



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.950

DIGITAL SECTIONS AND DIGITAL LINE SYSTEMS

**GENERAL CONSIDERATIONS ON DIGITAL
LINE SYSTEMS**

ITU-T Recommendation G.950

(Extract from the *Blue Book*)

NOTES

1 ITU-T Recommendation G.950 was published in Fascicle III.5 of the *Blue Book*. This file is an extract from the *Blue Book*. While the presentation and layout of the text might be slightly different from the *Blue Book* version, the contents of the file are identical to the *Blue Book* version and copyright conditions remain unchanged (see below).

2 In this Recommendation, the expression “Administration” is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

Recommendation G.950

GENERAL CONSIDERATIONS ON DIGITAL LINE SYSTEMS

(Malaga-Torremolinos, 1984; amended at Melbourne, 1988)

1 Introduction

Digital line systems are the means of providing digital line sections. Recommendations on digital line systems may recognize, for digital line sections operating at a given bit rate, specific transmission media and transmission techniques (e.g. coaxial cable, regenerative transmission, etc.). Performance requirements of digital line systems are for the guidance of systems designers and users (equipment design objectives) and may be related to hypothetical digital paths of defined constitution.

All digital line systems operating on the same medium at a given bit rate shall comply with the characteristics of the digital line section at the same bit rate.

2 General requirements for digital line systems

The following general requirements apply to all digital line systems on metallic pair cables and where applicable with appropriate interpretation, also to those on optical fibre cables.

2.1 Environmental conditions

2.1.1 Climatic conditions

Data concerning the classification of climatic stresses that can be expected for overground equipment is available in IEC Publication series No. 721. Conditions for underground equipment and further details for overground equipment need further study.

Note - Supplement No. 34 contains some information on climatic conditions in underground repeater housing.

2.1.2 Pressurization

The repeaters of digital line systems may be operated in pressurized housings.

2.1.3 Protection against induced voltages and currents caused by lightning and power lines, etc.

The repeaters, line terminals and the power feeding arrangement should be protected against induced voltages and currents (caused by lightning or other sources) in accordance with Recommendation K.17.

The system shall be physically protected from the above induced voltages and currents so that no damage is sustained. In addition, the performance of the system shall not be adversely affected by steady state induced voltages and currents although it may be affected by surges for the duration of the surge in certain circumstances.

In addition the CCITT Directives [1] give guidance on these problems.

2.1.4 Protection against interference from other sources

The performance of Digital Line Systems should not be affected significantly by interference from sources within stations such as fluorescent lamp, tools, ventilation plant, etc., and especially sources giving rise to pulse type interference. Performance degradation due to interferences from radio and broadcast transmitters should also be prevented.

Note - The Supplement No. 27 contains some information on possible measures to reduce effects from interference and measuring methods concerning interference.

2.1.5 *Interference to other systems*

Conducted and radiated emissions must not interfere with other equipment, radio and broadcast services. In particular, digital line systems must coexist in the same cable with other digital and analogue line systems. (Some restrictions might, however, be necessary for joint use of different line systems on symmetrical pair cables.)

Reference

- [1] CCITT Manual *Directives concerning the protection of telecommunication lines against harmful effects from electric power and electrified railway lines*, ITU, Geneva, 1988.