

**Universal Mobile Telecommunications System (UMTS);  
Report on electrical safety requirements and regulations  
(3G TR 34.907 version 3.0.0 Release 1999)**



Reference

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## Foreword

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## Foreword

This Technical Report has been produced by the 3<sup>rd</sup> Generation Partnership Project, Technical Specification Group Terminals (TSG-T).

The contents of the present document will not be updated as a result of continuing work within the 3GPP, since its intent is to provide currently available information at the time of generation, but it may change following formal TSG-T approval for editorial reasons. Should the TSG modify the contents of the present document, it will be re-released with an identifying change of release date and an increase in version number as follows:

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m indicates [major version number]

x the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.

y the third digit is incremented when editorial only changes have been incorporated into the specification.

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## Introduction

Until recently, essential requirements for conformity assessment of mobile communication terminals were mostly regulations on EMC issues. The reason is that electrical safety requirements, which prevent the products from excessive heat, electric shock and fire, were not applicable to battery operated equipment. They were only applicable to the accompanying battery-charger and equipment with an integrated power supply. However, with the remarkable growth of mobile communications, there is a need to consider new requirements with regard to electrical safety, including conformity assessment. For this reason, the present document investigates the current status electrical safety requirements in each country and region. EMC requirements are excluded from this report.

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# 1 Scope

**The present document, that will not be maintained, provides information describing the situation in March 1999.**

The present document provides the information on electrical safety requirements for Information and Technical equipment including 3G mobile phone in each country and region.

[The main objective of the present document is to give an outline on electrical safety in each country and region, to people who are not familiar with this issue. Therefore, the information in the present document will not be kept updated with the latest information.] The present document summarizes the differences between international standards IEC60950 and national standards and also refers to regulations with regard to the conformity assessment because each country has standards, which are different from other countries.

Most information in the present document is quoted from IEC's publications. Therefore the present document neither defines any new electrical safety requirements nor contradicts IEC's policy.

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# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.
- A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

- [1] <http://www.miti.go.jp/report-e/> "CHAPTER 10 Standards and Conformity Assessment Systems".
- [2] <http://www.iec.ch/gnote1-e.htm/> "What is the IEC? The IEC's mission".
- [3] IEC Strategic Policy Statement - TC74 " SAFETY AND ENERGY EFFICIENCY OF IT EQUIPMENT",B. Environment, 02/1009/RCA, 1997-02.
- [4] <http://www.eiaj.or.jp/japanese/> "One-One-One Concept".
- [5] CB BULLETIN No. 94AI March 1999: "List of national standards and national differences to IEC Standards".
- [6] Training program presented by BSI (UK standard and CENELEC approved lab), 1999.
- [7] <http://www.cbscheme.org/> "Countries".
- [8] EUROPEAN COMMISSION DIRECTORATE-GENERAL III INDUSTRY July 1997 "GUIDELINES ON THE APPLICATION OF COUNCIL DIRECTIVE 73/23/EEC".
- [9] Official Journal of the European Communities 7.4. 1999 "DIRECTIVE 1999/5/EC OF THE EUROPEAN PALIAMENT AND OF THE COUNCIL of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity".

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## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

**technical regulations:** technical specifications, including applicable administrative provisions, with which compliance is mandatory by law or regulation. [1]

**standards:** standards with which compliance is not mandatory.

**national differences:** national differences are all such differences between the national standard of a country and the IEC standard, which have to be taken into account by a manufacturer if his product shall comply with national standard.

**group differences:** when a number of countries have agreed on the same differences only from the IEC standard, those differences are grouped together and it is indicated to which countries those group differences apply.

### 3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

3G	Third Generation
A.C.	Alternating Current
D.C.	Direct Current
AFTA	ASEAN Free Trade Agreement
CB	Certification Body
EU	European Union
IEC	International Electrotechnical Commission
MERCOSUR	Mercado Común del Sur (Latin America Common Market)
NAFTA	North American Free Trade Agreement
NCB	National Certification Body
TBT	Technical Barriers to Trade
TC	Technical Committee
WTO	World Trade Organisation

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## 4 Summary of electrical safety requirements

### 4.1 International standard for electrical safety

The International Electrotechnical Commission (IEC) [2] is the world organisation that prepares and publishes international standards for all electrical, electronic and related technologies. The mission of IEC is to promote, through its members, international co-operation on all questions of electrotechnical standardisation and related matters, such as the assessment of conformity to standards, in the fields of electricity, electronics and related technologies. The membership consists of more than 50 participating countries.

Among those international standards, IEC60950, which is safety requirements for Information Technology equipment, such as personal computers and telephone sets, is the most widely used of all IEC standards. [3] In recent trend, the functions of information technology products with those of the home and professional entertainment products have been merging; consequently it is expected that the products within the scope of this standard will be expanded in the future.

### 4.2 Relationship between national standards and IEC standards

In the current situation, not only standards relating to electrical safety requirements but also other national standards in each country are not so different from IEC international standards because of the following backgrounds. [4]

- 1) A member nation of WTO (World Trade Organisation) has an obligation to adjust national standards to IEC standards based on agreement on TBT (Technical Barriers to Trade).
- 2) A non-member of WTO is also encouraged to remove significant differences from national standards and accept international standards positively based on TBT agreement.
- 3) In free trade regions such as EU, NAFTA (North American), AFTA (ASEAN), and MERCOSUR (Latin America), it becomes indispensable to prepare standards or recognition systems for the acceleration of an international trade.

Since the necessity of the smooth development of free trade in various regions is growing, IEC60950 is adopted as a national standard for safety requirements of Information Technology equipment. Nevertheless, some deviations are added to it in most countries. To grasp the current deviations in each country, IEC collects such information from the countries taking part in the IEC activity and issues the results. This publication is called CB Bulletin and it is updated once a year.



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## 5 Comparison of national standards and regulations

### 5.1 Comparison of national standards

List of national standards and national differences to IEC60950 is shown in Table 1 [5]. Table 2 shows the background of IEC60950 [6]. The deviation parts from IEC60950 are described in Table 3. See CB bulletin [5] for more information.

### 5.2 Conformity assessment in each country and region

Even though a national standard is almost the same as an international standard, it is very important for manufacturers to distinguish whether or not the national regulation prescribes the compulsory approval against some products. In fact some countries need compulsory approval set by law. On the other hand there are also voluntary standards that carry no legal obligation, but the presence or absence on a product of a mark-certifying adherence is likely to affect sales. Normally Information Technology equipment driven by low voltage like mobile phones are not specified as products which needs the compulsory approval by government. However, the self-approval still would be needed in most cases. The current situation of national regulations in each country and region is shown in Table 4. [7]

**IEC Publication 60950, 2<sup>nd</sup> Edition (1991) and Amendment1(1992), 2(1993), 3(1995) and 4(1996)**

Information technology equipment including electrical business equipment

The letter "R" indicates that the NCB (National Certification Body) is only a recognizing NCB for the standard in question.

**National Differences:**

National differences are all such differences between the national standard of a country and the IEC standard, which have to be taken into account by a manufacturer if his product shall comply with national standard.

**Group differences:**

When a number of countries have agreed on the same differences only from the IEC standard, those differences are grouped together and it is indicated to which countries those group differences apply.

**Table 1: List of national standards and national differences to IEC60950**

Country	Remark	Incl. Amds	Group differ.	National differ.	National Standard
Austria (AT)		1,2,3,4	Yes	Yes	OVE EN60950+A2:1993-05
Australia (AU)		1,2,3,4		Yes	AS/NRZ3260
Belgium (BE)		1,2,3,4	Yes		NBN C77-950
Canada (CA)		1,2,3,4		Yes	CAN/CSA-c27.2 No. 950-95
Switzerland (CH)		1,2,3,4	Yes	Yes	SN EN60950
China (CN)		1,2,3,4			GB 4943-90 1 <sup>st</sup> edition
Czech Republic (CZ)		1,2,3,4	Yes		CSN EN60950
Germany (DE)		1,2,3,4	Yes	Yes	DIN EN60950
Denmark (DK)		1,2,3,4	Yes	Yes	SB137
Spain (ES)			Yes		UNE EN60950-95
Finland (FI)		1,2,3,4	Yes	Yes	SFS-EN60950(1996)
France (FR)		1,2,3,4	Yes	Yes	
United Kingdom (GB)		1,2,3,4	Yes	Yes	BS EN60950:1992
Greece (GR)	R	1,2	Yes		ELOT EN60950 ed.2
Hungary (HU)		1,2,3,4	Yes		MSZ EN60950
Ireland (IE)		1,2,3,4	Yes		I.S/EN60950:1993
Israel (IL)		1,2,3,4			IS 1121
India (IN)		1,2,3,4			
Italy (IT)		1,2,3,4	Yes		CEI EN60950
Japan (JP)		1,2,3,4		Yes	
Republic of Korea (KR)		1,2,3		Yes	
The Netherlands (NL)		1,2,3,4	Yes		
Norway (NO)		1,2,3,4	Yes	Yes	NEK-EN 60950
Poland (PL)		1,2			
Russia (RU)		1,2,3,4			
Sweden (SE)		1,2,3,4	Yes	Yes	SS EN60950 5 <sup>th</sup> ed.
Singapore (SG)		1,2,3,4		Yes	SS337: 1997
Slovenia (SI)		1,2,3,4	Yes		SIS EN60950, -/A1, -/A2
Slovakia (SK)		1,2,3,4			STN 369060
United States (US)		1,2,3,4		Yes	UL1950
South Africa (ZA)		3,4			SABS IEC60950 : 1991

**Table 2: Background of IEC60950**

IEC Version	Description
<b>IEC60950(1st edition )</b>	It was drafted under the International group IEC TC74 and issued 1986.
<b>IEC60950(2ndedition )</b>	It was drafted under the supervision of TC74, incorporating clause 6 (connection to Telecommunication Networks) and issued 1991.
<b>IEC60950/A2:1993</b>	Amendment A2 introduced interpolation for calculation of creepage distances. Amendment is withdrawn in 2002. All products sold after this date will need to be reassessed to the current revision.
<b>IEC60950/A3:1995</b>	Amendment A3 introduced the scope of pre-insulation winding for transformers. It changes the scope to cover equipment powered from the Telecommunication Network. Scope was extended to cover battery powered IT equipment.
<b>IEC60950/A4:1996</b>	Amendment A4 introduced the concept of TNV-1, TNV-2 and TNV-3 Text for limited power sources was revised.

Table 3: Contents of deviations in each country

Country	Deviation parts
AT	6. Connection to telecommunication networks 6.4 Protection of equipment users from voltage on the telecommunication network 6.4.2.1 Impulse response
AU	1. General 1.2 Definition 1.2.12.2 Power distributions 1.2.12.3 Flammability 1.5 Components 1.5.1 General 1.5.2 Evaluation and testing of components 1.7 Marking and instructions 1.7.14 Language 2. Protection from hazards 2.3 SELV circuits 2.3.7 3. Wiring connections and supply 3.2 Connection to primary power 3.2.2 Permanently connected equipment 3.2.4 Power supply code 4. Physical requirements 4.4 Resistance to fire 4.4.1 Methods of achieving resistance to fire 6. Connection to telecommunication network 6.4 Protection of equipment users from voltages on the telecommunication network 6.4.2 Test procedure 6.4.2.1 Impulse test 6.4.2.2 Electric strength test  Annex A Tests for resistance to heat and fire (normative)  Appendix 2 Alternative resistance to fire test determination of ignitability and combustion propagation  X2.0 General X2.1 Solid Insulating materials and non-metallic enclosures X2.1.1 General requirements X2.1.2 Non-metallic material X2.1.3 Attended equipment X2.1.4 Unattended equipment X2.2 Additional test requirements  Appendix 3 D.C. component from A.C. equipment
CA	Special national conditions 1. General 1.1 Scope 1.1.1 Equipment covered by this standard 1.7 Marking and instructions 1.7.1 Power rating 2. Protection from hazards 2.5 Provisions for earthing 2.5.9 Protective earthing terminals for fixed supply conductors or for non-detachable power supply cords shall comply with the requirements of 3.3 2.5.11 Resistance of protective earthing conductors 2.6 Disconnection from primary power 2.6.2 Disconnect devices 2.6.8 Switches as disconnect devices 2.6.11 Interconnected equipment 2.7 Overcurrent and earth fault protection in primary circuits 2.7.1 Basic requirements 2.7.6 Warning to service personnel 3. Wiring, connections and supply 3.1 General 3.1.12 Interconnecting cables used for external interconnection 3.2 Connection to primary power 3.2.1 Means of connection

	<ul style="list-style-type: none"> <li>3.2.2 Permanently connected equipment</li> <li>3.2.4 Power supply cords</li> <li>3.2.8 The supply wiring space provided inside for permanent connection</li> <li>3.3 Wiring terminals for external primary power supply conductors <ul style="list-style-type: none"> <li>3.3.3 Screws and nuts which clamp external power supply</li> </ul> </li> <li>4. Physical requirements <ul style="list-style-type: none"> <li>4.3 Construction details <ul style="list-style-type: none"> <li>4.3.12 Equipment that can generate ionizing radiation or ultraviolet light</li> </ul> </li> <li>4.4 Resistance to fire <ul style="list-style-type: none"> <li>4.4.1 Methods of achieving resistance to fire</li> <li>4.4.4 Materials for enclosures and for decorative parts</li> <li>4.4.8 Flammable liquids</li> </ul> </li> </ul> </li> </ul> <p>Other differences</p> <ul style="list-style-type: none"> <li>1. General <ul style="list-style-type: none"> <li>1.5 Components</li> </ul> </li> <li>3. Wiring, connections and supply <ul style="list-style-type: none"> <li>3.4 Special considerations for equipment connected to a centralized D.C. power system</li> </ul> </li> <li>4. Physical requirements <ul style="list-style-type: none"> <li>4.1 Stability and mechanical hazards <ul style="list-style-type: none"> <li>4.1.6 The mounting means of a unit intended for wall or ceiling</li> <li>4.1.7 A handle or handles intended to support more than 9.0Kg</li> </ul> </li> <li>4.2 Mechanical Strength and stress <ul style="list-style-type: none"> <li>4.2.9 Cathode ray tube enclosure</li> </ul> </li> <li>4.3 Construction details <ul style="list-style-type: none"> <li>4.3.18 DIRECT PLUG-IN EQUIPMENT</li> </ul> </li> </ul> </li> <li>6. Connection to telecommunication networks <ul style="list-style-type: none"> <li>6.2. TNV circuits <ul style="list-style-type: none"> <li>6.2.1.1 Limits</li> </ul> </li> <li>6.4. Protection of equipment users from voltages on the telecommunications <ul style="list-style-type: none"> <li>6.4.3 Acoustic tests</li> <li>6.4.4 Leakage current for telecommunication equipment</li> </ul> </li> <li>6.5 Protection of the telecommunication wiring system from overheating</li> <li>6.6 Protection against overvoltage from power line crosses.</li> </ul> </li> </ul>
<b>CH</b>	<ul style="list-style-type: none"> <li>1. General <ul style="list-style-type: none"> <li>1.7 Marking and instructions <ul style="list-style-type: none"> <li>1.7.17 Replaceable batteries</li> </ul> </li> </ul> </li> <li>3. Wiring, connections and supply <ul style="list-style-type: none"> <li>3.2 Connection to primary power <ul style="list-style-type: none"> <li>3.2.1 Means of connection</li> </ul> </li> </ul> </li> <li>6. Connection to telecommunication <ul style="list-style-type: none"> <li>6.1 General</li> </ul> </li> </ul>
<b>DE</b>	<ul style="list-style-type: none"> <li>1. General <ul style="list-style-type: none"> <li>1.7 Marking and instructions <ul style="list-style-type: none"> <li>1.7.14 Language</li> </ul> </li> </ul> </li> </ul>
<b>DK</b>	<ul style="list-style-type: none"> <li>1. General <ul style="list-style-type: none"> <li>1.2 Definitions <ul style="list-style-type: none"> <li>1.2.4.1 Class 1 equipment: equipment where protection against electric shock</li> </ul> </li> <li>1.7 Marking and instructions <ul style="list-style-type: none"> <li>1.7.2 Safety instructions</li> <li>1.7.5 Power outlets</li> </ul> </li> </ul> </li> <li>2. Protection from hazards <ul style="list-style-type: none"> <li>2.5 Provisions for earthing <ul style="list-style-type: none"> <li>2.5.2 Class 2 equipment</li> </ul> </li> </ul> </li> <li>3. Wiring, connections and supply <ul style="list-style-type: none"> <li>3.2 Connection to primary power <ul style="list-style-type: none"> <li>3.2.1 Means of connection</li> </ul> </li> </ul> </li> </ul>
<b>FI</b>	<ul style="list-style-type: none"> <li>6. Connection to telecommunication networks <ul style="list-style-type: none"> <li>6.2 TNV circuits <ul style="list-style-type: none"> <li>6.2.1.4b Separation from hazardous voltages</li> </ul> </li> </ul> </li> </ul>
<b>FR</b>	<ul style="list-style-type: none"> <li>2. Protection from hazards <ul style="list-style-type: none"> <li>2.3 SELV circuits <ul style="list-style-type: none"> <li>2.3.6 Protection by earthing of SELV circuits</li> </ul> </li> </ul> </li> </ul>
<b>GB</b>	<ul style="list-style-type: none"> <li>3. Wiring, connections and supply <ul style="list-style-type: none"> <li>3.2 Connection to primary power <ul style="list-style-type: none"> <li>3.2.1 means of connection</li> <li>3.2.4 power supply cords</li> </ul> </li> <li>3.3 Wiring terminals for external primary power supply conductors</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>3.3.5 Terminals</li> <li>4. Physical requirements <ul style="list-style-type: none"> <li>4.3 construction details <ul style="list-style-type: none"> <li>4.3.18 Direct Plug-in equipment</li> </ul> </li> </ul> </li> </ul>
<b>JP</b>	<ul style="list-style-type: none"> <li>2. Protection from hazards <ul style="list-style-type: none"> <li>2.9 Clearances, creepage distance and distances through insulation <ul style="list-style-type: none"> <li>2.9.2 Clearances</li> <li>2.9.4 Solid insulation</li> </ul> </li> </ul> </li> <li>5. Thermal and electrical requirements <ul style="list-style-type: none"> <li>5.1 Heating</li> </ul> </li> <li>Annex U Insulated winding wires for use without interleaved insulation <ul style="list-style-type: none"> <li>U.1 Wire Construction</li> <li>U.2 Type tests <ul style="list-style-type: none"> <li>U.2.1 Electric strength</li> </ul> </li> <li>U.2.2 Adherence and flexibility</li> <li>U.2.3 Heat Shock</li> <li>U.2.4 Retention of electric strength after bending</li> <li>U.3 Routine test <ul style="list-style-type: none"> <li>U.3.1 Full length</li> <li>U.3.2 Audit test</li> </ul> </li> </ul> </li> </ul>
<b>KR</b>	<ul style="list-style-type: none"> <li>LIMITATIONS <ul style="list-style-type: none"> <li>Voltage ratings</li> <li>Frequency</li> <li>Instructions</li> </ul> </li> <li>DEVIATIONS <ul style="list-style-type: none"> <li>1. General <ul style="list-style-type: none"> <li>1.5 Components <ul style="list-style-type: none"> <li>1.5.101 Addition</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>NO</b>	<ul style="list-style-type: none"> <li>1. General <ul style="list-style-type: none"> <li>1.6 Power interface <ul style="list-style-type: none"> <li>1.6.4 Note2 Components in equipment for IT power systems</li> </ul> </li> <li>1.7 Marking and instructions <ul style="list-style-type: none"> <li>1.7.2 Note4 safety instructions</li> </ul> </li> </ul> </li> <li>2. Protection from hazards <ul style="list-style-type: none"> <li>2.3 SELV circuits <ul style="list-style-type: none"> <li>2.3.5 Connection of SELV circuits to other circuits</li> </ul> </li> <li>2.5 Disconnection from primary power <ul style="list-style-type: none"> <li>2.5.2 Class 2 equipment</li> </ul> </li> <li>2.9 Clearances, creepage distances and distances through insulation <ul style="list-style-type: none"> <li>2.9.1 NOTE 3 General</li> </ul> </li> </ul> </li> <li>5. Thermal and electrical requirements <ul style="list-style-type: none"> <li>5.4 Abnormal operating and fault conditions <ul style="list-style-type: none"> <li>5.4.9 NOTE During the tests of 5.4.4,5.4.6,5.4.7 and 5.4.8</li> </ul> </li> </ul> </li> <li>6. Connection to telecommunication network <ul style="list-style-type: none"> <li>6.2 TNV circuits <ul style="list-style-type: none"> <li>6.2.1.2 Note2 Separation from other circuits</li> <li>6.2.1.4 Note2 Separation from hazardous voltages</li> <li>6.2.1.5 Note2 Connection of TNV circuits to other circuits</li> </ul> </li> <li>6.3 Protection of telecommunication network service personnel, and users of other equipment connected to the network, from hazards in the equipment <ul style="list-style-type: none"> <li>6.3.3 Separation of the telecommunication network from earth <ul style="list-style-type: none"> <li>6.3.3.1 Requirements</li> <li>6.3.3.2 Note1 Exclusions</li> </ul> </li> </ul> </li> </ul> </li> </ul>
<b>SE</b>	<ul style="list-style-type: none"> <li>1. General <ul style="list-style-type: none"> <li>1.5 Components <ul style="list-style-type: none"> <li>1.5.1 General</li> </ul> </li> <li>1.7 Marking and instructions <ul style="list-style-type: none"> <li>1.7.2 Safety instructions</li> </ul> </li> </ul> </li> <li>6. Connection to telecommunication networks <ul style="list-style-type: none"> <li>6.2 TNV circuits <ul style="list-style-type: none"> <li>6.2.1.2 Separation from other circuits and from accessible parts</li> </ul> </li> <li>6.3 Protection of telecommunications network service personnel, and other users of the telecommunication network, from hazards in the equipment <ul style="list-style-type: none"> <li>6.3.3.1 Requirements</li> </ul> </li> </ul> </li> </ul>
<b>SG</b>	<ul style="list-style-type: none"> <li>IT Power Systems are not allowed in the Republic of Singapore and all clauses related to IT Power Systems are not applicable.</li> <li>2. Protection from hazards <ul style="list-style-type: none"> <li>2.2</li> </ul> </li> </ul>

	2.2.3
<b>US</b>	<p>Special national conditions</p> <ol style="list-style-type: none"> <li>1. General <ol style="list-style-type: none"> <li>1.1 Scope <ol style="list-style-type: none"> <li>1.1.1 Equipment covered by this standard</li> </ol> </li> <li>1.7 Marking and instructions <ol style="list-style-type: none"> <li>1.7.1 Power rating</li> </ol> </li> </ol> </li> <li>2. Protection from hazards <ol style="list-style-type: none"> <li>2.5 Provisions for earthing <ol style="list-style-type: none"> <li>2.5.9 Protective earthing terminals for fixed supply conductors or for non-detachable power supply cords shall comply with the requirements of 3.3</li> <li>2.5.11 Resistance of protective earthing conductors</li> </ol> </li> <li>2.6 Disconnection from primary power <ol style="list-style-type: none"> <li>2.6.2 Disconnect devices</li> <li>2.6.8 Switches as disconnect devices</li> <li>2.6.11 Interconnected equipment</li> </ol> </li> <li>2.7 Overcurrent and earth fault protection in primary circuits <ol style="list-style-type: none"> <li>2.7.1 Basic requirements</li> <li>2.7.6 Warning to service personnel</li> </ol> </li> <li>2.11 Limited power sources</li> </ol> </li> <li>3 Wiring, connections and supply <ol style="list-style-type: none"> <li>3.1 General <ol style="list-style-type: none"> <li>3.1.12 Interconnecting cables used for external interconnection</li> </ol> </li> <li>3.2 Connection to primary power <ol style="list-style-type: none"> <li>3.2.1 Means of connection</li> <li>3.2.2 Permanently connected equipment</li> <li>3.2.4 Power supply cords</li> <li>3.2.8 The supply wiring space provided inside for permanent connection</li> </ol> </li> <li>3.3 Wiring terminals for external primary power supply conductors <ol style="list-style-type: none"> <li>3.3.3 Screws and nuts which clamp external power supply</li> </ol> </li> </ol> </li> <li>4. Physical requirements <ol style="list-style-type: none"> <li>4.3 Construction details <ol style="list-style-type: none"> <li>4.3.12 Equipment that can generate ionizing radiation or ultraviolet light</li> </ol> </li> <li>4.4 Resistance to fire <ol style="list-style-type: none"> <li>4.4.1 Methods of achieving resistance to fire</li> <li>4.4.4 Materials for enclosures and for decorative parts</li> <li>4.4.8 Flammable liquids</li> </ol> </li> </ol> </li> </ol> <p><b>The following national differences are based on requirements other than national regulatory requirements</b></p> <ol style="list-style-type: none"> <li>1. General <ol style="list-style-type: none"> <li>1.5 Components <ol style="list-style-type: none"> <li>1.5.1 General</li> </ol> </li> </ol> </li> <li>3. Wiring, connections and supply <ol style="list-style-type: none"> <li>3.4 Special considerations for equipment connected to a centralized D.C. power system</li> </ol> </li> <li>4. Physical requirements <ol style="list-style-type: none"> <li>4.1 Stability and mechanical hazards <ol style="list-style-type: none"> <li>4.1.6 The mounting means of a unit intended for wall or ceiling</li> <li>4.1.7 A handle or handles intended to support more than 9.0Kg</li> </ol> </li> <li>4.2 Mechanical Strength and stress <ol style="list-style-type: none"> <li>4.2.9 Cathode ray tube enclosure</li> </ol> </li> </ol> </li> <li>6. Connection to telecommunication networks <ol style="list-style-type: none"> <li>6.2. TNV circuits <ol style="list-style-type: none"> <li>6.2.1.1 Limits</li> <li>6.2.2.2 Battery compartments</li> </ol> </li> <li>6.3 Protection of telecommunication network service personnel, and users of other equipment connected to the network, from hazards in the equipment</li> <li>6.4. Protection of equipment users from voltages on the telecommunications <ol style="list-style-type: none"> <li>6.4.1 Separation requirements</li> <li>6.4.3 Acoustic tests</li> <li>6.4.4 Leakage current for telecommunication equipment</li> </ol> </li> <li>6.5 Protection of the telecommunication wiring system from overheating</li> <li>6.6 Protection against overvoltage from power line crosses.</li> </ol> </li> </ol> <p>Annexes</p> <p>M Criteria for telephone ringing and other signals(normative)</p> <p>M.2 Method A</p>
<b>GROUP DIFFER-</b>	<ol style="list-style-type: none"> <li>1. General <ol style="list-style-type: none"> <li>1.7 Marking and instructions</li> </ol> </li> </ol>

<b>ENCS</b>	<ul style="list-style-type: none"> <li>1.7.2 Safety Instructions</li> <li>2. Protection from hazards</li> <li>2.3 SELV circuits <ul style="list-style-type: none"> <li>2.3.3 Voltages under fault conditions</li> <li>2.3.6 Protection by earthing of the SELV circuit</li> <li>2.3.7</li> </ul> </li> <li>2.5 Provisions for earthing <ul style="list-style-type: none"> <li>2.5.2 Class 2 equipment</li> </ul> </li> <li>2.7 Overcurrent and earth fault protection in primary circuits <ul style="list-style-type: none"> <li>2.7.1 Basic requirements</li> <li>2.7.2 Faults not covered in 5.4</li> </ul> </li> <li>2.8 Safety interlocks <ul style="list-style-type: none"> <li>2.8.4 requirement</li> </ul> </li> <li>2.11 Limited power sources</li> <li>3 Wiring, connections and supply <ul style="list-style-type: none"> <li>3.2 Connection to primary power <ul style="list-style-type: none"> <li>3.2.2 Permanently connected equipment</li> <li>3.2.4 Power supply cords</li> </ul> </li> <li>3.3 Wiring terminals for external primary power supply conductors <ul style="list-style-type: none"> <li>3.3.5 Terminal</li> </ul> </li> </ul> </li> <li>4. Physical requirements <ul style="list-style-type: none"> <li>4.4 Resistance to fire <ul style="list-style-type: none"> <li>4.4.4 Materials for enclosures and for decorative parts</li> </ul> </li> </ul> </li> <li>6. Connection to telecommunication networks <ul style="list-style-type: none"> <li>6.2. TNV circuits <ul style="list-style-type: none"> <li>6.2.1.2 Separation from other circuits and from accessible parts</li> <li>6.2.1.3 Operating voltages generated externally</li> <li>6.2.1.4 Separation from hazardous voltages</li> </ul> </li> <li>6.4. Protection of equipment users from voltages on the telecommunications <ul style="list-style-type: none"> <li>6.4.1 Separation requirements <ul style="list-style-type: none"> <li>6.4.2.1 Impulse tests</li> </ul> </li> </ul> </li> </ul> </li> <li>Annex P Normative references</li> <li>Annex Q Bibliography</li> </ul>
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**Table 4: National regulations in each country and region**

<b>Countries</b>	<b>Explanation by National Certification Bodies</b>
<b>Japan</b>	Remarks: We have established S-mark scheme in addition to □ -mark scheme from 1995, namely the former is based on a third-party certification scheme and the latter is based on Japanese safety law.
<b>China</b>	On the basis of the standardisation laws of China, electricity safety standards are compulsory in our country. At present our approval mark is compulsory for Low Voltage Apparatus, Electric Tools, Electric Cables and Wires, Radio, Tape Recorders, TV Set and Safety Critical Components, Refrigerators, Electric Fans, Air-conditioners. Our mark covers only the contents of the IEC or CEE safety standards.
<b>Singapore</b>	The licensee must abide by the Singapore Productivity and Standards Board (Singapore Quality Mark) Certification Regulations, 1996 and comply with the terms and conditions set forth by the Board for continued approval and the use of the Mark.
<b>Poland</b>	Our mark is compulsory for all manufacturers. Our mark covers following in excess of the IEC or CEE safety standard: radio interference, noise level, and influence on health. More detailed information available on request.
<b>Slovenia</b>	The national certification mark is obligatory for the product, which is subject to the obligatory certification. The national certification mark covers in excess of the IEC safety standards requirements, also radio-frequency interference. Marking of the products with the national certification mark is the supplier's responsibility.
<b>South Africa</b>	Electrical and electronic equipment designed for household and similar use generally require proof of compliance with compulsory electrical safety standards in the form of an acceptable test report. The safety certification mark is deemed to satisfy this requirement.
<b>Canada</b>	Approval of electrical products is mandatory in Canada. CSA Certified products are accepted by all Canadian Electrical Inspection authorities as being approved.
<b>EU</b>	<p>The Low Voltage Directive (LVD) and the CE marking requirements became mandatory on 1 January 1997.[8] In addition, regarding telecommunications terminal equipment and satellite earth station equipment, new Directive 98/13/EEC was announced.[9]</p> <p><b>Technical documentation:</b> Before a product is placed on the market the manufacturer puts together the technical documentation which makes it possible to assess whether the electrical equipment complies with the requirements of the Directive.</p> <p><b>Declaration of Conformity:</b> The manufacturer or his authorized representative established in the community are also required, and are the only ones authorized to do so, to draw up in writing a declaration of conformity before placing the product on the market</p> <p><b>CE marking:</b> Before it is placed on the market the electrical equipment must have the "CE" marking affixed. Only the manufacture or his authorized representatives established in the community are authorized to affix the "CE" marking.</p>

**Editor's note: National regulation does not exist in some counties not described in the list above (e.g. U.S.A), but standards exist for voluntary testing by equipment vendors. I**

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# History

<b>Document history</b>		
V3.0.0	January 2000	Publication