ISO/IEC TS 11801-9903

Edition 2.0 2025-09

TECHNICAL SPECIFICATION

Information technology - Generic cabling for customer premises - Part 9903: Modelling of channels and links

ICS 35.200

ISBN 978-2-8327-0698-5

ISO/IEC TS 11801-9903: 2025-09(en)

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FOREWORD

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ISO/IEC 11801-9903 has been prepared by subcommittee 25: Interconnection of information technology equipment, of ISO/IEC joint technical committee 1: Information technology. It is a Technical Specification.

This second edition cancels and replaces the first edition published in 2021. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

a) the expansion of the list of specified parameters to include mixed-mode mode-conversion and related unbalance attenuation parameters;
b) the addition of an informative annex covering the topic of signal-to-noise ratio and its relation to the S-parameter matrix channel model.

The text of this Technical Specification is based on the following documents:

Draft	Report on voting
JTC1-SC25/3324/DTS	JTC1-SC25/3333/RVDTS

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this Technical Specification is English.

A list of all parts in the ISO/IEC 11801 series, published under the general title *Information technology - Generic cabling for customer premises*, can be found on the IEC website.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1, and the ISO/IEC Directives, JTC 1 Supplement available at www.iec.ch/members_experts/refdocs and www.iso.org/directives.

INTRODUCTION

This document includes models and assumptions, which support the limits for the channel and permanent link test configurations in ISO/IEC 11801-1. These are based on the performance requirements of cable and connecting hardware as specified in IEC standards. Modelling of channels and links can be done in different ways.

This document provides models that assure that a channel created by adding compliant patch cords to a permanent link will meet the applicable channel performance limits.

1 Scope

This part of ISO/IEC 11801, which is a Technical Specification, establishes modelling of limits for mixed-mode transmission parameters within and between two pairs of balanced cabling. This document consists of a detailed description of matrix modelling and gives explanations on how to convert matrices, by using the S to T and T to S matrix conversion. Further it consists of terms and definitions used, how specific parameters are modelled, alternative calculation and signal-to-noise ratio (SNR) modelling.

Chain parameters and alternative approaches and formulas are described for combining component cable and connector transmission parameters into cabling link and channel transmission parameters. S-parameter limit matrix formulas are covered, which can be transformed into T-parameter limit matrices for use in chain parameter link and channel limit formulas. The formulas are applicable to all transmission parameters for forming complete differential-mode, mixed-mode, and common-mode link and channel models.

Terms and definitions used for modelling are discussed, together with how modelling is done for specific transmission parameters. Alternative calculation models are explained, and the SNR modelling introduced.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

ISO/IEC 11801-1, *Information technology - Generic cabling for customer premises - Part 1: General requirements*