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Pre-Standard

First edition
2004-01

Safety aspects for xDSL signals on circuits connected to telecommunication networks (DSL: Digital Subscriber Line)

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

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SAFETY ASPECTS FOR XDSL SIGNALS ON CIRCUITS CONNECTED TO TELECOMMUNICATION NETWORKS (DSL: DIGITAL SUBSCRIBER LINE)

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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC-TS 62367, which is a technical specification, has been prepared by IEC technical committee 108: Safety of electronic equipment within the field of audio/video, information technology and communication technology.

This technical specification is a pre-standard publication which may be updated in the future as an International Standard.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
108/61/DTS	108/90/RVC

Full information on the voting for the approval of this technical specification can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

In this standard, terms defined in 1.2 of IEC 60950-1are printed in SMALL CAPITALS.

The committee has decided that the contents of this publication will remain unchanged until 2007. At this date, the publication will be

- transformed into an International Standard;
- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

INTRODUCTION

xDSL signals are high-speed telecommunication signals that may be present on a telecommunication line, together with:

– analogue PSTN (Public Switched Telephone Network);

– ISDN (Integrated Services Digital Network) signals; or

– a d.c. power-feeding component.

An xDSL signal is characterised by an amplitude of the order of 3 V r.m.s. with superimposed spikes having very short duration (about 1 μs) and peak values not exceeding 30 V.

When combined with other services as above, the peak voltage can very occasionally exceed the limits for a TNV-3 CIRCUIT. However the excursions above these limits consist of these very short duration spikes.

There are no published documents from IEC on the effect of such spikes on the human body, but experience with xDSL is that the safety risk, if any, is very small because of:

– the low power of the spikes; and

– the limited accessibility of TNV circuits.

The amplitude and probability of the spikes have been calculated as follows:

– amplitude up to 15V/1μs with a probability of occurrence of one every few seconds to every few minutes;

– amplitude up to 20V/1μs with a probability of occurrence of one every few hours;

– amplitude up to 27V/1μs with a probability of occurrence of one every few years.

Annex A gives more detail on the operation of xDSL telecommunication systems.

SAFETY ASPECTS FOR XDSL SIGNALS ON CIRCUITS CONNECTED TO TELECOMMUNICATION NETWORKS (DSL: DIGITAL SUBSCRIBER LINE)

1 Scope

This technical specification addresses the safety implications of having xDSL signals on circuits in equipment connected to a TELECOMMUNICATION NETWORK, and gives rules for dealing with such equipment in the context of the IEC 60950 series.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60950 (all parts), *Information technology equipment – Safety*

IEC 60950-1 (all parts), *Information technology equipment – Safety – Part 1: General requirements*

3 Terms and definitions, and abbreviations

For the purposes of this document, the terms and definitions in the IEC 60950 series and the following abbreviations apply.

ADSL	Asymmetric Digital Subscriber Line
CF	Crest Factor
CO	Central Office
CPE	Customer Premises Equipment
DMT	Discrete Multi Tone
DSL	Digital Subscriber Line
HDSL	High Speed Digital Subscriber Line
IEC	International Electrotechnical Commission
ISDN	Integrated Services Digital Network
ITU	International Telecommunication Union
ITU-T	Telecommunication Standardization Sector of ITU
NT	Network Termination
PAR	Peak to Average Ratio
PSTN	Public Switched Telephone Network
QAM	Quadrature Amplitude Modulation
RSS	Remote Signal Source
SDSL	Symmetric Digital Subscriber Line
TNV	Telecommunication Network Voltage
VDSL	Very-high-bit-rate Digital Subscriber Line