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EUROPEAN COMPUTER MANUFACTURERS ASSOCIATION

COMPLIANCE VERIFICATION REPORT (COVER)

ECMA-129 - IEC 950 - EN60950

ECMA TR/39

3rd Edition - December 1992

FOREWORD

This ECMA Technical Report provides a test protocol for verification of equipment compliance with Standard ECMA-129 or IEC Publication 950, second edition, 1991 (amendment 1 and 3 included) and/or the compatible revision of European Norme EN60950: 1992 (amendment 1 and 2 included): "Safety of information technology equipment, including electrical business equipment".

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

- visual inspection;
- non-destructive testing;
- destructive testing.

The purpose of each clause is indicated; in case of doubt, consult the reference standards.

ANNEX 1 contains a supplementary section which is to be applied when the product is designed and intended to be connected to a telecommunication network. It is to be used in conjunction with IEC950 (clause 6), EN60950 (clause 6) or with EN41003.

This third edition of ECMA TR/39 has been adopted by the General Assembly of December 1992.

PART I
GENERAL INFORMATION

COMPLIANCE VERIFICATION

TO

IEC950 AND/OR EN60950

Product: _____

[ ] The product complies with the Standard

[ ] The product does not comply with the Standard

Amendments and/or special national conditions:

Source organization: _____

Prepared by: _____

	(Name)	(Title)	(Date)
Approved by:	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

General conclusion

PRODUCT SAFETY AUDIT
INTENDED MARKET AREAS

PRODUCT: _____

SUBMITTED BY: _____

DEPARTMENT/DIVISION: _____

GEOGRAPHICAL MARKET AREAS		TELECOM CONNECTIONS		
		PTSN*	ISDN	OTHER
UK				
FRANCE				
GERMANY				
BELGIUM				
NETHERLANDANDS				
ITALY				
LUXEMBOURG				
DENMARK				
SWEDEN				
NORWAY				
FINLAND				
USA				
CANADA				
AUSTRALIA				

* State whether modem, (M); fax, (F); and/or other

PRODUCT SAFETY FEATURES

The following items are example of information describing how safety is achieved.
They are intended to assist the test engineer in verifying compliance of the equipment with IEC Publication 950 and/or EN60950.

- **General**
  - Statement that the equipment has been design and built according to IEC950 and/or the compatible edition of EN60950
  - Statement about classfication of equipment (electrical, moisture, mobility, etc.)
  - Supply connection (directly or indirectly to the supply).

- **Electrical safety**
  - How protection from electrical shock and energy hazards is achieved (Use of SELV-circuitry, Limited Current Circuitry, Barriers, etc.)
  - 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 - there is no requirement about this item
  - How protection of internal wiring is achieved
  - How protection of the telecommunication network is achieved.

- **Construction**
  - Main points of construction which have product safety implications (e.g. 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.).

DOCUMENTS TO BE PROVIDED WITH THE COMPLIANCE VERIFICATION REPORT

The following documents should be provided with the COVER Report and listed on page 0-5:

- General description of the equipment tested.
- Description of how safety is achieved (see page 0-3).
- Safety relevant parts of
  - Operator instructions.
  - Installation instructions.
  - Service instructions.

In addition, the following documentation may be required and, if applicable, should be listed on page 0-5:

- Components data sheets and certifications.
- 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 printed 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 circuit boards.
- Insulating material data sheets.
- Limited power source test results.

NOTE

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

DOCUMENTS ATTACHED TO THE COMPLIANCE VERIFICATION REPORT

ITEM NO.	DOCUMENT DESCRIPTION	SUB-CLAUSE NO.	DOCUMENT REF. NO.

INTRODUCTION

The unit was checked for compliance with: IEC 950 [ ]* EN60950 [ ]*
EN41003 [ ]*

Connection to a telecommunication networks or equivalent complying with EN41003. **yes [ ]*** **no [ ]***

A summary of the results is shown on page 1-02.

** Tick as appropriate*

PART II - SUMMARY OF VISUAL INSPECTION

1.5 Components	Pass [ ]	Fail [ ]	N/A [ ]
1.7 Marking and instruction	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 [ ]
2.6 Primary power insulation	Pass [ ]	Fail [ ]	N/A [ ]
2.7 Overcurrent and earth fault in primary circuits	Pass [ ]	Fail [ ]	N/A [ ]
2.8 Safety interlocks	Pass [ ]	Fail [ ]	N/A [ ]
2.10 Connection to other equipment	Pass [ ]	Fail [ ]	N/A [ ]
2.11 Limited power source	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 conductors	Pass [ ]	Fail [ ]	N/A [ ]
4.1 Stability and mechanical hazards	Pass [ ]	Fail [ ]	N/A [ ]
4.3 Construction details	Pass [ ]	Fail [ ]	N/A [ ]
RESULT OF PART II:	**PASS [ ]**	**FAIL [ ]**	

PART III - SUMMARY OF NON-DESTRUCTIVE TESTING

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 [ ]
2.4 Limited current circuits	Pass [ ]	Fail [ ]	N/A [ ]
2.5 Provisions for protective earthing	Pass [ ]	Fail [ ]	N/A [ ]
2.7 Overcurrent and earth fault in primary circuits	Pass [ ]	Fail [ ]	N/A [ ]
2.8 Safety interlocks	Pass [ ]	Fail [ ]	N/A [ ]
2.9 Clearances, creepage distances and distances through insulation	Pass [ ]	Fail [ ]	N/A [ ]
2.11 Limited power source	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 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 [ ]
RESULT OF PART III:	**PASS [ ]**	**FAIL [ ]**	

Overall conclusion Pass [ ] Fail [ ]

PART IV - SUMMARY OF DESTRUCTIVE TESTING

2.9 Clearances, creepage distances and distances through insulation	Pass [ ]	Fail [ ]	N/A [ ]
2.9/5.3/Annex C transformer	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 [ ]
RESULT OF PART IV:	**PASS** [ ]	**FAIL** [ ]	

ANNEX A

Special references in clauses covered in part II, III, IV	Pass [ ]	Fail [ ]	N/A [ ]
6.2.1 TNV circuit characteristics and requirements	Pass [ ]	Fail [ ]	N/A [ ]
6.2.2 Protection against contact with TNV circuit	Pass [ ]	Fail [ ]	N/A [ ]
6.3 Protection of telecom network service personnel, and other users of the telecom network, from hazards in the equipment	Pass [ ]	Fail [ ]	N/A [ ]
6.4 Protection of the equipment users from voltages on the telecommunication network	Pass [ ]	Fail [ ]	N/A [ ]
RESULT OF ANNEX A:	**PASS** [ ]	**FAIL** [ ]	

Overall conclusion Pass [ ] Fail [ ]

LIST OF RESULTING ACTION ITEMS

ACTION No.	REF. CLAUSE	ACTION REQUIRED	RESULT	PASS	FAIL

CHIEF ENGINEER : _____

PROD. SAFETY ENGINEER : _____

NOTES:

ISSUE : _____

DATE : _____

PART II
SUMMARY OF VISUAL INSPECTION

CLAUSE 1.5 - COMPONENTS

Comments:

SPECIAL NATIONAL CONDITION (informative)
In Sweden, switches containing mercury, such as thermostats, relays level controllers are not allowed.

NOTES

- *Use Page II-3 to list the safety-critical components.*
- *Indicate above 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.*
- *Transformers to be tested in accordance with annex C.*
- *Thermal controls to be tested in accordance with annex K.*
- *Interconnecting cables to be tested in accordance with the relevant requirements.*
- *Confirm, if appropriate, that capacitors have been certified to meet IEC 384-14 for the voltage and the dielectric test (problem with X_2 capacitor) which they may be used. Beware that it is not a requirement to have components certified. It, however, facilitates the acceptance procedure.*

Results of Clause 1.5: Pass [ ] Fail [ ]

LIST OF SAFETY - CRITICAL COMPONENTS

Rev. 1:

PART REF.	PART NUMBER	APPLICATION/FUNCTION	MANUFACTURER'S AND MANUF. TYPE NO.	RATING	APPROVAL MARKS

NOTE 1 - List all different suppliers of above components.
NOTE 2 - Use separate lists for different schematics.

REFERENCE SCHEMATIC:

EXAMPLES OF PART REFERENCES

W	= Power Cord (Set)	F	= Primary Fuse	MS	= Main Switch	T	= Transformer
I	= Indicator	F	= Secondary Fuse	S	= Interlock	PrT	= Thermal Protector
TB	= Terminal Block	XF	= Fuse Holder	SI	= Safety Interlock	SSr	= Solid State Relay
FL	= RFI Filter	C	= RFI Capacitor	CB	= Circuit Breaker	M	= Motor
		L	= RFI Choke	VS	= Voltage Selector	PrM	= Thermal Protector
		OC	= Opto Coupler	B	= Fan	CM	= Motor Capacitor
						BT	= Batteries

SUB-CLAUSE 1.6 - POWER INTERFACE

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

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 [ ]

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

SUB-CLAUSE 1.7 - MARKING AND INSTRUCTIONS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

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 [ ]
1.7.17	P [ ]	F [ ]	N/A [ ]
1.7.18	P [ ]	F [ ]	N/A [ ]

NOTE

Sub-clause 1.7.8 has several different requirements.

Special National Conditions: (See page II-05, annex 1 & 2 for details)

- United Kingdom : Sub-clauses 1.7.1 (normative) and 1.7.2 (informative)
- Denmark : Sub-clauses 1.7.2 and 1.7.5 (informative)
- Norway : Sub-clause 1.7.2 (normative)
- Sweden : Sub-clauses 1.7.2 (normative) and 1.7.18 (informative)
- Switzerland : Sub-clause 1.7.17 (informative)
- Germany : Sub-clause 1.7.14 (informative)

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

SUB-CLAUSE 1.7 - MARKING AND INSTRUCTIONS

SPECIAL NATIONAL CONDITIONS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

UNITED KINGDOM **Pass [ ] Fail [ ] N/A [ ]**

1.7.1 : Refer to 240 V or 415 V

1.7.2 : 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 yell : earth**
- **blue : neutral**
- **brown : live"**

DENMARK **Pass [ ] Fail [ ] N/A [ ]**

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 gron/gul isolation ma kun
tilsluttes en klemme maerket ⏚ **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 tilslutning af de ovrige ledere, se
medfolgende installationsvejledning"

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

SUB-CLAUSE 1.7 - MARKING AND INSTRUCTIONS

SPECIAL NATIONAL CONDITIONS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

DENMARK **Pass [ ] Fail [ ] N/A [ ]**

1.7.5 : Socket-outlets for providing power to other appliances, shall be in accordance with the Heavy Current Regulations, Section 107-2-DI, Standard Sheet DK 1-3a, DK1-5a or DK 1-7a, when used on appliances of Class I.

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

SWEDEN **Pass [ ] Fail [ ] N/A [ ]**

1.7.2 : If separation between the mains and a SELV terminal relies upon connection to the safety earth, the apparatus shall have a marking stating that it must be connected to an earthed mains socket-outlet when the SELV-circuit is connected to a network passing both unearthed and earthed electrical environment.

The marking text shall be in Swedish and as follows:

APPARATEN SKALL ANSLUTAS TILL JORDAT
UTTAG NÄR DEN ANSLUTS TILL ETT NÄTVERK

1.7.17 : Equipment with built-in batteries, not replaceable by the user, shall be marked with the following symbol, if the batteries have a content of mercury or cadmium exceeding 0,025% by weight:

Pass [ ] Fail [ ] N/A [ ]

NORWAY **Pass [ ] Fail [ ] N/A [ ]**

1.7.2 : If separation between the mains and a communication system/network, other than the public telecommunications networks, relies upon connection to safety earth, the equipment shall have a marking stating that it must be connected to an earthed mains socket-outlet (for connection to a public telecom network, see sub-cl. 6.2.1.4).

SWITZERLAND **Pass [ ] Fail [ ] N/A [ ]**

1.7.17 : Ordinance on environmentally hazardous substances SR 814.013 Annex 4.10 applies for batteries.

GERMANY **Pass [ ] Fail [ ] N/A [ ]**

1.7.14 : Documentation for service personnel purposes, be it intended even only by service personnel, shall be written in the German language.

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

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

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

2.1.1	P [ ]	F [ ]	N/A [ ]
2.1.2	P [ ]	F [ ]	N/A [ ]
2.1.3	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 [ ]
2.1.8	P [ ]	F [ ]	N/A [ ]
2.1.9	P [ ]	F [ ]	N/A [ ]
2.1.10	P [ ]	F [ ]	N/A [ ]

NOTE

See also Part III for non destructive tests for Sub-clauses: 2.1.3, 2.1.5, 2.1.9 and 2.1.10.

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

SUB-CLAUSE 2.2 - INSULATION

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

(describe materials used)

2.2.1 P [ ] F [ ] N/A [ ]
2.2.2 P [ ] F [ ] N/A [ ]
2.2.6 P [ ] F [ ] N/A [ ]

Ref. 2.2.2: Ensure in first instance that the material data sheets are provided. If not, refer to Part III and the tests of 2.2.2 and 2.2.3.
Ref. 2.2.5: Working Voltages shall be measured. See Part III.

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

SUB-CLAUSE 2.3 - SELV CIRCUITS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

2.3.3	P [ ]	F [ ]	N/A [ ]
2.3.4	P [ ]	F [ ]	N/A [ ]
2.3.5	P [ ]	F [ ]	N/A [ ]
2.3.6	P [ ]	F [ ]	N/A [ ]
2.3.8	P [ ]	F [ ]	N/A [ ]
2.3.9	P [ ]	F [ ]	N/A [ ]

SPECIAL NATIONAL CONDITIONS: Ref. 2.3.6
Method 3 is not acceptable in:
DENMARK, FINLAND AND FRANCE.

NOTES

- *Describe which method(s) in 2.3.3 is (are) used (see also 2.3.4-2.3.6).*
- *Method 4 of 2.3.7 shall not be used because of conflict with EN60950.*
- *Many Telecom Authorities do not accept Methods 3 and 4.*

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

SUB-CLAUSE 2.4 - LIMITED CURRENT CIRCUITS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments: 2.4.1 P [ ] F [ ] N/A [ ]

(check segregation of accessible part from other circuits in accordance with 2.3. for SELV circuits)

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

SUB-CLAUSE 2.5 - PROVISIONS FOR PROTECTIVE EARTHING

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

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 [ ]

SPECIAL NATIONAL CONDITION

In Denmark, the first paragraph of 2.5.2 is replaced by the following:

"Class II equipment shall have no provision for protective earthing except that permanently connected 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 voltages by double or reinforced insulation."

NOTES

- *If accessible parts are separated from parts at hazardous voltage as described in 2.5.1, the tests of 2.9.2 and 4.2.6 apply (see Part III).*
- *For telecom connected equipment additional or alternative requirements may apply.*
- *Ref. 2.5.10: refer to Annex J of IEC950 (EN60950).*
- *See also Part III for non destructive tests for sub-clause 2.5.9.*

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

SUB-CLAUSE 2.6 - PRIMARY POWER ISOLATION

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

(describe the implementation)

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 [ ]

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

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

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

(describe the implementation)

2.7.1 P [ ] F [ ] N/A [ ]
2.7.2 P [ ] F [ ] N/A [ ]
2.7.5 P [ ] F [ ] N/A [ ]
2.7.6 P [ ] F [ ] N/A [ ]

NOTES

- *See 2.7.1 European common deviation (EN60950)*
- *See also 1.7.11, See also 5.4 for sub-clause 2.7.2.*

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

SUB-CLAUSE 2.8 - SAFETY INTERLOCKS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

(compliance is checked by inspection)

2.8.1	P [ ]	F [ ]	N/A [ ]
2.8.2	P [ ]	F [ ]	N/A [ ]
2.8.3	P [ ]	F [ ]	N/A [ ]
2.8.4	P [ ]	F [ ]	N/A [ ]
2.8.5	P [ ]	F [ ]	N/A [ ]
2.8.6	P [ ]	F [ ]	N/A [ ]
2.8.7	P [ ]	F [ ]	N/A [ ]

NOTE

Ref 2.8.6 ensure in first instance that the data sheets are provided.

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

SUB-CLAUSE 2.10 - CONNECTION TO OTHER EQUIPMENT

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

(list of the safety level of all interconnection circuits)

2.10.1 P [ ] F [ ] N/A [ ]
2.10.2 P [ ] F [ ] N/A [ ]
2.10.3 P [ ] F [ ] N/A [ ]

Results of Sub-Clause 2.10: Pass [ ] Fail [ ]

SUB-CLAUSE 2.11 - LIMITED POWER SOURCE

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

2.11 P [ ] F [ ] N/A [ ]

NOTE

Describe which method is used with the isolating transformer.

SPECIAL NATIONAL CONDITION FOR DENMARK AND FINLAND
Max. voltage 42.4 V peak or D.C.
Max. current 0.2 Amps for no more than 2 minutes.

SPECIAL NATIONAL CONDITION FOR NORWAY
The maximum value of VA for values of V_{oc} exceeding 10 V is 50 (table 8).
The maximum value of VA is 50 (table 9).

CENELEC COMMON MODIFICATION EXPECTED (July 1993)
Level of acceptable power: 15 WA (instead of present 100 VA).

Results of Sub-Clause 2.11:

Pass [ ] Fail [ ]

SUB-CLAUSE 3.1 - INTERNAL WIRING

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

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 [ ]
3.1.5	P [ ]	F [ ]	N/A [ ]
3.1.6	P [ ]	F [ ]	N/A [ ]
3.1.7	P [ ]	F [ ]	N/A [ ]
3.1.8	P [ ]	F [ ]	N/A [ ]
3.1.9	P [ ]	F [ ]	N/A [ ]
3.1.10	P [ ]	F [ ]	N/A [ ]
3.1.11	P [ ]	F [ ]	N/A [ ]

NOTE

See also 5.1 for sub-clause 3.1.1 (Part IV).
3.1.5 if the results are not available see sub-clause 5.3 (Part III).

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

SUB-CLAUSE 3.2 - CONNECTION TO PRIMARY POWER

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

3.2.1	P [ ]	F [ ]	N/A [ ]
3.2.2	P [ ]	F [ ]	N/A [ ]
3.2.3	P [ ]	F [ ]	N/A [ ]
3.2.4	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 [ ]

SPECIAL NATIONAL CONDITIONS

In Denmark, certain types of Class I appliances may be provided with a plug establishing earthing continuity when inserted into Danish socket-outlets.
(see Page II - 17 annex 1 for details) P [ ] F [ ] N/A [ ]

In the United Kingdom, a 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. P [ ] F [ ] N/A [ ]

In Switzerland, plugs for connection of the power supply cord to primary power have to comply with SEV/ASE 1011.
P [ ] F [ ] N/A [ ]

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

SUB-CLAUSE 3.2 - CONNECTION TO PRIMARY POWER

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

SPECIAL NATIONAL CONDITIONS
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:

		Plug
Class of Equipment		The Heavy Current Regulations, Section 107-2-D1 Standard Sheet
I	Protection against indirect contact required *) earthing connection not required	DK 2-1a or DK 2-5a DK 2-1a, DK 2-5a, DKA 2-1a, DKA 2-1b, C 1b, C 2b, C 3b, C4
II		DK 2-5a**), DKA 2-1a, DKA 2-1b, C1b, C5, C6

*) – 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 direct contact is required, ref. Section 10, clause 17.

**) The earthing contact is not connected.

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

Class of Equipment	Plug	
	The Heavy Current Regulations	
	Section 107-1-D1 Standard Sheet	Section 117, Standard Sheet
I II III	DK 6-1a DK 6-1a*) -	II II* IX

*) The earthing contact is not connected.

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

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

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

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 [ ]

SPECIAL NATIONAL CONDITION

In the United Kingdom, in table X, the range of conductor sizes of flexible cords to be accepted by terminals for equipment with a current rating of over 10 A up to and including 13 A is:

1.25 to 1.5 mm^2 nominal cross-sectional area. P [ ] F [ ] N/A [ ]

NOTES

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

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

SUB-CLAUSE 4.1 - STABILITY AND MECHANICAL HAZARDS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

4.1.2 P [ ] F [ ] N/A [ ]
4.1.3 P [ ] F [ ] N/A [ ]
4.1.4 P [ ] F [ ] N/A [ ]
4.1.5 P [ ] F [ ] N/A [ ]

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

SUB-CLAUSE 4.3 - CONSTRUCTION DETAILS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

manual test
manual test
4.3.3 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 [ ]
4.3.12 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 [ ]
4.3.21 P [ ] F [ ] N/A [ ]

NOTES

Ref. 4.3.12
- *For ionizing radiation compliance is checked by the test of appendix H.*
- *For equipment using lasers, compliance is checked according to IEC825 (EN60825).*

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

PART III
SUMMARY OF NON-DESTRUCTIVE TESTING

SUB-CLAUSE 1.5 - COMPONENTS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

1.5.2	P [ ]	F [ ]	N/A [ ]
App. K	P [ ]	F [ ]	N/A [ ]
1.5.3	P [ ]	F [ ]	N/A [ ]
App. C	P [ ]	F [ ]	N/A [ ]

SPECIAL NATIONAL CONDITION

In Sweden, switches containing mercury, such as thermostats, relays and level controllers are not allowed.

Results of Sub-Clause 1.5: Pass [ ] Fail [ ]

SUB-CLAUSE 1.6 - POWER INTERFACE

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

1.6.1 P [ ] F [ ] N/A [ ]
1.6.4 P [ ] F [ ] N/A [ ]
1.6.5 P [ ] F [ ] N/A [ ]

NOTES

- *Measure input current at manual load and compare it with the value of the rating plate.*
- *Ref. 1.6.4: measure voltage at capacitor terminals and compare with rating.*

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

SUB-CLAUSE 1.7 - MARKING AND INSTRUCTIONS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

1.7.15 P [ ] F [ ] N/A [ ]

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

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

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

(describe how protection against electric shock is achieved)

2.1.2	P [ ]	F [ ]	N/A [ ]
2.1.3	P [ ]	F [ ]	N/A [ ]
2.1.5	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

- *Test voltage levels.*
- *If applicable, test 2.1.6 according to 4.2.3.*
- *If applicable, test 2.1.8 according to 5.3.2.*
- *If applicable, test 2.1.9 according to 2.9 and 5.3.2.*
- *If applicable, provide capacitor discharge test results (2.1.10).*

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

SUB-CLAUSE 2.2 - INSULATION

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

2.2.2	P [ ]	F [ ]	N/A [ ]
2.2.3	P [ ]	F [ ]	N/A [ ]
2.2.4	P [ ]	F [ ]	N/A [ ]
2.2.5	P [ ]	F [ ]	N/A [ ]
2.2.7	P [ ]	F [ ]	N/A [ ]

NOTES

- *If applicable, apply humidity treatment according to 2.2.3, followed by the test of 5.3.2.*
- *Ref. 2.2.4 do a test according to 2.7, 5.1 and 5.3.*

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

SUB-CLAUSE 2.3 - SELV CIRCUITS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

2.3.2	P [ ]	F [ ]	N/A [ ]
2.3.3	P [ ]	F [ ]	N/A [ ]
2.3.4	P [ ]	F [ ]	N/A [ ]
2.3.5	P [ ]	F [ ]	N/A [ ]
2.3.6	P [ ]	F [ ]	N/A [ ]
2.3.9	P [ ]	F [ ]	N/A [ ]
2.3.10	P [ ]	F [ ]	N/A [ ]

SPECIAL NATIONAL CONDITIONS: Ref. 2.3.6
Method 3 is not acceptable in: DENMARK, FINLAND AND FRANCE.

NOTE

Measure the voltage of each SELV circuit under normal condition (2.3.2), and during a single failure of insulation or a component (2.3.3).

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

SUB-CLAUSE 2.4 - LIMITED CURRENT CIRCUITS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

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 [ ]

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

SUB-CLAUSE 2.5 - PROVISIONS FOR PROTECTIVE EARTHING

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

2.5.1 P [ ] F [ ] N/A [ ]
2.5.9 P [ ] F [ ] N/A [ ]
2.5.11 P [ ] F [ ] N/A [ ]

NOTE

Ref. 2.5.1: do a test according to 4.2.3 and / or 5.3 if appropriate.

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

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

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

2.7.3 P [ ] F [ ] N/A [ ]
2.7.4 P [ ] F [ ] N/A [ ]

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

SUB-CLAUSE 2.8 - SAFETY INTERLOCKS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

2.8.2 P [ ] F [ ] N/A [ ]
2.8.3 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 [ ]

NOTE

Reed switches shall be cycled for 100.000 operations.

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

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

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

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 [ ]

NOTES

- *See Sub-clause 2.2.6 to determine the application of insulation.*
- *See Sub-clause 2.2.7 to determine the working voltage.*

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

SUB-CLAUSE 2.11 - LIMITED POWER SOURCE

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

2.11 P [ ] F [ ] N/A [ ]

Using this Sub-clause to enable use of HB material instead of V1 (see 4.4.5.2) only when power level complies with this sub-clause.

SPECIAL NATIONAL CONDITION FOR DENMARK AND FINLAND
Max. voltage 42.4 V peak or D.C.
Max. current 0.2 Amps for no more than 2 minutes.

SPECIAL NATIONAL CONDITION FOR NORWAY
The maximum value of VA for values of V_{oc} exceeding 10 V is 50 (table 8)
The maximum value of VA is 50 (table 9).

NOTE

It is anticipated that for CENELEC countries a common modification to IEC950 will be initiated.

Results of Sub-Clause 2.11: Pass [ ] Fail [ ]

SUB-CLAUSE 3.1 - INTERNAL WIRING

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

3.1.1 P [ ] F [ ] N/A [ ]
3.1.5 P [ ] F [ ] N/A [ ]
3.1.7 P [ ] F [ ] N/A [ ]

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

SUB-CLAUSE 3.2 - CONNECTION TO PRIMARY POWER

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

3.2.2	P [ ]	F [ ]	N/A [ ]
3.2.3	P [ ]	F [ ]	N/A [ ]
3.2.4	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 [ ]

SPECIAL NATIONAL CONDITION IN DENMARK (see PAGE II-17 annex 1)

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

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

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

3.3.2	P [ ]	F [ ]	N/A [ ]
3.3.5	P [ ]	F [ ]	N/A [ ]
3.3.7	P [ ]	F [ ]	N/A [ ]
3.3.9	P [ ]	F [ ]	N/A [ ]

SPECIAL NATIONAL CONDITION IN THE UNITED KINGDOM **(See page II-18)**

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

SUB-CLAUSE 4.1 - STABILITY AND MECHANICAL HAZARDS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

4.1.1 P [ ] F [ ] N/A [ ]
4.1.2 P [ ] F [ ] N/A [ ]

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

SUB-CLAUSE 4.3 - CONSTRUCTION DETAILS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

4.3.2	P [ ]	F [ ]	N/A [ ]
4.3.4	P [ ]	F [ ]	N/A [ ]
4.3.5	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 [ ]
4.3.12	P [ ]	F [ ]	N/A [ ]
4.3.15	P [ ]	F [ ]	N/A [ ]
4.3.16	P [ ]	F [ ]	N/A [ ]
4.3.18	P [ ]	F [ ]	N/A [ ]
4.3.19	P [ ]	F [ ]	N/A [ ]
4.3.21	P [ ]	F [ ]	N/A [ ]

SPECIAL NATIONAL CONDITION on 4.3.12
German: see page III-18 annex 1

NOTE

For 4.3.12 reference may be made to a separate report.

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

SUB-CLAUSE 4.3.12 - X-RAY EMISSION SOURCES

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments: 4.3.12 P [ ] F [ ] N/A [ ]

SPECIAL NATIONAL CONDITION ON 4.3.12

GERMANY

Regulation on protection against hazards by X-ray, of 8th January 1987:
Article 5 (Operation of X-ray emission source), sub-clauses 1 to 4

a) A licence is required by those who operate an X-ray emission source.

b) A licence in accordance with clause 1 is not required by those who operate a X-ray emission source on which the electron acceleration voltage does not exceed 20 Kv, if:

1) the local dose rate at a distance of 0.1 m from the surface does not exceed 1 µSv/h, and

2) it is adequately indicated on the X-ray emission source that:

i) X-rays are generated, and

ii) the electron acceleration voltage must not exceed the maximum value stipulated by the manufacturer or importer.

c) A licence in accordance with clause 1 is also not required by persons who operate a X-ray emission source on which the electron acceleration voltage exceeds 20 Kv, if:

1) the X-ray emission source has been granted a type approval, and

2) it is adequately indicated on the X-ray emission source that:

i) X-rays are generated, and

ii) the device stipulated by the manufacturer or importer guarantees that the maximum permissible local dose rate in accordance with the type approval is not exceeded, and

iii) the electron acceleration voltage must not exceed the maximum value stipulated by the manufacturer or importer.

d) Furthermore, a licence in accordance with clause 1 is also not required by persons who operate a X-ray emission source on which the electron acceleration voltage does not exceed 30 KV, if:

1) the X-rays are generated only be intrinsically safe CTR's complying with enclosure III, No. 6,

2) the values stipulated in accordance with enclosure III No. 62 are limited by technical measures and specified in the device, and

3) it is adequately indicated on the X-ray emission source that the X-rays generated are adequately screened by the intrinsically safe CRT.

NOTE

The above text has been literally copied from the German input to the Endorsement of EN60950:1992 (document No. CLC/BT(SR 74Bx1/Sec) 1 dated July 1992).

Results of Sub-Clause 4.3.12: Pass [ ] Fail [ ]

SUB-CLAUSE 5.1 - HEATING

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments: 5.1 P [ ] F [ ] N/A [ ]

SPECIAL NATIONAL CONDITION

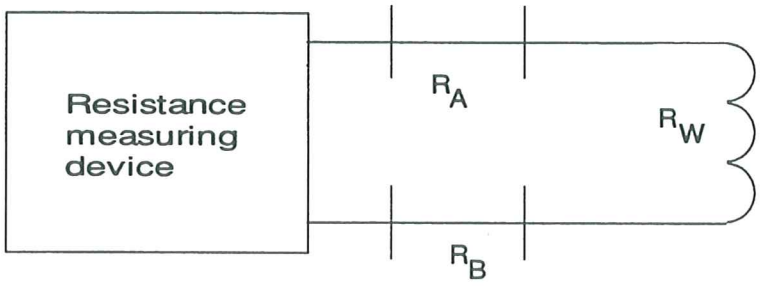
In Norway, to prevent fire risk, temperature limits for wooden supports shall be taken into account. The temperature limit is 65 K in general and 60 K for apparatus for continuous operation.

NOTES

- *Wirewound components are normally measured by the change of resistance method (see test-sheet on page III-17). Deviation from this method shall be explained.*
- *If thermocouples are used, describe their position.*

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

TEMPERATURE RISE OF WINDINGS (Sub-clause 5.1 & annex E)



R_l = Resistance of measuring leads

$R_L = R_A + R_B$

$R_{W1} = R_W + R_L$

$$t = \frac{R_{W2} - R_{W1}}{R_{W1}}(234,5 + t_1) - (t_2 - t_1)$$

Measuring set-up for resistance method

Winding tested	Cold condition					Hot condition				
	R_{T1}	R_L	R_{W1}	t_1		R_{T2}	R_L	R_{W2}	t_2	t

Winding diagram:

Component part number :_____

Manufacturer's name :_____

Manuf. designation :_____

Insulation class :_____ Temp. limit:_____

Test voltage :_____VAC

Means of internal/external protection:_____

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

SUB-CLAUSE 5.2 - EARTH LEAKAGE CURRENT

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

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 [ ]

NOTES

- *Indicate which limit applies and which test equipment has been used.*
- *Equipment to be connected directly to IT power system, see annex G.*
- *Measuring instrument, see annex D.*

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

SUB-CLAUSE 5.3 - ELECTRIC STRENGTH

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

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 tested.*
- *Use pages III-20 and III-21 for test results and construction details respectively.*

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

ELECTRIC STRENGHT AND SPACINGS OF TRANSFORMERS (sub-clause 2.9, 5.3 and annex C)

Winding diagram:

Requirements:						
Location	Insulation	Electric strength (V)	Terminal spacings (mm)	Creepage Distance (mm)	Clearance Distance (mm)	Distance through Insulation (No. of layers/mm)
1						
2						
3						
4						
5						
6						

Test Results:					
Location	Electric strength (V) pass/fail	Terminal spacings (mm)	Creepage Distance (mm)	Clearance Distance (mm)	Distance through Insulation (No. of layers/mm)
1					
2					
3					
4					
5					
6					

Components part number : _____

Manufacturer's name : _____

Manuf. designation : _____

Results of Sub-Clause 2.9/5.3/Annex C: Pass [ ] Fail [ ]

CONSTRUCTIONAL OVERVIEW OF TRANSFORMERS

Components part number : _____

Manufacturer's name : _____

Manuf. designation : _____

Results of Sub-Clause 2.9/5.3/Annex C: Pass [ ] Fail [ ]

PART IV
SUMMARY OF DESTRUCTIVE TESTING

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

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

2.7.3	P [ ]	F [ ]	N/A [ ]
2.7.4	P [ ]	F [ ]	N/A [ ]
5.4	P [ ]	F [ ]	N/A [ ]

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

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

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

2.9.2 is not a destructive testing.

2.9.1	P [ ]	F [ ]	N/A [ ]
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 [ ]

NOTES

- *For transformers, use a copy of pages III-22 and III-23.*
- *For operational insulation, creepage distances and clearances smaller than those in 2.9, see 5.4.4.*

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

SUB-CLAUSE 4.2 - MECHANICAL STRENGTH

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

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 [ ]

NOTES

- *It is considered that Part IV applies, since it is potentially destructive, or at least no longer fit for customer use.*
- *Ref. 4.2.6, test temperature shall be specified.*

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

SUB-CLAUSE 4.4 - RESISTANCE TO FIRE

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

- 4.4.1 is a general requirement and not a test.
- sub-clause 4.4.3 is very important and with the new text, 4.4.3 has a several different items. It could be better, in such case, to identified each item as 4.4.3-1 [ ] , 4.4.3-2 [ ].

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 [ ]
4.4.8	P [ ]	F [ ]	N/A [ ]

SPECIAL NATIONAL CONDITION: REF 2.11
Denmark, Finland and Norway do not accept 100 VA for a limited power source.
CENELEC common deviation expected (July 1993).

NOTES

- *Level of acceptable limited power source: 15W.*
- *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).*
- *When appropriate, justify that no fire enclosure is required (see 4.4.5.2).*

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

SUB-CLAUSE 5.4 - ABNORMAL OPERATING AND FAULT CONDITIONS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

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 [ ]
5.4.5	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 [ ]

SPECIAL NATIONAL CONDITIONS

In Denmark
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.

In Norway
The electric strength test after the tests of 5.4.4, 5.4.5, 5.4.6, 5.4.7 and 5.4.8 includes testing of basic insulation in Class I equipment.

NOTES

- *List all simulated abnormal operating and fault conditions and describe the results on Page IV-07.*
- *For temperature rise test of transformer windings and motor locked rotor tests, use pages IV-08 and IV-09 RESPECTIVELY.*
- *Check for possible reductions in creepage distances and clearances resulting from fault conditions tests.*
- *Carry out electric strength tests after all abnormal tests with the voltages of 5.3.2 (was 0.6 times these voltages in earlier conditions of IEC950).*

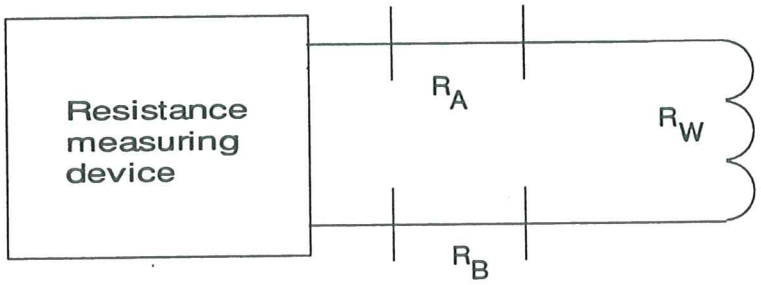
Results of Sub-Clause 5.4: Pass [ ] Fail [ ]

SUB-CLAUSE 5.4 - ABNORMAL OPERATING AND FAULT CONDITIONS (Continued)

List of simulated faults				
No.	Simulated fault	Assembly affected	Result	Pass-Fail

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

TEMPERATURE RISE OF TRANSFORMERS WINDINGS (Sub-clause 5.4.2 & appendix C)
(Abnormal Operations)



R_L = Resistance of measuring leads

$R_L = R_A + R_B$

$R_{W1} = R_W + R_L$

$$t = \frac{R_{W2} - R_{W1}}{R_{W1}}(234,5 + t_1) - (t_2 - t_1)$$

Measuring set-up for resistance method

Winding	Cold condition					Hot condition				t
	R_{T1}	R_L	R_{W1}	t_1		R_{T2}	R_L	R_{W2}	t_2	

Winding diagram:

Component part number :_____

Manufacturer's name :_____

Manuf. designation :_____

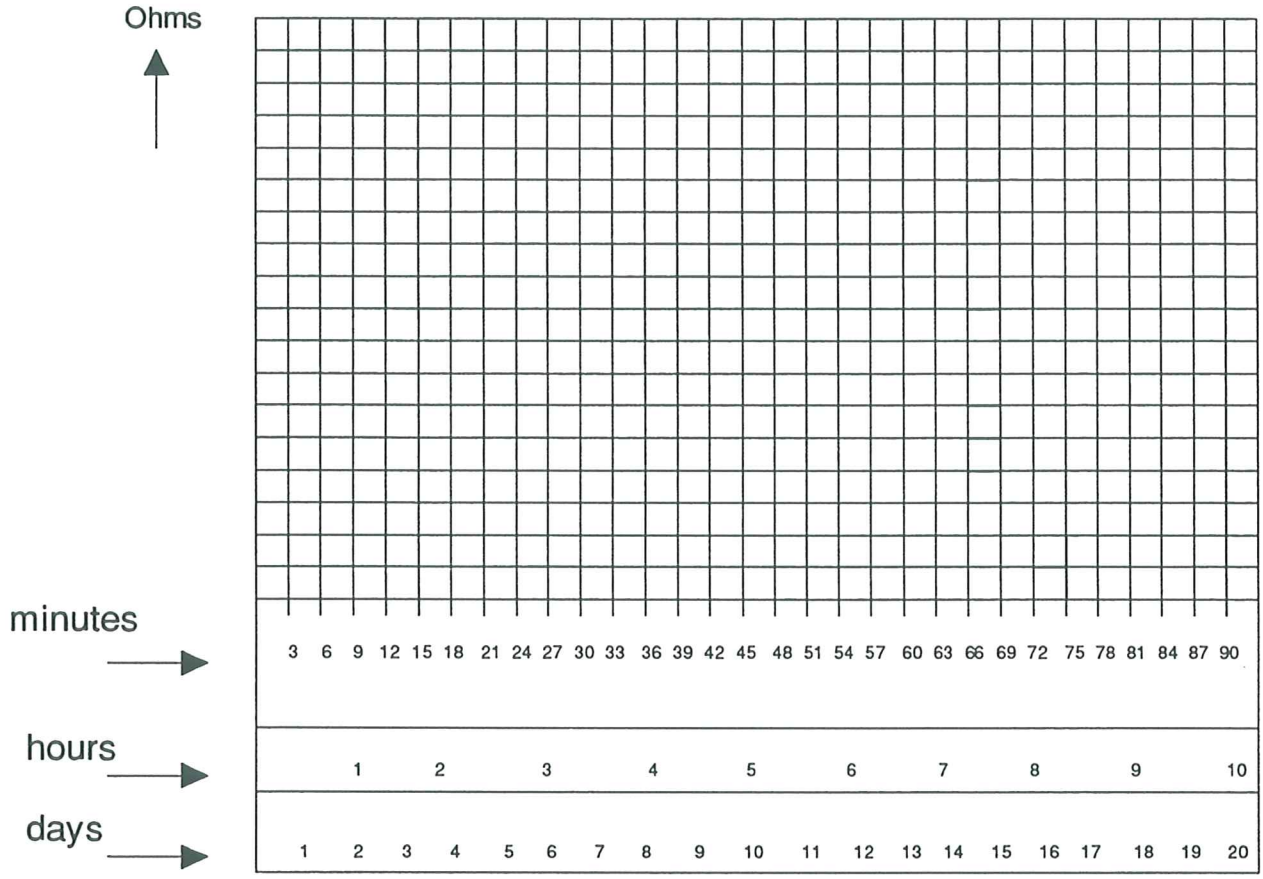
Insulation class :_____ Temp. limit:_____

Test voltage :_____VAC

Means of internal/external protection:_____

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

TEMPERATURE RISE OF MOTOR WINDINGS (Sub-clause 5.4.2 & appendix B)



LOCKED ROTOR TEST Duration: _____ days

Component part number : _____

Manufacturer's name : _____

Manuf. designation : _____

Insulation class : _____ Temp. limit: _____

Test voltage : _____VAC

Means of internal/external protection: _____

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

ANNEX A
CONNECTION TO TELECOMMUNICATION NETWORKS

SPECIAL REFERENCES IN CLAUSES COVERED IN PARTS 2, 3 OR 4

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

The reference to 1.7.2 is implicit (see 6.3.2): on 4.3.15 there is no reference to telecom connections.

1.7.2	P [ ]	F [ ]	N/A [ ]
2.1.1	P [ ]	F [ ]	N/A [ ]
2.2.2.6	P [ ]	F [ ]	N/A [ ]
2.3.9	P [ ]	F [ ]	N/A [ ]
2.5	P [ ]	F [ ]	N/A [ ]
2.10	P [ ]	F [ ]	N/A [ ]

NOTE

The clauses mentioned on this page contain a reference to telecom connections and should therefore be considered particularly. With all applicable clauses, they will normally be taken care of when the test protocol parts II, III and IV have been completed.

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

SUB-CLAUSE 6.2.1 - TNV CIRCUITS CHARACTERISTICS AND REQUIREMENTS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

6.2.1.1 P [ ] F [ ] N/A [ ]
6.2.1.2 P [ ] F [ ] N/A [ ]
6.2.1.3 P [ ] F [ ] N/A [ ]
6.2.1.4 P [ ] F [ ] N/A [ ]
6.2.1.5 P [ ] F [ ] N/A [ ]

NOTE

Indicate the value of TNV circuits generated internally in the equipment.

SPECIAL NATIONAL CONDITION TO 6.2.1.4b

In Norway, insulation between parts conductively connected to the supply mains and parts connected to a public telecommunication network shall comply with the requirements for double or reinforced insulation.

Pass [ ] Fail [ ] N/A [ ]

CENELEC CLARIFICATIONS

6.2.1.1 : In the event of a single insulation fault or component failure TNV circuits shall not exceed the limits of figure 15.

6.2.1.2/3 : This sub-clause only applies to TNV circuits normally operating in excess of the limits of SELV circuits.

Annex M : Method A is only applicable.

Results of Sub-Clause 6.2.1: Pass [ ] Fail [ ]

SUB-CLAUSE 6.2.2 - PROTECTION AGAINST CONTACT WITH TNV CIRCUITS

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

6.2.2 P [ ] F [ ] N/A [ ]

Results of Sub-Clause 6.2.2: Pass [ ] Fail [ ]

SUB-CLAUSE 6.3 - PROTECTION OF TELECOM NETWORK SERVICE PERSONNEL, AND OTHER USERS OF THE TELECOM NETWORK, FROM HAZARDS IN THE EQUIPMENT

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

6.3.1 P[ ] F[ ] N/A[ ]
6.3.2 P[ ] F[ ] N/A[ ]
6.3.3 P[ ] F[ ] N/A[ ]

NOTE

Ref. 6.3.2 see 1.7.2.

COMMUN DEVIATION
The working voltage relating to the supplementary insulation (6.3.3) is 230 V.

SPECIAL NATIONAL CONDITION
NORWAY: See page A-05 (annex 1).

CENELEC CLARIFICATION TO 6.3.3
The requirements of 6.3.3 do not apply to equipment that needs a connection to earth to enable the equipment to function, with some additional provision.

Results of Sub-Clause 6.3: Pass [ ] Fail [ ]

SUB-CLAUSE 6.3 - PROTECTION OF TELECOM NETWORK SERVICE PERSONNEL, AND OTHER USERS OF THE TELECOM NETWORK, FROM HAZARDS IN THE EQUIPMENT

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

6.3.1 P[ ] F[ ] N/A[ ]
6.3.2 P[ ] F[ ] N/A[ ]
6.3.3 P[ ] F[ ] N/A[ ]

SPECIAL NATIONAL CONDITION
NORWAY: (Telegrafloven av 29. April 1899)

Dielectric barrier between telecom line terminals and mains terminals

Impulse voltage resistibility

To ensure that the equipment can resist high voltage surges which may arise on power conductors from lightning, the equipment must provide an adequate electrical separation between the port provided for connection of the telecommunication network conductors and the mains terminals.

Compliance shall be checked by applying to the electrical separation 10 / 700 s test impulses (using the impulse generating circuit given in figure No. 1 with a test voltage of

- U_c = 10 kV for power distribution systems where no surge suppressor is installed ("uncontrolled" situation, see IEC664).
- U_c = 2.5 kV for power distribution systems where surge suppressors are installed.

Ten impulses shall be applied with minimum 10 s between consecutive impulses, the polarity being reversed between impulses.

During the test breakdown through the insulation (with damage of it) shall not occur.

Compliance is checked by subjecting the insulation to an insulation resistance test where the insulation resistance shall not be less than 4 MΩ when measured at 500 V d.c.

Results of Sub-Clause 6.3: Pass [ ] Fail [ ]

SUB-CLAUSE 6.4 - PROTECTION OF THE EQUIPMENT USERS FROM VOLTAGES ON THE TELECOMMUNICATION NETWORK

Applicable? YES [ ] NO [ ]
Applicable Documents? YES [ ] NO [ ]

Attached Documents? YES [ ] NO [ ]

Comments:

6.4.1	P [ ]	F [ ]	N/A [ ]
6.4.2	P [ ]	F [ ]	N/A [ ]
6.4.2.1	P [ ]	F [ ]	N/A [ ]
6.4.2.2	P [ ]	F [ ]	N/A [ ]
6.4.2.3	P [ ]	F [ ]	N/A [ ]

NOTE

Specify the choice of the tests (6.4.2).

SPECIAL NATIONAL CONDITIONS

To 6.4.1 : **In Finland,** for pluggable equipment it is forbidden to use surge suppressors between the telecom network and conductive metallic parts which are permitted to be accessible.
In Switzerland, protective means in the equipment shall not prevent transient surge protection in the telecom network from operating properly (DC spark-over voltage of the surge suppressor installed in the telecom network: approx. 245 V).

To 6.4.2.2 : **In Austria,** equipment shall comply wiht U_c = 20 kV in cases b) and c).

Results of Sub-Clause 6.4: Pass [ ] Fail [ ]