ISO/IEC TR 11801-9907

Edition 1.0 2019-07

TECHNICAL REPORT

Information technology – Generic cabling for customer premises – Part 9907: Specifications for direct attach cabling



ISO/IEC TR 11801-9907:2019-07(en)

THIS PUBLICATION IS COPYRIGHT PROTECTED
Copyright © 2019 ISO/IEC, Geneva, Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either IEC or IEC's member National Committee in the country of the requester. If you have any questions about ISO/IEC copyright or have an enquiry about obtaining additional rights to this publication, please contact the address below or your local IEC member National Committee for further information.

IEC Central Office
3, rue de Varembé
CH-1211 Geneva 20
Switzerland

Tel.: +41 22 919 02 11
info@iec.ch
www.iec.ch

About the IEC
The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes International Standards for all electrical, electronic and related technologies.

About IEC publications
The technical content of IEC publications is kept under constant review by the IEC. Please make sure that you have the latest edition, a corrigendum or an amendment might have been published.

IEC publications search - webstore.iec.ch/advsearchform
The advanced search enables to find IEC publications by a variety of criteria (reference number, text, technical committee,...). It also gives information on projects, replaced and withdrawn publications.

IEC Just Published - webstore.iec.ch/justpublished
Stay up to date on all new IEC publications. Just Published details all new publications released. Available online and once a month by email.

IEC Customer Service Centre - webstore.iec.ch/csc
If you wish to give us your feedback on this publication or need further assistance, please contact the Customer Service Centre: sales@iec.ch.

Electropedia - www.electropedia.org
The world's leading online dictionary on electrotechnology, containing more than 22 000 terminological entries in English and French, with equivalent terms in 16 additional languages. Also known as the International Electrotechnical Vocabulary (IEV) online.

IEC Glossary - std.iec.ch/glossary
67 000 electrotechnical terminology entries in English and French extracted from the Terms and Definitions clause of IEC publications issued since 2002. Some entries have been collected from earlier publications of IEC TC 37, 77, 86 and CISPR.

ISO/IEC TR 11801-9907

Edition 1.0 2019-07

TECHNICAL REPORT

Information technology – Generic cabling for customer premises – Part 9907: Specifications for direct attach cabling

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

ICS 35.200

ISBN 978-2-8322-7195-7

Warning! Make sure that you obtained this publication from an authorized distributor.

CONTENTS

FOREWORD 4
INTRODUCTION 5
1 Scope 6
2 Normative references 6
3 Terms, definitions, abbreviated terms and symbols 6
3.1 Terms and definitions 6
3.2 Abbreviated terms 7
3.3 Symbols 7
4 Specifications 7
5 Direct attach cabling configuration 7
6 Performance specifications 8
6.1 General 8
6.2 Return loss limits 8
6.3 Insertion loss limits 8
6.4 NEXT limits 8
6.5 PS NEXT limits 8
6.6 ACR-N limits 8
6.7 PS ACR-N limits 8
6.8 ACR-F limits 8
6.9 PS ACR-F limits 8
6.10 TCL limits 8
6.11 ELTCTL limits 8
6.12 Coupling attenuation 9
6.13 Alien crosstalk 9
6.14 Direct current loop resistance 9
6.15 Direct current resistance unbalance within a pair 9
6.16 Propagation delay 9
6.17 Delay skew 9
7 Direct attach cabling performance 9
7.1 General 9
7.2 Reference performance testing 9
7.3 Installation performance testing 10
7.4 Installation performance testing of direct attach cabling 10
8 Testing of direct attach cabling 12
Annex A (informative) Short reach Class I direct attach channel transmission performance 13
A.1 General 13
A.2 Short reach Class I direct attach cabling return loss 13
A.3 Short reach Class I direct attach cabling insertion loss 13
A.4 Short reach Class I direct attach cabling NEXT 13
A.5 Short reach Class I direct attach cabling PS NEXT 14
A.6 Short reach Class I direct attach cabling ACR-F 14
A.7 Short reach Class I direct attach cabling PS ACR-F 15
A.8 Short reach Class I direct attach cabling propagation delay 15
A.9 Short reach Class I direct attach cabling delay skew 15

A.10 Short reach Class I direct attach cabling PS ANEXT 15
A.11 Short reach Class I direct attach cabling PS AACR-F 16
Bibliography 17

Figure 1 – Direct attach cabling 7

Table 1 – Test regime for reference performance and installation performance – Direct attach cabling of Classes D, E, E_A, F, F_A, I, II 11
Table A.1 – Short reach Class I direct attach cabling return loss 13
Table A.2 – Short reach Class I direct attach cabling insertion loss 13
Table A.3 – Short reach Class I direct attach cabling NEXT 14
Table A.4 – Short reach Class I direct attach cabling PS NEXT 14
Table A.5 – Short reach Class I direct attach cabling ACR-F 14
Table A.6 – Short reach Class I direct attach cabling PS ACR-F 15
Table A.7 – Short reach Class I direct attach cabling propagation delay 15
Table A.8 – Short reach Class I direct attach cabling PS NEXT 16
Table A.9 – Short reach Class I direct attach cabling PS AACR-F 16

INFORMATION TECHNOLOGY – GENERIC CABLING FOR CUSTOMER PREMISES –

Part 9907: Specifications for direct attach cabling

FOREWORD

1) ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

2) The formal decisions or agreements of IEC and ISO on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees and ISO member bodies.

3) IEC, ISO and ISO/IEC publications have the form of recommendations for international use and are accepted by IEC National Committees and ISO member bodies in that sense. While all reasonable efforts are made to ensure that the technical content of IEC, ISO and ISO/IEC publications is accurate, IEC or ISO cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.

4) In order to promote international uniformity, IEC National Committees and ISO member bodies undertake to apply IEC, ISO and ISO/IEC publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any ISO, IEC or ISO/IEC publication and the corresponding national or regional publication should be clearly indicated in the latter.

5) ISO and IEC do not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. ISO or IEC are not responsible for any services carried out by independent certification bodies.

6) All users should ensure that they have the latest edition of this publication.

7) No liability shall attach to IEC or ISO or its directors, employees, servants or agents including individual experts and members of their technical committees and IEC National Committees or ISO member bodies for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication of, use of, or reliance upon, this ISO/IEC publication or any other IEC, ISO or ISO/IEC publications.

8) Attention is drawn to the normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.

9) Attention is drawn to the possibility that some of the elements of this ISO/IEC publication may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

The main task of IEC and ISO 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 11801-9907, which is a Technical Report, was 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 website.

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

DTR	Report on voting
JTC1-SC25/2841/DTR	JTC1-SC25/2863/RVDTR

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

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

A bilingual version of this document may be issued at a later date.

INTRODUCTION

This document provides definitions and examples of direct attach cabling. It provides performance specifications for Classes D, E, E_A, F, F_A, I and II direct attach cabling that can also be used to verify terminating connectors. Performance verification for direct attach cabling will be specified in the second edition of ISO/IEC 14763-4.

INFORMATION TECHNOLOGY – GENERIC CABLING FOR CUSTOMER PREMISES –

Part 9907: Specifications for direct attach cabling

1 Scope

This part of ISO/IEC 11801, which is a Technical Report, provides definitions for, and examples of, direct attach cabling configurations.

This document provides performance specifications for Classes D, E, E_A, F, F_A, I and II direct attach cabling by reference to ISO/IEC 11801-1.

Informative limits for Class I direct attach cabling to support 5 m short reach mode application according to ISO/IEC/IEEE 8802-3:2017/AMD3, i.e. 25GBASE-T and 40GBASE-T, are provided in Annex A.

Test methods will be provided in the second edition of ISO/IEC 14763-4.

NOTE ISO/IEC 14763-4 is the test method for End to End (E2E) link. It can be also used for direct attach cabling. Test methods for Classes E_A, F, F_A, I, II will be provided in the second edition of ISO/IEC 14763-4.

Direct attach cabling connects two pieces of equipment, it has connectors at each end, and no intermediate connecting hardware.

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*

3 Terms, definitions, abbreviated terms and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 11801-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

3.1.1
direct attach cabling
cable with free connectors at each end, and with no intermediate connecting hardware, that connects two pieces of equipment

3.2 Abbreviated terms

For the purposes of this document, the abbreviated terms given in ISO/IEC 11801-1 apply.

3.3 Symbols

For the purposes of this document, the symbols given in ISO/IEC 11801-1 apply.

4 Specifications

The specifications for direct attach cabling assume the following.

a) The configurations and structure meet the specifications outlined in Clause 5.

b) The interfaces to the cabling meet the specifications of ISO/IEC 11801-1 with respect to mating interfaces and performance.

c) Installation is performed in accordance with ISO/IEC 14763-2.

d) The direct attach cabling meets the specifications of Clause 6.

e) Performance testing to the specifications of Clause 6 is used to provide assurance of installed cabling to determine its capacity to support the applications described by ISO/IEC 11801-1.

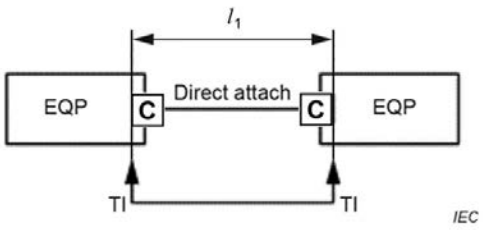
f) The performance of direct attach cabling as specified in Clause 6 supports the link specifications specified in ISO/IEC 11801-1. Performance can be achieved by one of the following when the additional connections are included in the test results:

   1) a direct attach cabling design and implementation ensuring that the prescribed transmission performance is met;

   2) using compatible cabling components that meet the specifications of ISO/IEC 11801-1.

5 Direct attach cabling configuration

See Figure 1.



Key

l_1	length of direct attach cabling
TI	test interface
EQP	equipment
C	connection

Figure 1 – Direct attach cabling