

The unit identified below has been checked for compliance with the Reference Document identified in page I-1.

A summary of the results is shown on page I-6.

A list of resulting action items is shown on page I-7.

1. PRODUCT NAME : _____
2. MODEL/TYPE REF. : _____
3. TRACER NO./SERIAL NO. : _____
4. DEVELOPMENT ORGANIZATION : _____
5. MANUFACTURING ORGANIZATION : _____
6. BLOCK DIAGRAM : _____

SUMMARY OF TESTING

PART II - SUMMARY OF VISUAL INSPECTION

1.5 Components	Pass [ ] Fail [ ] N/A [ ]
1.6 Power Interface	Pass [ ] Fail [ ] N/A [ ]
1.7 Marking and instructions	Pass [ ] Fail [ ] N/A [ ]
2.1 Protection against electric shock and energy hazards	Pass [ ] Fail [ ] N/A [ ]
2.2 Insulation	Pass [ ] Fail [ ] N/A [ ]
2.3 SELV circuits	Pass [ ] Fail [ ] N/A [ ]
2.5 Provisions for protective earthing	Pass [ ] Fail [ ] N/A [ ]
2.6 Primary power isolation	Pass [ ] Fail [ ] N/A [ ]
2.7 Overcurrent and earth fault protection in primary circuits	Pass [ ] Fail [ ] N/A [ ]
2.8 Safety interlocks	Pass [ ] Fail [ ] N/A [ ]
3.1 Wiring	Pass [ ] Fail [ ] N/A [ ]
3.2 Connection to primary power	Pass [ ] Fail [ ] N/A [ ]
3.3 Wiring terminals for external primary power supply conductors	Pass [ ] Fail [ ] N/A [ ]
4.1 Stability and mechanical hazards	Pass [ ] Fail [ ] N/A [ ]
4.3 Construction details	Pass [ ] Fail [ ] N/A [ ]

PART III - SUMMARY OF NON-DESTRUCTIVE TESTING

1.6 Power interface	Pass [ ] Fail [ ] N/A [ ]
1.7 Marking and instructions	Pass [ ] Fail [ ] N/A [ ]
2.1 Protection against electric shock and energy hazards	Pass [ ] Fail [ ] N/A [ ]
2.2 Insulation	Pass [ ] Fail [ ] N/A [ ]
2.3 SELV circuits	Pass [ ] Fail [ ] N/A [ ]
2.4 Limited current circuits	Pass [ ] Fail [ ] N/A [ ]
2.5 Provisions for protective earthing	Pass [ ] Fail [ ] N/A [ ]
2.9 Creepage distances, clearances and distances through insulation	Pass [ ] Fail [ ] N/A [ ]
3.1 Internal wiring	Pass [ ] Fail [ ] N/A [ ]
3.2 Connection to primary power	Pass [ ] Fail [ ] N/A [ ]
3.3 Wiring terminals for external primary power supply conductors	Pass [ ] Fail [ ] N/A [ ]
4.1 Stability and mechanical hazards	Pass [ ] Fail [ ] N/A [ ]
4.3 Construction details	Pass [ ] Fail [ ] N/A [ ]
5.1 Heating	Pass [ ] Fail [ ] N/A [ ]
5.2 Earth leakage current	Pass [ ] Fail [ ] N/A [ ]
5.3 Electric strength	Pass [ ] Fail [ ] N/A [ ]

PART IV - SUMMARY OF DESTRUCTIVE TESTING

2.7 Overcurrent and earth fault protection in primary circuits	Pass [ ] Fail [ ] N/A [ ]
2.9 Creepage distances, clearances and distances through insulation	Pass [ ] Fail [ ] N/A [ ]
4.2 Mechanical strength	Pass [ ] Fail [ ] N/A [ ]
4.4 Resistance to fire	Pass [ ] Fail [ ] N/A [ ]
5.4 Abnormal operating and fault conditions	Pass [ ] Fail [ ] N/A [ ]

LIST OF RESULTING ACTION ITEMS

ACTION No.	ACTION REQUIRED	SUB-CLAUSE No.	PASS	FAIL

Part II

SUMMARY OF VISUAL INSPECTION

LIST OF COMPONENTS WHERE SAFETY IS INVOLVED

PART REF.	PART NUMBER	APPLICATION/FUNCTION	MANUFACTURER AND MANUF. TYPE NUMBER	RATING	APPROVAL MARKS

- List all different manufacturers of the above componenents.
- Use separate lists for different schematics.
- Give reference to schematic.

SUB-CLAUSE 1.5 - COMPONENTS

Attached Documents? YES [ ] NO [ ]	1.5.1 P [ ] F [ ] N/A [ ] 1.5.3 P [ ] F [ ] N/A [ ] 1.5.4 P [ ] F [ ] N/A [ ] C. P [ ] F [ ] N/A [ ]
Notes: - Use page II-1 to list the components where safety is involved. - Give any relevant information on components and their documentation. - If high voltage components are used which require testing per 1.5.4, see Part IV for details.	

Comments:

SUB-CLAUSE 1.6 - POWER INTERFACE

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	1.6.2 P [ ] F [ ] N/A [ ] 1.6.3 P [ ] F [ ] N/A [ ] 1.6.4 P [ ] F [ ] N/A [ ] 1.6.5 P [ ] F [ ] N/A [ ]
Comments:	

Results of Sub-Clause 1.6: Pass [ ] Fail [ ]

SUB-CLAUSE 1.7 - MARKING AND INSTRUCTIONS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

Special National Conditions

United Kingdom: 1.7.2 (page II-5)
Denmark: 1.7.2 and 1.7.5 (page II-6)

Comments: (e.g. affix copy of rating plates, list markings of fuses, etc.)

1.7.1 P [ ] F [ ] N/A [ ]
1.7.2 P [ ] F [ ] N/A [ ]
1.7.3 P [ ] F [ ] N/A [ ]
1.7.4 P [ ] F [ ] N/A [ ]
1.7.5 P [ ] F [ ] N/A [ ]
1.7.6 P [ ] F [ ] N/A [ ]
1.7.7 P [ ] F [ ] N/A [ ]
1.7.8 P [ ] F [ ] N/A [ ]
1.7.9 P [ ] F [ ] N/A [ ]
1.7.10 P [ ] F [ ] N/A [ ]
1.7.11 P [ ] F [ ] N/A [ ]
1.7.12 P [ ] F [ ] N/A [ ]
1.7.13 P [ ] F [ ] N/A [ ]
1.7.14 P [ ] F [ ] N/A [ ]
1.7.16 P [ ] F [ ] N/A [ ]

Results of Sub-Clause 1.7: Pass [ ] Fail [ ]

SUB-CLAUSE 1.7 - MARKING AND INSTRUCTIONS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

UNITED KINGDOM

Power supply cords of Class I equipment must be provided with a label with the following text in legible characters:

IMPORTANT!
The cores in this mains lead are coloured in accordance with the following code:

- **green and yellow earth**
- **blue neutral**
- **brown live**

For Class I equipment fitted with a power supply cord, the instruction sheet and the label required, must also include the substance of the following text:

As the colours of the cores in the mains lead of this equipment may not correspond with the colour markings identifying the terminals in your plug, proceed as follows:

- **the core which is coulored green and yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol, or colored green and yellow,**
- **the core which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black,**
- **the core which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.**

For Class II equipment fitted with a power supply cord, the instruction sheet must give instructions for the correct connection of the plug, making it clear that neither core is to be connected to the earth terminal of a three pin plug.

For Class I equipment, the instruction sheet and, for portable Class I equipment, also the label attached to the power supply cord must quote the following warning:

WARNING - THIS EQUIPMENT MUST BE EARTHED

Results of Sub-Clause 1.7: Pass [ ] Fail [ ]

SUB-CLAUSE 1.7 - MARKING AND INSTRUCTIONS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

DENMARK

1.7.2

Supply cords of Class I appliances, which are delivered without a plug, must be provided with a visible tag with the following text:

VIGTIGT!

Lederen med grn/gul isolation må kun tilsluttes en klemme mærket eller

If essential for the safety of the appliance, the tag must in addition be provided with a diagram which shows the connection of the other conductors, or be provided with the following text:

For tilsluting af de vrige ledere, se medfigende installationsvejledning.

1.7.5

Socket-outlets for providing power to other appliances, shall ensure protection against electric shock during insertion of the plug, according to the Heavy Current Regulations, Section 107, for portable socket-outlets.

This requirement implies that the socket-outlets shall be provided with a protection rim.

Socket-outlets shall be in compliance with the Heavy Current Regulations, Section 107, the Standard Sheets being applied as follows:

- Class I.....Standard Sheet 3 or 3a

For Class I appliances the earthing contact of the socket-outlet shall be electrically connected to the earthing terminal of the appliance.

Class II appliances shall not be fitted with socket-outlets for providing power to other appliances.

Results of Sub-Clause 1.7: Pass [ ] Fail [ ]

SUB-CLAUSE 2.1 - PROTECTION AGAINST ELECTRIC SHOCK AND ENERGY HAZARDS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	2.1.1 P [ ] F [ ] N/A [ ] 2.1.2 P [ ] F [ ] N/A [ ] 2.1.4 P [ ] F [ ] N/A [ ] 2.1.5 P [ ] F [ ] N/A [ ] 2.1.7 P [ ] F [ ] N/A [ ]
Comments:	

Results of Sub-Clause 2.1: Pass [ ] Fail [ ]

SUB-CLAUSE 2.2 - INSULATION

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	2.2.2 P [ ] F [ ] N/A [ ]

Notes:

- General information on insulation is given in Subclause 2.2.1 and 2.2.4 - 2.2.7.
- In case of doubt regarding the hygroscopic nature of an insulating material, the tests in 2.2.2 shall be carried out (see Part III).

Comments: (describe materials used)

Results of Sub-Clause 2.2: Pass [ ] Fail [ ]

SUB-CLAUSE 2.3 - SELV CIRCUITS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	2.3.2 P [ ] F [ ] N/A [ ] 2.3.3 P [ ] F [ ] N/A [ ] 2.3.8 P [ ] F [ ] N/A [ ]
Note: - Describe which method(s) in 2.3.3 is(are) used (see also 2.3.4 - 2.3.7).	

Special National Conditions

Denmark: Method 3 of 2.3.6 is not considered acceptable.

Comments:

Results of Sub-Clause 2.3: Pass [ ] Fail [ ]

SUB-CLAUSE 2.5 - PROVISIONS FOR PROTECTIVE EARTHING

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

Note:

- If accessible parts are separated from parts at hazardous voltage as described in 2.5.1, the tests of 2.9.2 and 4.2.3 apply (see Part III).

Special National Conditions

Denmark: 2.5.2 (page II-11)

2.5.1	P [ ]	F [ ]	N/A [ ]
2.5.2	P [ ]	F [ ]	N/A [ ]
2.5.3	P [ ]	F [ ]	N/A [ ]
2.5.4	P [ ]	F [ ]	N/A [ ]
2.5.5	P [ ]	F [ ]	N/A [ ]
2.5.6	P [ ]	F [ ]	N/A [ ]
2.5.7	P [ ]	F [ ]	N/A [ ]
2.5.8	P [ ]	F [ ]	N/A [ ]
2.5.9	P [ ]	F [ ]	N/A [ ]
2.5.10	P [ ]	F [ ]	N/A [ ]

Comments: (e.g. affix copy of rating plates, list markings of fuses, etc.)

Results of Sub-Clause 2.5: Pass [ ] Fail [ ]

SUB-CLAUSE 2.5 - PROVISIONS FOR PROTECTIVE EARTHING

ApplicableApplicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

DENMARK

The first paragraph of Sub-clause 2.5.2 is replaced by the following:

"Class II equipment shall have no provision for protective earthing except that fixed equipment may be provided with a means for maintaining the continuity of protective earthing circuits to other equipment in a system if the earth connection is separated from parts at hazardous voltage by double or reinforced insulation."

Results of Sub-Clause 2.5: Pass [ ] Fail [ ]

SUB-CLAUSE 2.6 - PRIMARY POWER ISOLATION

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

Special National Conditions

Austria: 2.6.7

All pole disconnection (phase and neutral conductors) is required for all power supply systems.
(Ref: Oe VE-E5 1, Part 1/1981, section 13.3.1).

2.6.1	P [ ]	F [ ]	N/A [ ]
2.6.2	P [ ]	F [ ]	N/A [ ]
2.6.3	P [ ]	F [ ]	N/A [ ]
2.6.4	P [ ]	F [ ]	N/A [ ]
2.6.5	P [ ]	F [ ]	N/A [ ]
2.6.6	P [ ]	F [ ]	N/A [ ]
2.6.7	P [ ]	F [ ]	N/A [ ]
2.6.8	P [ ]	F [ ]	N/A [ ]
2.6.9	P [ ]	F [ ]	N/A [ ]
2.6.10	P [ ]	F [ ]	N/A [ ]
2.6.11	P [ ]	F [ ]	N/A [ ]
2.6.12	P [ ]	F [ ]	N/A [ ]

Comments: (describe implementation)

Results of Sub-Clause 2.6: Pass [ ] Fail [ ]

SUB-CLAUSE 2.7 - OVERCURRENT AND EARTH FAULT PROTECTION IN PRIMARY CIRCUITS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	2.7.1 P [ ] F [ ] N/A [ ] 2.7.2 P [ ] F [ ] N/A [ ]
Note: - As 2.7.3 generally requires simulation of fault conditions, it is covered in Part IV.	

Comments:

Results of Sub-Clause 2.7: Pass [ ] Fail [ ]

SUB-CLAUSE 2.8 - SAFETY INTERLOCKS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	2.8.1 P [ ] F [ ] N/A [ ] 2.8.3 P [ ] F [ ] N/A [ ] 2.8.5 P [ ] F [ ] N/A [ ]
Comments:	

Results of Sub-Clause 2.8: Pass [ ] Fail [ ]

SUB-CLAUSE 3.1 - WIRING

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	3.1.1 P [ ] F [ ] N/A [ ] 3.1.2 P [ ] F [ ] N/A [ ] 3.1.3 P [ ] F [ ] N/A [ ] 3.1.4 P [ ] F [ ] N/A [ ] 3.1.6 P [ ] F [ ] N/A [ ] 3.1.7 P [ ] F [ ] N/A [ ]
Notes: - Specify type of wire used and describe insulation properties. - Where temperature rise tests are necessary, these are covered in Part III.	

Comments:

Results of Sub-Clause 3.1: Pass [ ] Fail [ ]

SUB-CLAUSE 3.2 - CONNECTION TO PRIMARY POWER

Applicable [ ] Not Applicable [ ]

Attached Documents?	YES [ ] NO [ ]
Special National Conditions	
Denmark:	3.2.1 (page II-17)

3.2.1 P [ ] F [ ] N/A [ ]
3.2.2 P [ ] F [ ] N/A [ ]
3.2.3 P [ ] F [ ] N/A [ ]
3.2.5 P [ ] F [ ] N/A [ ]
3.2.6 P [ ] F [ ] N/A [ ]
3.2.7 P [ ] F [ ] N/A [ ]
3.2.8 P [ ] F [ ] N/A [ ]

Comments:

Results of Sub-Clause 3.2: Pass [ ] Fail [ ]

SUB-CLAUSE 3.2 - CONNECTION TO PRIMARY POWER

Applicable [ ] Not Applicable

Attached Documents? YES [ ] NO [ ]

DENMARK

3.2.1

If single-phase appliances having a rated current not exceeding 10 A are provided with a supply cord with a plug, this plug shall be in accordance with the following table:

Class of Equipment		Plug	
		The Heavy Current Regulations, Section 107 Standard Sheet	CEE 7 Standard Sheet
I	Protection against indirect contact required*	4, 4a	-
	Earth connection not required	II, IV, VI, VII 2, 2a, 4, 4a	II, IV, VI, VII
II		II, 2, 2a	II, XVI, XVII

* Appliances fitted with a socket-outlet for providing power to other appliances

- Appliances covered by the general requirement for protection against indirect contact in the Heavy Current Regulations, Section 10, Clause 18.1;
- Appliances which are mainly used in locations where protection against indirect contact is required according to the Heavy Current Regulations, Section 10, Clause 17.

If polyphase appliances and single-phase appliances having a current rating exceeding 10 A are provided with a supply cord with a plug, this plug shall be in accordance with the following table:

Class of Equipment	Plug	
	The Heavy Current Regulations, Section 107 Standard Sheet	The Heavy Current Regulations, Section 177 Standard Sheet
I	6	II
II	6*	II*
III	-	IX

* The earthing contact not connected

Results of Sub-Clause 3.2: Pass [ ] Fail [ ]

SUB-CLAUSE 3.3 - WIRING TERMINALS FOR EXTERNAL PRIMARY POWER SUPPLY CONDUCTORS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

Notes:

- Specify type of terminations used.
- 3.3.2 is addressed in Part III.

Special National Conditions

United Kingdom: 3.3.5

In Table X, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a rated current of over 10 A up to and including 13 A is: 1,25 to 1,5 mm^2 nominal cross-section area.

3.3.1 P [ ] F [ ] N/A [ ]
3.3.3 P [ ] F [ ] N/A [ ]
3.3.4 P [ ] F [ ] N/A [ ]
3.3.5 P [ ] F [ ] N/A [ ]
3.3.6 P [ ] F [ ] N/A [ ]
3.3.7 P [ ] F [ ] N/A [ ]
3.3.8 P [ ] F [ ] N/A [ ]
3.3.9 P [ ] F [ ] N/A [ ]

Comments: (e.g. affix copy of rating plates, list markings of fuses, etc.)

Results of Sub-Clause 3.3: Pass [ ] Fail [ ]

SUB-CLAUSE 4.1 - STABILITY AND MECHANICAL HAZARDS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	4.1.2 P [ ] F [ ] N/A [ ] 4.1.3 P [ ] F [ ] N/A [ ] 4.1.4 P [ ] F [ ] N/A [ ]
Comments:	

Results of Sub-Clause 4.1: Pass [ ] Fail [ ]

SUB-CLAUSE 4.3 - CONSTRUCTION DETAILS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

4.3.1	P [ ]	F [ ]	N/A [ ]
4.3.2	P [ ]	F [ ]	N/A [ ]
4.3.3	P [ ]	F [ ]	N/A [ ]
4.3.6	P [ ]	F [ ]	N/A [ ]
4.3.7	P [ ]	F [ ]	N/A [ ]
4.3.8	P [ ]	F [ ]	N/A [ ]
4.3.9	P [ ]	F [ ]	N/A [ ]
4.3.10	P [ ]	F [ ]	N/A [ ]
4.3.11	P [ ]	F [ ]	N/A [ ]
4.3.13	P [ ]	F [ ]	N/A [ ]
4.3.14	P [ ]	F [ ]	N/A [ ]
4.3.15	P [ ]	F [ ]	N/A [ ]
4.3.16	P [ ]	F [ ]	N/A [ ]
4.3.17	P [ ]	F [ ]	N/A [ ]
4.3.18	P [ ]	F [ ]	N/A [ ]
4.3.19	P [ ]	F [ ]	N/A [ ]
4.3.20	P [ ]	F [ ]	N/A [ ]
4.3.22	P [ ]	F [ ]	N/A [ ]
4.3.23	P [ ]	F [ ]	N/A [ ]

Results of Sub-Clause 4.3: Pass [ ] Fail [ ]

Part III

SUMMARY OF NON-DESTRUCTIVE TESTING

SUB-CLAUSE 1.6 - POWER INTERFACE

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	1.6.1 P [ ] F [ ] N/A [ ]

Note:

- Measure input current and compare it with the value on the rating plate.

Comments:

Results of Sub-Clause 1.6: Pass [ ] Fail [ ]

SUB-CLAUSE 1.7 - MARKING AND INSTRUCTIONS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	1.7.15 P [ ] F [ ] N/A [ ]

Comments:

Results of Sub-Clause 1.1.7: Pass [ ] Fail [ ]

SUB-CLAUSE 2.1 - PROTECTION AGAINST ELECTRIC SHOCK AND ENERGY HAZARDS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	2.1.3 P [ ] F [ ] N/A [ ] 2.1.6 P [ ] F [ ] N/A [ ] 2.1.8 P [ ] F [ ] N/A [ ] 2.1.9 P [ ] F [ ] N/A [ ] 2.1.10 P [ ] F [ ] N/A [ ]
Notes: - If applicable, test 2.1.8 according to 5.3.2. - If applicable, provide capacitor discharge test results. - If applicable, test 2.1.6 according to 4.2.3. - If applicable, test 2.1.9 according to 2.9 and 5.3.2.	

Comments:

Results of Sub-Clause 2.1: Pass [ ] Fail [ ]

SUB-CLAUSE 2.2 - INSULATION

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	2.2.2 P [ ] F [ ] N/A [ ] 2.2.3 P [ ] F [ ] N/A [ ]
Note: - If applicable, apply humidity treatment according to 2.2.3, followed by the test of 5.3.2.	

Comments:

Results of Sub-Clause 2.2: Pass [ ] Fail [ ]

SUB-CLAUSE 2.3 - SELV CIRCUITS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	2.3.2 P [ ] F [ ] N/A [ ] 2.3.3 P [ ] F [ ] N/A [ ] 2.3.9 P [ ] F [ ] N/A [ ]
Note: - Measure the voltage of each SELV circuit under normal conditions, and after a single fault.	

Comments:

Results of Sub-Clause 2.3: Pass [ ] Fail [ ]

SUB-CLAUSE 2.4 - LIMITED CURRENT CIRCUITS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	2.4.1 P [ ] F [ ] N/A [ ] 2.4.2 P [ ] F [ ] N/A [ ] 2.4.3 P [ ] F [ ] N/A [ ] 2.4.4 P [ ] F [ ] N/A [ ] 2.4.5 P [ ] F [ ] N/A [ ]
Comments:	

Results of Sub-Clause 2.4: Pass [ ] Fail [ ]

SUB-CLAUSE 2.5 - PROVISIONS FOR PROTECTIVE EARTHING

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	2.5.1 P [ ] F [ ] N/A [ ] 2.5.2 P [ ] F [ ] N/A [ ] 2.5.11 P [ ] F [ ] N/A [ ]
Comments:	

Results of Sub-Clause 2.5: Pass [ ] Fail [ ]

SUB-CLAUSE 2.8 - SAFETY INTERLOCKS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	2.8.2 P [ ] F [ ] N/A [ ] 2.8.4 P [ ] F [ ] N/A [ ] 2.8.6 P [ ] F [ ] N/A [ ] 2.8.7 P [ ] F [ ] N/A [ ]
Comments:	

Results of Sub-Clause 2.8: Pass [ ] Fail [ ]

SUB-CLAUSE 2.9 - CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH INSULATION

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

2.9.1 P [ ] F [ ] N/A [ ]
2.9.2 P [ ] F [ ] N/A [ ]
2.9.3 P [ ] F [ ] N/A [ ]
2.9.5 P [ ] F [ ] N/A [ ]

Results of Sub-Clause 2.9: Pass [ ] Fail [ ]

SUB-CLAUSE 3.1 - WIRING

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	3.1.1 P [ ] F [ ] N/A [ ] 3.1.5 P [ ] F [ ] N/A [ ]

Comments:

Results of Sub-Clause 3.1: Pass [ ] Fail [ ]

SUB-CLAUSE 3.2 - CONNECTION TO PRIMARY POWER

Applicable [ ] Not Applicable

Attached Documents? YES [ ] NO [ ]	3.2.4 P [ ] F [ ] N/A [ ] 3.2.5 P [ ] F [ ] N/A [ ]
Special National Conditions **United Kingdom**: 3.2.4 A power supply cord with conductor of 1,25 mm^2 is allowed for equipment with a rated current over 10 A and up to and including 13 A.	

Comments:

Results of Sub-Clause 3.2: Pass [ ] Fail [ ]

SUB-CLAUSE 3.3 - WIRING TERMINALS FOR EXTERNAL POWER SUPPLY CONDUCTORS

Applicable [ ] Not Applicable

Attached Documents? YES [ ] NO [ ]	3.3.2 P [ ] F [ ] N/A [ ]

Comments:

Results of Sub-Clause 3.3: Pass [ ] Fail [ ]

SUB-CLAUSE 4.1 - STABILITY AND MECHANICAL HAZARDS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	4.1.1 P [ ] F [ ] N/A [ ]

Comments:

Results of Sub-Clause 4.1.1: Pass [ ] Fail [ ]

SUB-CLAUSE 4.3 - CONSTRUCTION DETAILS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

Note:

- 4.3.12: reference may be made to a separate report.

4.3.4 P [ ] F [ ] N/A [ ]
4.3.5 P [ ] F [ ] N/A [ ]
4.3.12 P [ ] F [ ] N/A [ ]
4.3.21 P [ ] F [ ] N/A [ ]

Comments:

Results of Sub-Clause 4.3: Pass [ ] Fail [ ]

SUB-CLAUSE 5.1 - HEATING

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	5.1 P [ ] F [ ] N/A [ ]

Notes:

- Wirewound components are normally measured by the change of resistance method (see test sheet on page III-16). Deviation from this method shall be explained.
- If thermocouples are used describe their position.

Special National Conditions

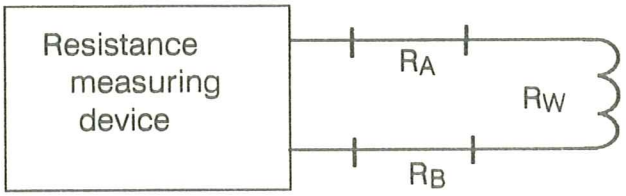
Austria: 5.1 (page III-17)

Norway: 5.1 (page III-18)

Comments: (provide winding diagrams)

Results of Sub-Clause 5.1: Pass [ ] Fail [ ]

TEMPERATURE RISE OF TRANSFORMER WINDINGS (Sub-Clause 5.4.2 and Appendix C - Abnormal Operations)



R_L = Resistance of measuring leads

$R_L = R_A + R_B$

$R_T = R_W + R_L$

$$Dt = \frac{RW2 - RW1}{RW1} (234,5 + t_1) - (t_2 - t_1)$$

Winding tested	Cold condition					Hot condition				t
	R_{T1}	R_L	R_{W1}	T_1		R_{T2}	R_L	R_{W2}	T_2	

Component part number: _____

Manufacturer's name: _____

Manufacturer's designation: _____

Insulation class: _____ Temp. limit: _____C

Test voltage: _____ VAC

Means of internal/external protection: _____

Results of Sub-Clause 5.1 Pass [ ] Fail [ ]

SUB-CLAUSE 5.1 - HEATING

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

AUSTRIA

5.1

The following reduced values apply to table II-XIII:

1. For handles, etc held for short periods:
   - for metal: 25 K (not exceeding 50 C *)
   - for glass, porcelain 35 K (not exceeding 60 C *)
   - for plastic 45 K (not exceeding 70 C *)
2. For handles, etc continuously held:
   - for metal: 18 K (not exceeding 43 C *)
   - for glass, porcelain 25 K (not exceeding 50 C *)
   - for plastic 35 K (not exceeding 60 C *)

* maximum temperature not to be exceeded when based on 25 C ambient air temperature according to 1.4.7

(Ref. Federal Act No. 219/1983, Section 10(2).

Results of Sub-Clause 5.1 Pass [ ] Fail [ ]

SUB-CLAUSE 5.1 - HEATING

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

NORWAY

5.1

To prevent fire risk, temperature limits for wooden supports shall be taken into account. The temperature limit is 65 K in general and 60 K for apparatus for continuous operation.

Results of Sub-Clause 5.1 Pass [ ] Fail [ ]

SUB-CLAUSE 5.2 - EARTH LEAKAGE CURRENT

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

Notes:

- Indicate which limits applies and which test equipment has been used.
- Equipment connected directly to IT power systems, see Appendix G.

Special National Conditions

Norway: 5.2.5

The connection of equipment to the electrical power installation of buildings shall comply with the requirements specified in IEC Publication 364-7-707: "Earthing requirements for the Installation of Data Processing Equipment", see 1.7.2.

This statement shall be specified in the equipment instructions (see 1.7.2).

(Ref. TEA 1929/FEA 1963).

5.2.1 P [ ] F [ ] N/A [ ]
5.2.2 P [ ] F [ ] N/A [ ]
5.2.3 P [ ] F [ ] N/A [ ]
5.2.4 P [ ] F [ ] N/A [ ]
5.2.5 P [ ] F [ ] N/A [ ]

Comments

Results of Sub-Clause 5.2: Pass [ ] Fail [ ]

SUB-CLAUSE 5.3 - ELECTRIC STRENGTH

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	5.3.1 P [ ] F [ ] N/A [ ] 5.3.2 P [ ] F [ ] N/A [ ]
Notes: - Check whether 2.1.8 and 2.1.9 are also applicable. - List all points of applications, including all individual components. - Use pages III-21 and III-22 for construction details and test results respectively.	

Comments

Results of Sub-Clause 5.3: Pass [ ] Fail [ ]

ELECTRIC STRENGTH AND SPACINGS OF TRANSFORMERS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	2.9 P [ ] F [ ] N/A [ ] 5.3 P [ ] F [ ] N/A [ ] C P [ ] F [ ] N/A [ ]

REQUIREMENTS

LOCATION	INSULATION	ELECTRIC STRENGHT	TERMINAL SPACINGS	CREEPAGE DISTANCE	CLEARANCE	DISTANCE THRU INSULATION
1						
2						
3						
4						
5						

TEST RESULTS

LOCATION	PASS/FAIL	mm	mm	mm	LAYERS
1					
2					
3					
4					
5					

Component part number: _____
Manufacturer's name: _____
Manufacturer's designation: _____

Results Pass [ ] Fail [ ]

CONSTRUCTIONAL OVERVIEW OF TRANSFORMERS

Component part number: _____
Manufacturer's name: _____
Manufacturer's designation: _____

Results Pass [ ] Fail [ ]

Part IV

SUMMARY OF DESTRUCTIVE TESTING

SUB-CLAUSE 2.7 - OVERCURRENT AND EARTH FAULT PROTECTION IN PRIMARY CIRCUITS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	2.7.3 P [ ] F [ ] N/A [ ]

Comments

Results of Sub-Clause 2.7 Pass [ ] Fail [ ]

SUB-CLAUSE 2.9 - CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH INSULATION

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

Notes:

- For transformers, use pages III-17 and III-18.
- For operational insulation, creepage distances and clearances smaller than those in 2.9, see 5.4.4.

2.9.4 P [ ] F [ ] N/A [ ]
2.9.5 P [ ] F [ ] N/A [ ]
2.9.6 P [ ] F [ ] N/A [ ]
2.9.7 P [ ] F [ ] N/A [ ]
2.9.8 P [ ] F [ ] N/A [ ]

Comments

Results of Sub-Clause 2.9: Pass [ ] Fail [ ]

SUB-CLAUSE 4.2 - MECHANICAL STRENGTH

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]	4.2.1 P [ ] F [ ] N/A [ ] 4.2.2 P [ ] F [ ] N/A [ ] 4.2.3 P [ ] F [ ] N/A [ ] 4.2.4 P [ ] F [ ] N/A [ ] 4.2.5 P [ ] F [ ] N/A [ ] 4.2.6 P [ ] F [ ] N/A [ ] 4.2.7 P [ ] F [ ] N/A [ ] 4.2.8 P [ ] F [ ] N/A [ ]
Note: - It is considered that Part IV applies since it is potentially destructive or at least no longer fit for customer use.	

Comments

Results of Sub-Clause 4.2: Pass [ ] Fail [ ]

SUB-CLAUSE 4.4 - RESISTANCE TO FIRE

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

Note:

- Conclusion on compliance with 4.4.1 shall be based on the results of 4.4.2 through 4.4.6, or alternatively by meeting requirements of 5.4.6 (see also note 5.4.1).

4.4.1	P [ ]	F [ ]	N/A [ ]
4.4.2	P [ ]	F [ ]	N/A [ ]
4.4.3	P [ ]	F [ ]	N/A [ ]
4.4.4	P [ ]	F [ ]	N/A [ ]
4.4.5	P [ ]	F [ ]	N/A [ ]
4.4.6	P [ ]	F [ ]	N/A [ ]
4.4.7	P [ ]	F [ ]	N/A [ ]

Comments

Results of Sub-Clause 4.4: Pass [ ] Fail [ ]

SUB-CLAUSE 5.4 - ABNORMAL OPERATING AND FAULT CONDITIONS

Applicable [ ] Not Applicable [ ]

Attached Documents? YES [ ] NO [ ]

Notes:

- List all simulated fault conditions and describe the results on page IV-7.
- For temperature rise test of transformer windings and motor locked rotor tests use pages IV-9 and IV-10 respectively.
- Check for possible reductions in creepage distances and clearances resulting from fault condition tests.
- Carry out electric strength tests after all abnormal tests with 0,6 times the voltages of 5.3.2.

Special National Conditions

Denmark 5.4.1

Circuits which under fault conditions may cause an earth-leakage current having a d.c. content exceeding 20% of the total earth-leakage current and also exceeding 5 mA, shall be so constructed that the earth-leakage current can occur only when an insulation fault equivalent to failure of double or reinforced insulation occurs.

5.4.1	P [ ]	F [ ]	N/A [ ]	
5.4.2	P [ ]	F [ ]	N/A [ ]	
B1	P [ ]	F [ ]	N/A [ ]	
B2	P [ ]	F [ ]	N/A [ ]	
B3	P [ ]	F [ ]	N/A [ ]	
B4	P [ ]	F [ ]	N/A [ ]	
B5	P [ ]	F [ ]	N/A [ ]	
B6	P [ ]	F [ ]	N/A [ ]	
B.7.1	P [ ]	F [ ]	N/A [ ]	
B.7.2	P [ ]	F [ ]	N/A [ ]	
B.7.3	P [ ]	F [ ]	N/A [ ]	
B8	P [ ]	F [ ]	N/A [ ]	
B9	P [ ]	F [ ]	N/A [ ]	
B10	P [ ]	F [ ]	N/A [ ]	
5.4.3	P [ ]	F [ ]	N/A [ ]	
C1	P [ ]	F [ ]	N/A [ ]	
5.4.4	P [ ]	F [ ]	N/A [ ]	
5.4.5	P [ ]	F [ ]	N/A [ ]	
5.4.6	P [ ]	F [ ]	N/A [ ]	
5.4.7	P [ ]	F [ ]	N/A [ ]	
2.3.3	P [ ]	F [ ]	N/A [ ]	
2.3.9	P [ ]	F [ ]	N/A [ ]	
2.4.5	P [ ]	F [ ]	N/A [ ]	
5.4.8	P [ ]	F [ ]	N/A [ ]	
5.4.9	P [ ]	F [ ]	N/A [ ]	
5.4.10	P [ ]	F [ ]	N/A [ ]	

Comments (provide winding diagrams):

Results of Sub-Clause 5.4: Continued on page 7 [ ] Pass [ ] Fail [ ]

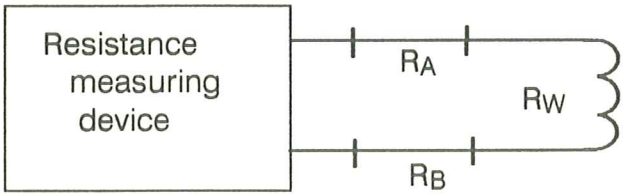
SUB-CLAUSE 5.4 - ABNORMAL OPERATING AND FAULT CONDITIONS

List of simulated faults

No.	Simulated fault	Assembly affected	Result	Pass-Fail

Results of Sub-Clause 5.4: Pass [ ] Fail [ ]

TEMPERATURE RISE OF TRANSFORMER WINDINGS (Sub-Clause 5.4.2 and Appendix C - Abnormal Operations)



R_L = Resistance of measuring leads

$R_L = R_A + R_B$

$R_T = R_W + R_L$

$$\Delta t = \frac{RW2 - RW1}{RW1} (234{,}5 + t_1) - (t_2 - t_1)$$

Measuring set-up for resistance method

Winding tested	Cold condition					Hot condition				t
	R_{T1}	R_L	R_{W1}	T_1		R_{T2}	R_L	R_{W2}	T_2	

Component part number: _____

Manufacturer's name: _____

Manufacturer's designation: _____

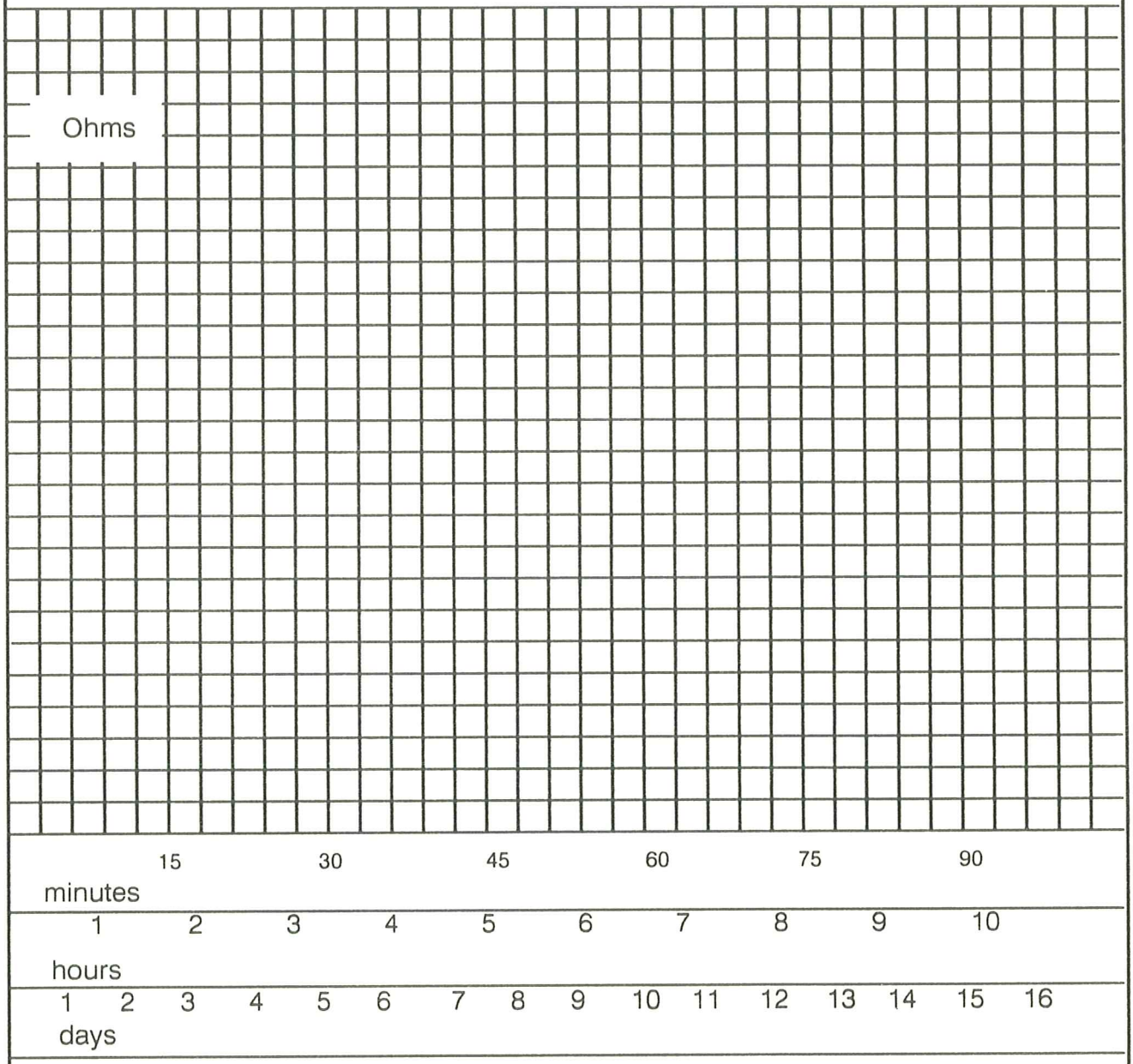
Insulation class: _____ Temp. limit: _____C

Test voltage: _____ VAC

Means of internal/external protection: _____

Results Pass [ ] Fail [ ]

TEMPERATURE RISE OF MOTOR WINDINGS (Sub-Clause 5.4.2 and Appendix B - Abnormal Operations)



Component part number: _____
Manufacturer's name: _____
Manufacturer's designation: _____

Insulation class: _____ Temp. limit: _____C
Test voltage: _____ VAC
Means of internal/external protection: _____

Results Pass [ ] Fail [ ]