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TECHNICAL REPORT

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Information technology – Generic cabling systems for customer premises – Part 9903: Matrix modelling of channels and links

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INFORMATION TECHNOLOGY – GENERIC CABLING SYSTEMS FOR CUSTOMER PREMISES –

Part 9903: Matrix modelling of channels and links

FOREWORD

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The main task of IEC technical committees is to prepare International Standards. However, a technical committee may propose the publication of a technical report when it has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

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

The list of all currently available parts of the ISO/IEC 11801 series, under the general title *Information technology – Generic cabling for customer premises*, can be found on the IEC web site.

This Technical Report has been approved by vote of the member bodies, and the voting results may be obtained from the address given on the second title page.

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

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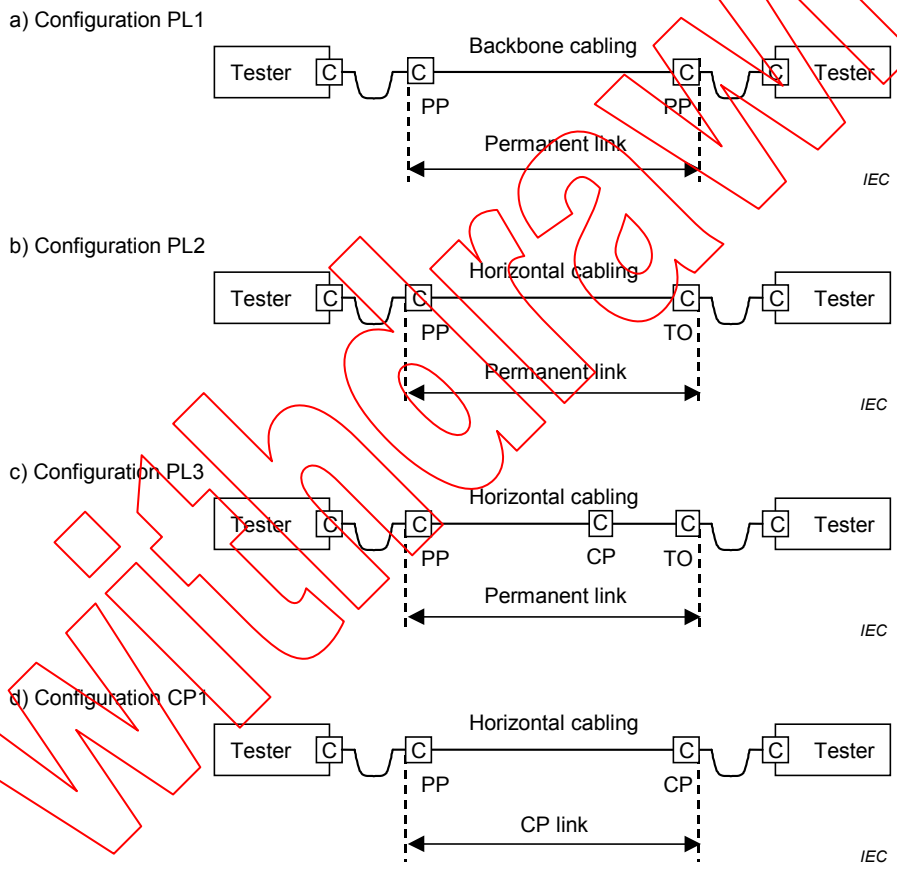
INTRODUCTION

The pass/fail limits for defined channel and permanent link cabling configurations have an implicit impact on the component limits for the cabling components used. The channel configurations are described in Clause 5, the link configurations in Clause 6 of ISO/IEC 11801:2002 with its amendments 1:2008 and 2:2010.

The permanent link configurations, which represent the fixed portion of the cabling, have two possible topologies:

A connection plus a segment of cable plus a connection (2 connector topology).

A connection plus a segment of cable plus a connection plus another segment of cable plus another connection (3 connector topology).



PP = patch panel; C = connection; CP = consolidation point;

TO = telecommunications outlet

Figure 1 – Link configurations of ISO/IEC 11801:2002

This Technical Report includes models and assumptions, which support pass/fail limits for the channel and permanent link test configurations in this standard. These are based on the performance requirements of cable and connecting hardware as specified in IEC standards.

This Technical Report provides reasonable assurance that a channel created by adding compliant patch cords to a previously certified permanent link will meet the applicable channel performance limits.

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Over the years the frequencies of the classes increased, but the theory for calculating the limits stayed the same. Especially the higher order effects had to be considered and at the end only by doing a Monte Carlo calculation, assuming that not all components would be at the limit at the same time, allowed to prove compliance.

The model uses 2 pairs for all calculations. The limits are equal for pairs or pair combinations but in reality measured values could be different. If results are required that need more pairs to be considered, then this calculation can be done based on the results from multiple 2 pair calculations with appropriate inputs (worst case). An example of such a calculation is the power sum and average limit lines for 4 pairs.

Symmetry and additional contributions that result from unbalanced signals and differential-to-common and common-to-differential mode coupling are not included in this Technical Report but can be added easily in a next step by increasing the matrix size.

For details on the naming of transmission parameters, see definitions and Clause C.1.

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INFORMATION TECHNOLOGY – GENERIC CABLING SYSTEMS FOR CUSTOMER PREMISES –

Part 9903: Matrix modelling of channels and links

1 Scope

This part of ISO/IEC 11801 establishes a matrix-model for formulating limits for differential mode parameters for return loss, insertion loss, and near and far end crosstalk, within and between two pairs of balanced cabling. This is for the purpose of supporting new, improved balanced cabling channel and link specifications, which are expected to be included in the next edition of ISO/IEC 11801[1].

2 Normative references

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

ISO/IEC 11801:2002, *Information technology – Generic cabling for customer premises*
Amendment 1:2008
Amendment 2:2010[2]

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1 A new edition of ISO/IEC 11801 is under consideration and is planned as ISO/IEC 11801-1 (first edition).

2 A consolidated version of this publication exists, comprising ISO/IEC 11801:2002, ISO/IEC 11801:2002/AMD 1:2008 and ISO/IEC 11801:2002/AMD 2:2010.