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REGULATIONS ON SAFETY IN ELECTRONIC COMMUNICATIONS NETWORKS

Laid down by the Norwegian Post and Telecommunications Authority on 27 September 2005, No. 1094 pursuant to Sections 1-4, 2-3, 10-1 and 10-5 of Act of 4 July 2003 No. 83 related to The Electronic Communications Act), cf. Part I, Section 2 of the Regulations of 4 July 2003, No. 881, related to the division of functions within the telecommunications authority. Cf. EEA agreement annex II Section X (Directive 73/23 EEC with later changes). Amended by regulation 9 July 2007, No. 885.

SECTION 1. PURPOSE

The regulations shall prevent voltages and currents in electronic communications networks from causing harm to life and health or damage to property.

SECTION 2. SCOPE

The regulations apply to

- a) equipment for electronic communications networks and
- b) construction and maintenance of electronic communications networks.

The regulations do not apply for equipment under regulation of regulations 20 June 2000 no. 628 on EEA requirements related to radio equipment and telecommunications terminal equipment.

The regulations address

- a) network owners
- b) all who manufacture, distribute or sell equipment intended for electronic communication networks and
- c) installers of electronic communications networks.

0 Amended by regulation 9 July 2007, No. 885

SECTION 3. DEFINITIONS

Internal control: systematic actions ensuring that network owners plan, organise, perform and maintain their activities in accordance with requirements laid down in the regulations.

The connection between system outlet of a coaxial based electronic communication network and the terminal equipment, is a part of the electronic communication network.

Rebuilding of electronic communication network: installation of cables or equipment with the purpose of changing the capacity or bandwidth of the network. Replacing damaged cable or equipment is not viewed as a rebuilding of the network.

In addition the definitions in the Electronic Communications Act apply.

0 Amended by regulation 9 July 2007, No. 885

SECTION 4. SAFETY REQUIREMENTS FOR NETWORKS

Electronic communications networks shall have a satisfactory level of safety during construction, operation and maintenance.

Safety requirements are considered complied with when relevant standards in chapter 6 are met. The safety requirements can also be complied with by using other specifications demonstrating equivalent levels of safety.

In interconnected electronic networks, the networks owners shall co-ordinate safety measures to ensure that safety requirements are fulfilled.

For new and rebuilt coaxial electronic communication networks the outer conductor of the coaxial cable leading into a building shall be galvanic isolated from the outer conductor of the coaxial cable inside the building. The over-voltage requirements for this galvanic isolator shall be compliant with the requirements listed in second and fourth paragraph in section 4a.

The Norwegian Post and Telecommunications Authority give guidance regarding safety requirements and the use of standards.

0 Amended by regulation 9 July 2007, No. 885

SECTION 4a. SAFETY REQUIREMENTS FOR NETWORKS

When terminal equipment forms a galvanic connection between the electrical earth and the socket jacks of the equipment to an electronic communication network and in addition is directly or indirectly connected to an electronic communication network, all connections between the system outlet and the connected equipment shall fulfil the requirements given in second and third paragraphs.

Applying a 50 Hz a.c. voltage of 230 V r.m.s between the input and the output of the outer conductor of the connection, the leakage current shall not exceed 8 mA r.m.s. Applying a continuous d.c. voltage of 2120 V between the input and the output of the outer conductor of the connection for a period of not less than 1 min. the leakage current shall not exceed 0,7 mA.

It shall not be possible to touch metallic parts of the connection when connected.

Requirements laid down in regulation 16 February 2004 No. 401 regarding Electronic Communication Networks and Services (ecomregulation) Section 9-5 and requirements laid down in regulation 22 January 2007 No 89 regarding Electromagnetic Compatibility (EMC) for Electronic Communication (EMC-regulation) have to be met in addition to requirements in second and fourth paragraphs in this section.

0 Amended by regulation 9 July 2007, No. 885

SECTION 5. SAFETY REQUIREMENTS FOR EQUIPMENT

Equipment shall be constructed and manufactured in accordance with existing safety related practice within the European Economic Area (EEA) so that if properly installed and maintained and used as intended, they do not bring safety for persons, animals and property in danger.

Equipment shall bear marking containing or, if this is not possible, the enclosed user documentation, shall contain, enough information for the user to make him able to put the equipment into service without danger within its range of application.

The name or identifier of the manufacturer shall be clearly marked on the equipment or, if this is not possible, on the packaging.

The equipment and its specific parts shall be constructed in such a way that it can be assembled in a correct and safe way.

The equipment shall be constructed and manufactured in such a way

- a) that persons and animals are properly protected against physical injury or other injuries which may be caused by direct or indirect touch,
- b) that there is no occurrence of temperatures, arcs or radiation that can cause danger,
- c) that persons, animals and property are satisfactory protected against danger of non-electrical character which from experience can be caused by the electrical equipment,
- d) that the equipment insulation is adapted to the foreseen conditions,
- e) that the equipment fulfil the expected mechanical requirements so that persons, animals and property are not exposed to danger,
- f) that the equipment can resist the non-mechanical effects that can be foreseen in those areas the equipment is expected to be used, thereby causing no danger to persons, animals or property, and
- g) that the equipment do not expose persons, animals or property to danger from overcharge conditions and faults that can be foreseen.

Compliance of the equipment with the safety requirements in

- 1) European harmonized standards or if suchlike standards do not exist
- 2) Existing IEC or CEE publications for the equipment approved according to established rules within EEA or if neither such publications exists
- 3) Existing standards in the production country within EEA as long as this standard fulfil existing safety requirements after this section

gives presumption of conformity.

SECTION 5a. SPECIAL REQUIREMENTS ON MARKETING AND SELLING TERMINAL EQUIPMENT ACCORDING TO SECTION 4a.

Anyone distributing or selling terminal equipment that forms a galvanic connection between the electrical earth and the socket jacks of the equipment to an electronic communication network is obligated to keep suitable safety equipment available and to sell this equipment along with the terminal equipment. The safety equipment shall fulfil the safety requirements given under Section 4a. The safety equipment must also include a user manual.

The Post- and Telecommunications authority is preparing guidance about the element of risks and the use of safety equipment.

0 Amended by regulation 9 July 2007, No. 885

SECTION 6. STANDARDS

Relevant standards are:

- a) NEK 400 Elektriske lavspenningsinstallasjoner (Edited translation of CENELEC HD384 and IEC 60364)
- b) REN (Rasjonell elektrisk nettvirksomhet) Spesifikasjoner vedrørende fellesføring i luft og jord (Specifications for joint use of poles and ditches)
- c) NEK-EN 50083-1/NEK-EN 60728-11 Cable networks for television signals, sound signals and interactive services – Part 1: Safety requirements.
- d) NEK-EN 50174-1 Informasjonsteknologi – Kablingsinstallasjoner Del 1: Spesifikasjon og kvalitetssikring
- e) NEK-EN 50174-2 Informasjonsteknologi – Kablingsinstallasjoner Del 2: Planlegging og utførelse av installasjoner i bygninger
- f) NEK-EN 50174-3 Informasjonsteknologi – Kablingsinstallasjoner Del 3: Planlegging og utførelse av installasjoner utenfor bygninger
- g) NEK-EN 50310 Application of equipotential bonding and earthing at premises with information technology equipment
- h) NEK-EN 60950-serien Information technology equipment – Safety
- i) NEK-EN TR 62102 Electrical safety – Classification of interfaces for equipment to be connected to information and communications technology networks
- j) NS-EN 300 253 Earthing and bonding of telecommunication equipment in telecommunication centres
- k) NEK-EN 61663-1 Lightning Protection - Telecommunication lines - Part 1: Fibre optics installations
- l) NEK-EN 61663-2 Lightning Protection – Telecommunication lines – Part 2: Lines using metallic conductors

- m) ITU-T K.8 Separation in the soil between telecommunication cables and earthing system of power facilities
- n) ITU-T K.12 Characteristics of gas discharge tubes for the protection of telecommunications installations
- o) ITU-T K.26 Protection of telecommunication lines against harmful effects from electric power and electrified railway lines
- p) ITU-T K.27 Bonding configurations and earthing inside a telecommunication building
- q) ITU-T K.31 Bonding configurations and earthing of telecommunication installations inside a subscriber's building
- r) ITU-T K.35 Bonding configuration and earthing at remote electronic sites
- s) ITU-T K.44 Resistibility tests for telecommunication equipment exposed to overvoltages and overcurrents – basic recommendation
- t) ITU-T K.45 Resistibility of telecommunication equipment installed in the access and trunk networks to overvoltages and overcurrents
- u) ITU-T K.51 Safety criteria for telecommunication equipment
- v) ITU-T K.56 Protection of radio base stations against lightning discharges
- w) ITU-T K.57 Protection measures for radio base stations sited on power line towers
- x) ITU-T K.58 EMC, resistibility and safety requirements and procedures for co-located telecommunication installations
- y) ITU-T K.59 EMC, resistibility and safety requirements and procedures for co-located telecommunication for connection to unbundled cables
- z) ITU-T Management of electromagnetic interference on telecommunication systems due to power systems.

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SECTION 7. OPERATING VOLTAGES

The operating voltages in electronic communications networks shall comply with the safety requirements in the European standards in the EN 60950-series or EN 50083-1/60728-11. If combining several signals in an interface, the sum of operating voltages shall not exceed the safety requirement.

Deviations from requirements in the EN 60950-series may be accepted if accessible termination points are marked and provided with safety signs describing the danger of working on the lines. Special work and safety procedures shall be established.

Network termination points and cabling shall withstand at least a current of 1.3 A without causing any risk of fire, unless the network owner has declared a lower limit value.

SECTION 8. OVERVOLTAGES

Life, health and property shall be protected against harmful effects of insulation failure or defects between circuits with different voltages and other unwanted high voltages caused by electrical production plants, electric power and electrified railway lines or lightning discharges.

Depending on the voltage duration, the voltages referred to local earth potential in electronic communications networks caused by electrical production plants, electric power and electrified railway lines shall be limited to the following values:

0-200 ms:	1030 V
200-350 ms:	780 V
350-500 ms:	650 V
500-1 000 ms:	430 V
1 001-2 000 ms:	300 V
2 001-3 000 ms:	250 V
3 001-5 000 ms:	200 V
5 001- 10 000 ms:	150 V
Longer than 10 000 ms:	60 V

The Norwegian Post and Telecommunications Authority may allow deviations from the limit values in parts of the network not including equipment interfaces and network interfaces towards other electronic communications networks. The limit values shall then be limited to:

0-100 ms:	2000 V
100-200 ms:	1500 V
200-350 ms:	1000 V

A maximum short circuit current of 10 mA is allowed between the electronic communications line and the local earth by capacitive coupling between a high voltage installation and a line.

Phenomena affecting the safety and relevant dimensioning operating and fault situations in electrical production plants, electrical power and electrified railway lines given in "Directives concerning the protection of telecommunication lines against harmful effects from electric power and electrified railway lines" published by the International Telecommunication Union (ITU), cf. overview in Recommendation ITU-T K.26, shall be followed.

Overvoltages in electronic communications networks caused by lightning shall be limited to 1500 V towards user equipment and other networks, and the risk for damage shall be limited to the values described in relevant standards.

If overvoltage protection components are installed between the conductor and earth in electronic communications networks, these components shall have a DC sparkover voltage of at least 360 V when consideration have been taken to the overvoltage components' ageing and production tolerances. One may deviate from this requirement for spark overvoltage in a situation where the network owner has control with the electrical installations in the building including the earthing and bonding systems.

SECTION 9. DOCUMENTATION OF NETWORKS

The network owner shall declare the standards used and compliance with the safety requirements. If specifications other than relevant standards in Section 6 are used, they shall be identified and it shall be demonstrated that these provide an equivalent level of safety. The documentation shall be kept as long as the network is in service. The documentation shall be available for inspection, cf. Section 14.

If electrical production plants, electrical power or electrified railway lines cause the limit values in Section 8 to be exceeded, documentation shall be established which include

- a) maps showing the networks position in relation to each other,
- b) the earth resistivity and resistance used for calculations,
- c) relevant fault current data,
- d) calculated voltages,
- e) any measured voltages and
- f) protective measures carried out.

SECTION 10. DOCUMENTATION OF EQUIPMENT

Documentation for the equipment shall be established which demonstrate how the safety requirements are complied with. The procedure for internal production control shall be used. Internal production control is the procedure where the manufacturer or his authorized representative within the EEA ensures and declares that the equipment is compliant with the requirements in these regulations. The manufacturer or his authorized representative within the EEA shall affix the CE marking to each equipment according to the provisions of Section 11 as far as they are relevant.

The manufacturer or his authorized representatives within the EEA shall draw up a declaration of conformity for the equipment which shall include

- a) name and address of the manufacturer or his authorized representative within the EEA,
- b) a description which precisely identifies the equipment including the manufacturer's name or identifier, type number etc.,
- c) identifying numbers and names of the harmonized standards applied, in full or in part, or other technical specifications which the equipment complies with in case harmonized standards are not used,
- d) an assurance that the equipment complies with the standards referred to under point c),
- e) a signature with necessary identification of the person given authority to sign on behalf of the manufacturer or his representative within the EEA and
- f) the date of signature.

As a basis for the declaration of conformity the manufacturer shall draw up a technical documentation which makes it possible to evaluate the conformance of the equipment with the requirements in these regulations. The documentation shall, as far as necessary for the evaluation, cover the construction, production and operation of the equipment. The documentation shall include

- a) a general description of the equipment,
- b) construction and production drawings, list of components, list of sub-assemblies, circuit diagrams etc.,
- c) descriptions and explanations necessary to understand the mentioned drawings, lists and diagrams and the functioning of equipment,
- d) a list of standards applied, in full or in part, and description of solutions adopted to fulfil the objectives of these regulations when standards are not applied,
- e) results of design calculations made, examinations carried out etc. and

f) test reports.

The manufacturer shall take all measures necessary in order that the production processes ensures compliance of the manufactured products with the requirements in the regulations.

The manufacturer or his authorized representative within the EEA shall keep a copy of the declaration of conformity together with the technical documentation. On request the declaration of conformity and the technical documentation shall be submitted to the Norwegian Post and Telecommunications Authority.

The manufacturer or his authorized representative within the EEA shall keep the technical documentation available for the Norwegian Post and Telecommunications Authority for a period ending at least 10 years after the last equipment has been manufactured. If neither the manufacturer nor his authorized representative is established within the EEA, this responsibility rests upon the physical or legal person who is responsible for placing the equipment on the EEA market.

SECTION 11. CE MARKING

Equipment designed for rated voltages between 50 and 1000 V AC, or between 75 and 1500 V DC, shall have the CE marking affixed as a confirmation of the equipment complying with the safety requirements in section 5 and all relevant requirements in other regulations requiring CE marking of equipment.

Equipment designed for rated voltage outside the voltage range specified in the first paragraph, shall have the CE marking affixed if the equipment complies with all relevant requirements in other regulations requiring CE marking of the equipment. The CE marking shall be affixed to each single specimen of the equipment. The manufacturer or his authorized representative established within the EEA shall affix the CE marking which must be clearly visible, easy readable and durable. If it is not possible to affix the CE marking on the equipment itself, the CE making can be affixed to its packaging, the user documentation or the guarantee certificate.

It is not allowed to affix marking on the equipment, its packaging, user documentation or guarantee certificate that can be mistaken for the CE marking or that may be misleading with respect to the meaning and form of the CE marking.

All other marking can be affixed to the equipment, its packaging, user documentation or guarantee certificate on the condition that it will not make the CE marking less visible or more difficult to read. The CE marking is reproduced in figure 1 of Regulations 20 June 2000 no. 628 on EEA requirements related to radio equipment and telecommunications terminal equipment.

SECTION 12. INTERNAL CONTROL

The owner of an electronic communications network which shall be registered according to the Regulations 16 February 2004 no. 401 on electronic communications networks and services (Ecom Regulations), Section 1-2, shall establish an internal control system to monitor that the requirements in these regulations are complied with.

Internal control implies that the person responsible for the enterprise shall

- a) describe the main tasks and objectives of the enterprise, including goals for improvements and how the enterprise is organized, and clearly describe how responsibility, tasks and authority are divided,
- b) ensure access to acts and regulations which are relevant for the enterprise,

- c) see to that the employees have sufficient expertise and skills within their special fields of work and knowledge of the internal control system,
- d) obtain an overview of areas within the enterprises where there is risk of failure or non-compliance with regulatory requirements,
- e) develop, put into effect, inspect, evaluate and improve the necessary procedures, instructions, routines or other measures in order to identify, correct and prevent violation of these regulations and
- f) carry out methodical surveys and examinations of the internal control system in order to ensure that it functions as expected.

A report with documentation concerning points a) – f) above shall be worked out. The report shall be sent to the Norwegian Post and Telecommunications Authority on request.

The procedures of the internal control system and relevant documentation shall at all times be updated and kept as long as the network is in service. The documentation shall be available for inspection, cf. Section 14.

SECTION 13. DUTY TO REPORT

The network owners shall without delay report to the Norwegian Post and Telecommunications Authority occurrences of harm to life and health or damage to property on electronic communications networks.

SECTION 14. SUPERVISION

The Norwegian Post and Telecommunications Authority supervise the provisions in these regulations or decisions pursuant to these regulations.

As part of the supervision of equipment, the Norwegian Post and Telecommunications Authority or those assisting the Norwegian Post and Telecommunications Authority, can perform inspections at the premises of the manufacturer, importer, retailer or user.

Those subject to inspections, are obliged to give the Authority access to networks, documentation and premises and contribute to the accomplishment of the inspection, cf. The Electronic Communications Act, Section 10.

Spot tests, measurements or other control activities related to equipment, networks and internal control can be carried out.

If the Norwegian Post and Telecommunications Authority find it necessary, equipment can be taken for additional inspection. Those manufacturing, importing, distributing or renting equipment, have a duty to obtain equipment which the Norwegian Post and Telecommunications Authority request to be handed over for inspection, even if the equipment is not available in stock.

SECTION 15. EXEMPTIONS

In special cases the Norwegian Post and Telecommunications Authority may make exemptions from requirements in these regulations.

SECTION 16. SANCTIONS

If these regulations are violated, the Norwegian Post and Telecommunications Authority may adopt sanctions according to The Electronic Communications Act, Section 10.

SECTION 17. COMING INTO FORCE

These regulations enter into force immediately.

From the same date the regulations 26 June 2000 no. 636 on safety in telecommunications networks are repealed.