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TECHNICAL REPORT



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

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CONTENTS

FOREWORD	4
INTRODUCTION	6
1 Scope	8
2 Normative references	8
3 Terms, definitions and abbreviations	8
3.1 Terms and definitions	8
3.2 Abbreviations	9
4 Matrix model	9
5 Matrix definition	10
5.1 Quadriports	10
5.2 Matrix port definition for a two pair system representative for modelling purposes	10
5.3 Operational scattering matrix	10
5.4 General naming convention	11
5.5 S-Matrix	11
5.6 Passivity	12
5.7 Operational reflexion loss matrix	12
5.8 Transmission matrix (T-matrix)	13
5.9 S-matrix of cabling	13
6 Calculation with matrices using limit lines	13
7 Extracting limit lines	14
7.1 General	14
7.2 Equations to extract the cabling limit lines	14
7.2.1 Operational attenuation	14
7.2.2 Near end crosstalk	15
7.2.3 Attenuation to far end crosstalk ratio	15
7.2.4 Reflection	15
8 Component values to be used as input to the model	15
8.1 General	15
8.2 Cable	16
8.2.1 General	16
8.2.2 Wave attenuation	16
8.2.3 Near end crosstalk	16
8.2.4 Far end crosstalk	16
8.2.5 Reflection	16
8.3 Connections	17
8.3.1 General	17
8.3.2 As point source of disturbance	17
8.3.3 As a transmission line	18
Annex A (informative) S to T and T to S-matrix conversion formulas	19
A.1 Overview	19
A.2 Formulas	19
Annex B (informative) Calculation examples	20
B.1 Overview	20
B.2 Component assumptions for modelling purposes	20

B.2.1	Cables	20
B.2.2	Connections	21
B.3	Model results	21
B.3.1	General	21
B.3.2	Insertion loss	21
B.3.3	NEXT	22
B.3.4	ACR-F	22
B.3.5	Return loss	22
Annex C (informative)	Terms and definitions	23
C.1	Comparison of namings	23
C.2	General	24
C.3	Background of terms and definitions	24
C.3.1	Operational attenuation	24
C.3.2	Operational transfer function (T_B)	26
C.3.3	Image or wave transfer function (T)	26
C.3.4	Insertion transfers function of a two-port (T_{BI})	26
C.3.5	Insertion transfer function (T_{BI}) measured with a NWA	26
C.3.6	Operational reflection loss transfer function ($T_{ref} = S_{ref}$) of a junction	26
Bibliography	28
Figure 1	– Link configurations of ISO/IEC 11801:2002	6
Figure 2	– Matrix definition of a 4 port 2 twisted pair system	10
Figure 3	– Operational scattering parameters example from port 2	11
Figure 4	– All 4 ports operational scattering parameter definition	11
Figure 5	– S -Matrix definition showing corresponding S parameters	11
Figure 6	– Equal S parameters for real components	12
Figure 7	– Final operational scattering matrix for real components	12
Figure 8	– Definition of the operational reflection loss matrix with unitarity included (see C.3.6)	13
Figure 9	– Transmission matrix concatenation showing an example of a 2 connector permanent link	13
Figure 10	– Graphical example of a <i>NEXT-L</i> calculation showing statistical results (red) and final calculation (blue)	14
Figure 11	– 100 m cable return loss without reflection at both ends	17
Figure 12	– 100 m cable return loss with a reflection of 0,03 at both ends (6 Ω mismatch, ~23 dB return loss at 1 MHz)	17
Figure C.1	– Defining the operational attenuation and the operational transfer functions of a two-port	25
Figure C.2	– Defining the reflection transfer functions and the return loss of a junction	27
Table B.1	– Modelling assumptions for cable transmission parameters	20
Table B.2	– Modelling assumptions for connection transmission parameters	21
Table B.3	– Insertion loss	21
Table B.4	– NEXT	22
Table B.5	– ACR-F	22
Table B.6	– Return loss	22
Table C.1	– Comparison of naming in ISO/IEC 11081:2002 and this technical report	23

INFORMATION TECHNOLOGY – GENERIC CABLING SYSTEMS FOR CUSTOMER PREMISES –

Part 9903: Matrix modelling of channels and links

FOREWORD

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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.

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

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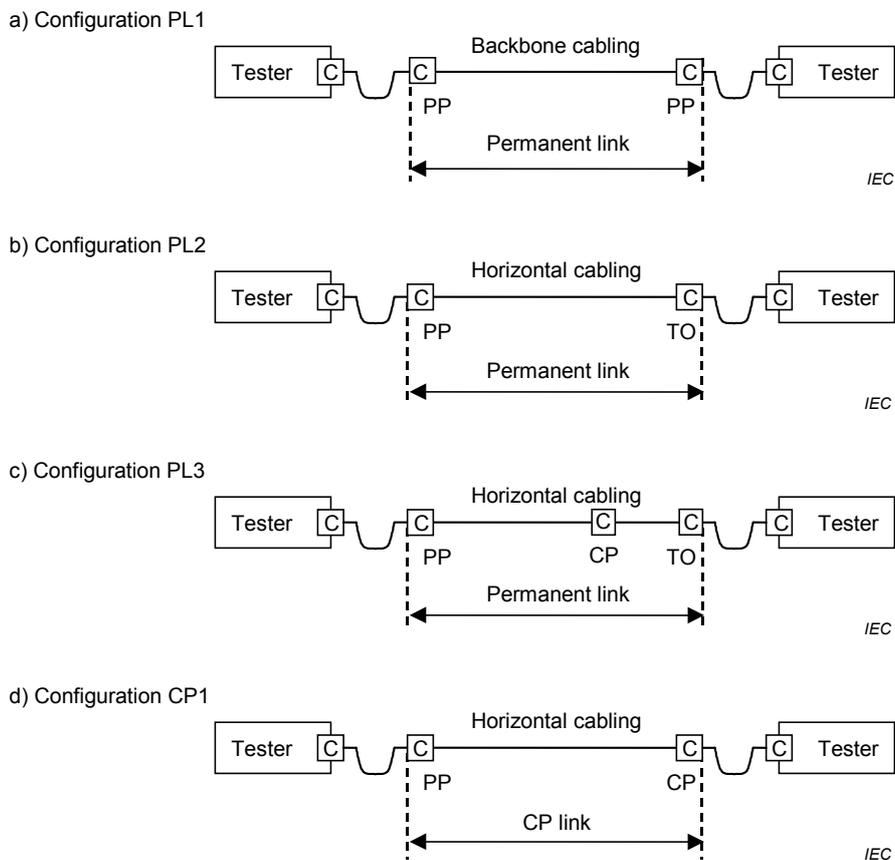
INTRODUCTION

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.

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.

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 11801¹.

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 2:2010²

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.