

CABLING STANDARDS REVIEW

Mike Gilmore

Cabling Design Standards

Cabling Installation Standards

Remote Powering

Cabling Testing

Associated Standards



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Mike Gilmore

Standards Activities



Member
JTC1 SC25 WG3: Generic Cabling
Leader



JTC1 SC25 WG3 Bonding Ad-hoc: ISO/IEC 30129
Meeting Secretary

JTC1 SC25 WG3 AIM Ad-hoc: Automated Infrastructure Management
JTC1 SC39 WG1: Resource efficient data centres



Convenor
TC215 WG1: Cabling design
Secretary



TC215 WG2: Cabling installation - QA and installation practices
Member

TC215 WG3: Facilities and infrastructures

Member - CEN/CLC/ETSI CG
Green Data Centres



Past-Chairman
TCT7: Telecommunications - Installation Requirements
Chairman



TCT7/1: Cabling: Infrastructure design, planning and commissioning
Meeting Secretary

TCT7/2: Cabling; Installation and UK implementation
TCT7/3: Facilities and infrastructures

FIA
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Fibreoptic
Industry Association

Director
standards@fia

Cabling Design Standards




Cabling Design Standards

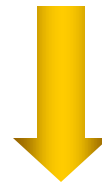
Cabling Installation Standards

Remote Powering

Cabling Testing

Associated Standards

	 CLC	 ISO/IEC	 ANSI/TIA
<i>General requirements</i>	EN 50173-1	11801	568-C.0, C.2, C.3, C.4
<i>Office premises</i>	EN 50173-2	11801	568-C.1
<i>Industrial premises</i>	EN 50173-3	24702	1005-A
<i>Homes</i>	EN 50173-4	15018	570-C
<i>Data centres</i>	EN 50173-5	24764	942-A
<i>Distributed building services</i>	EN 50173-6:2013		862-A



The inclusion of new component Categories and cabling Classes

The re-structuring of standards as per CENELEC

The inclusion of a new component and cabling Category

The re-structuring of standards

Cabling Channel Configuration

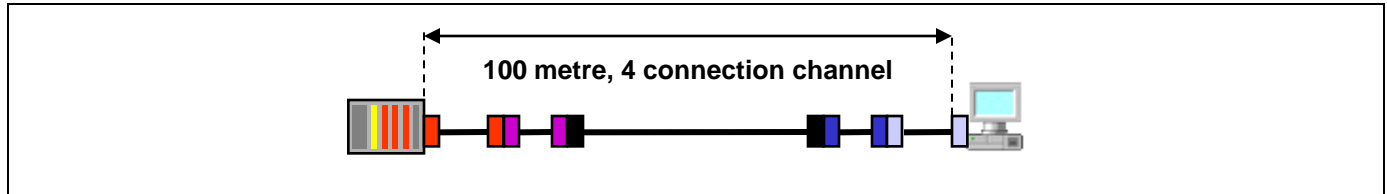
Cabling Design Standards

Cabling Installation Standards

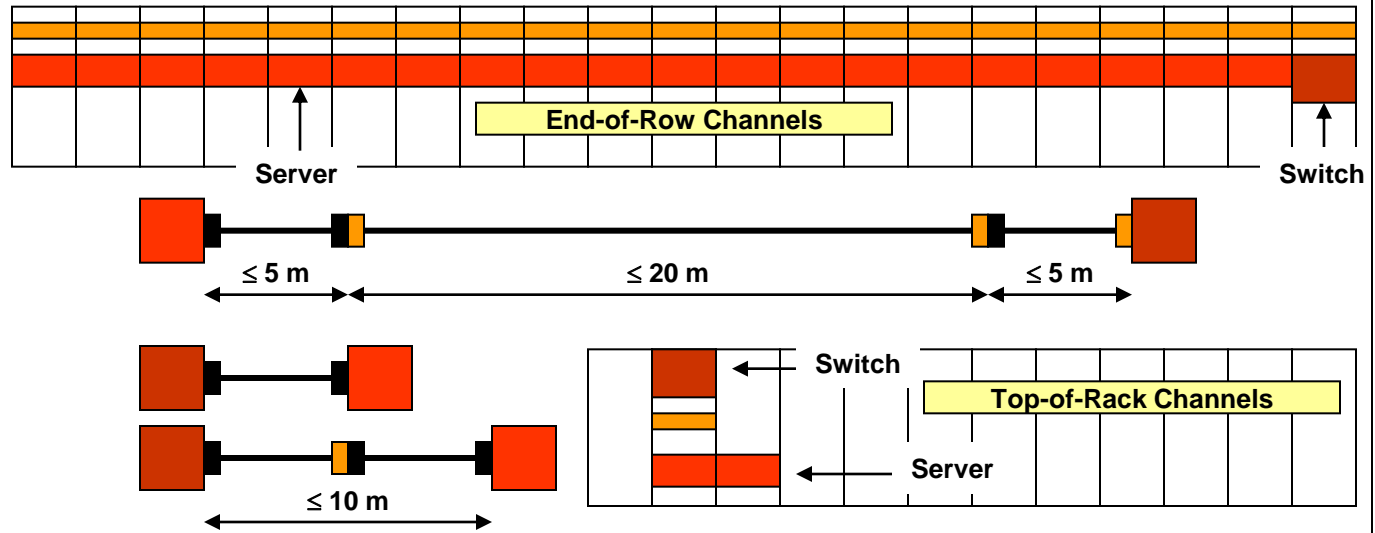
Remote Powering

Cabling Testing

Associated Standards



IEEE 802.3bq - "40GBASE-T"	
Liaison to ANSI/TIA and ISO/IEC JTC1 SC25 WG3 November 2012	There is a need to define new channel topology for designers
	Server-to-switch links spanning ~20 cabinets 30m channel ≤ 2 connections (now a project objective)
	Server-to-switch links in single or nearby cabinets < 2 connections P-to-P links of 5-10m



Cabling Structure

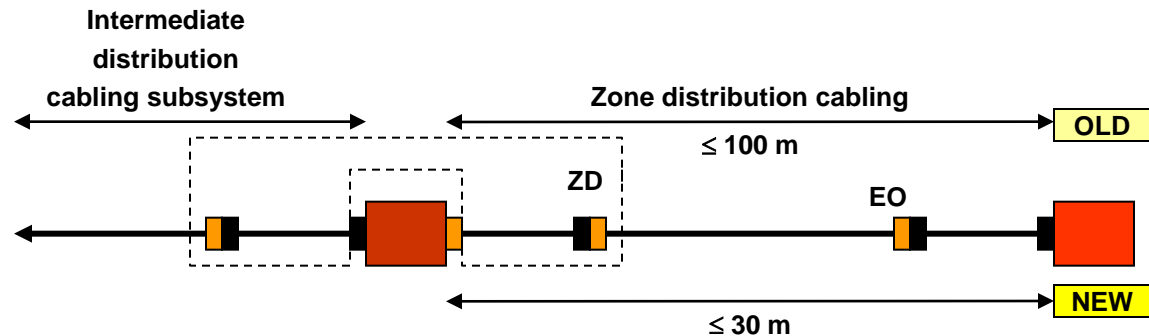
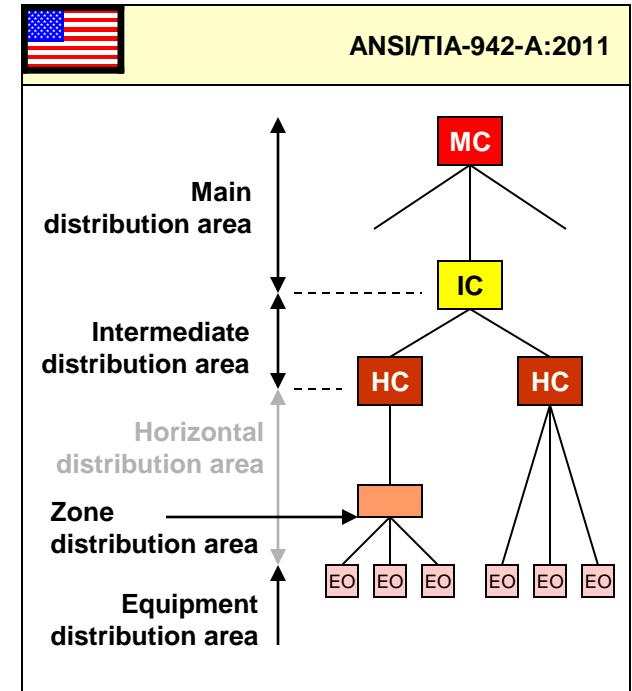
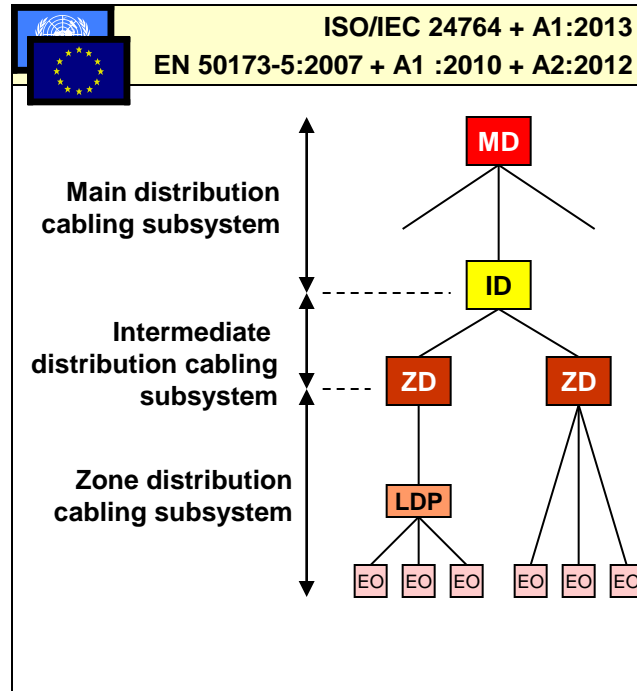
Cabling Design Standards

Cabling Installation Standards

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Associated Standards



Fundamental Principles

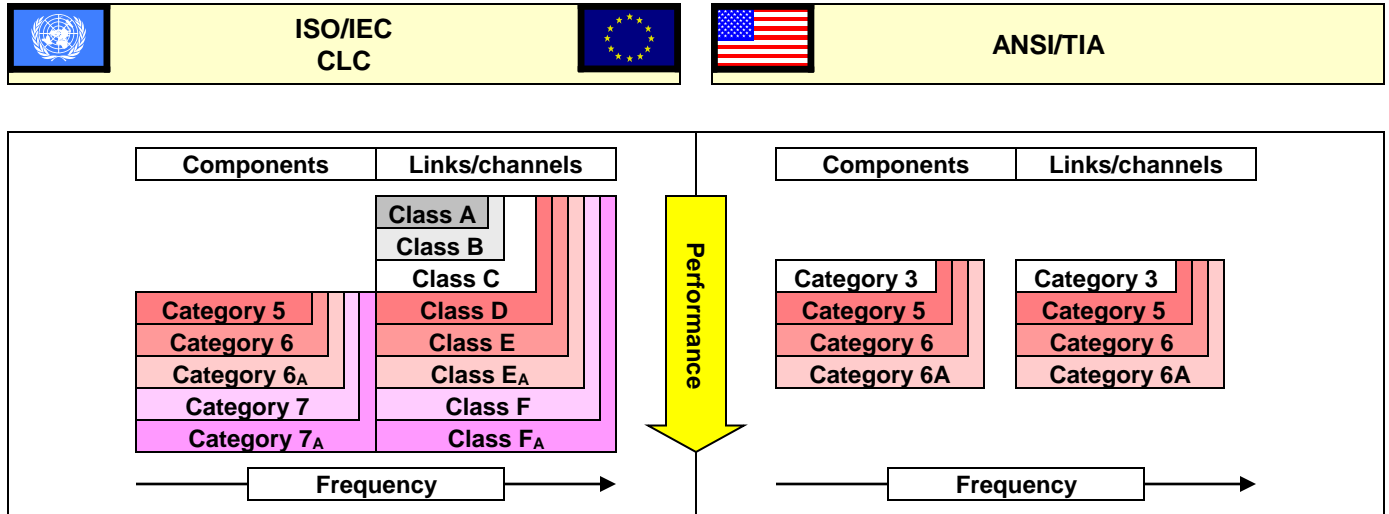
Cabling Design Standards

Cabling Installation Standards

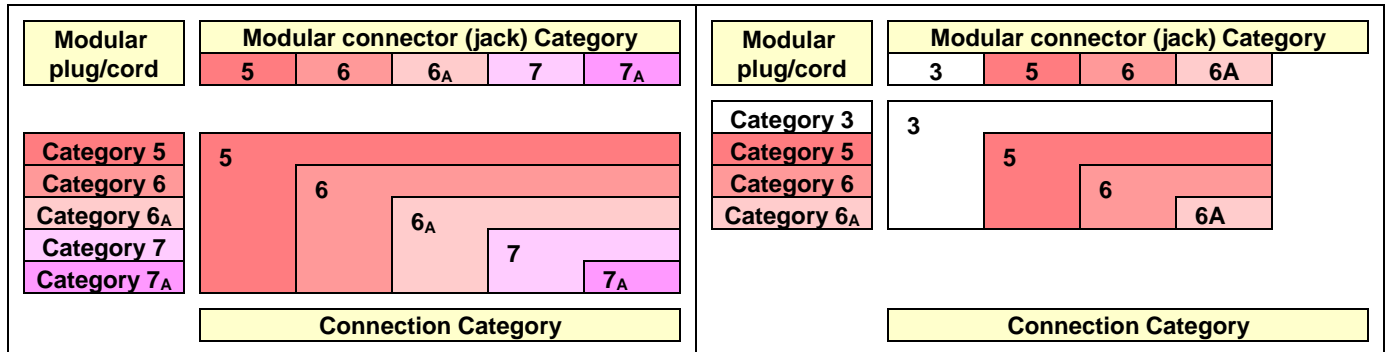
Remote Powering

Cabling Testing

Associated Standards



Cables and connections of different Categories may be mixed within a channel however the resultant cabling performance will be determined by the Category of the lowest performing component.



New Channels and Components

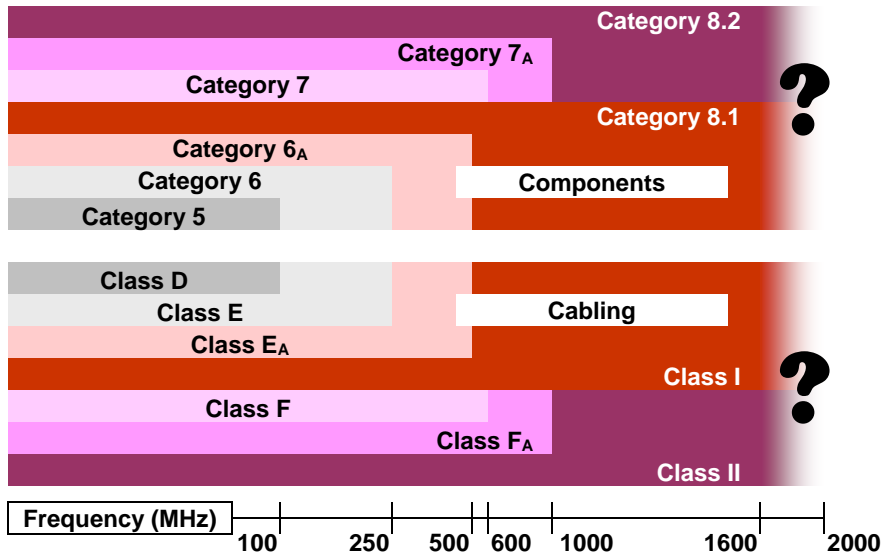
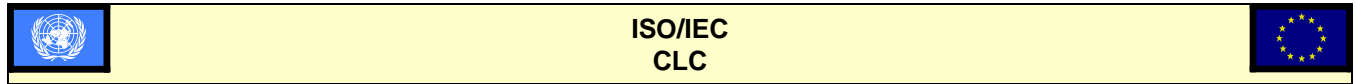
Cabling Design Standards

Cabling Installation Standards

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Associated Standards

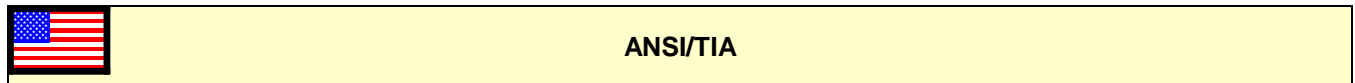


Category 8.2/Class II is currently considered to be hierarchical to Category 6_A

Category 8.1/Class I is currently considered to be hierarchical to Category 7_A



Category 8 is currently considered to be hierarchical to Category 6_A



Backwards compatibility is yet to be determined

EN 50173 series

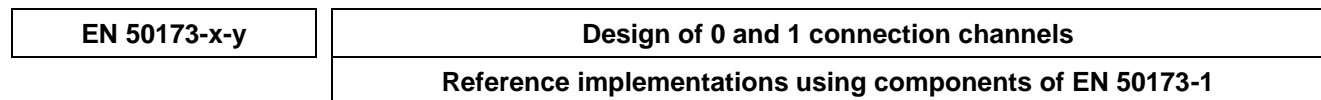
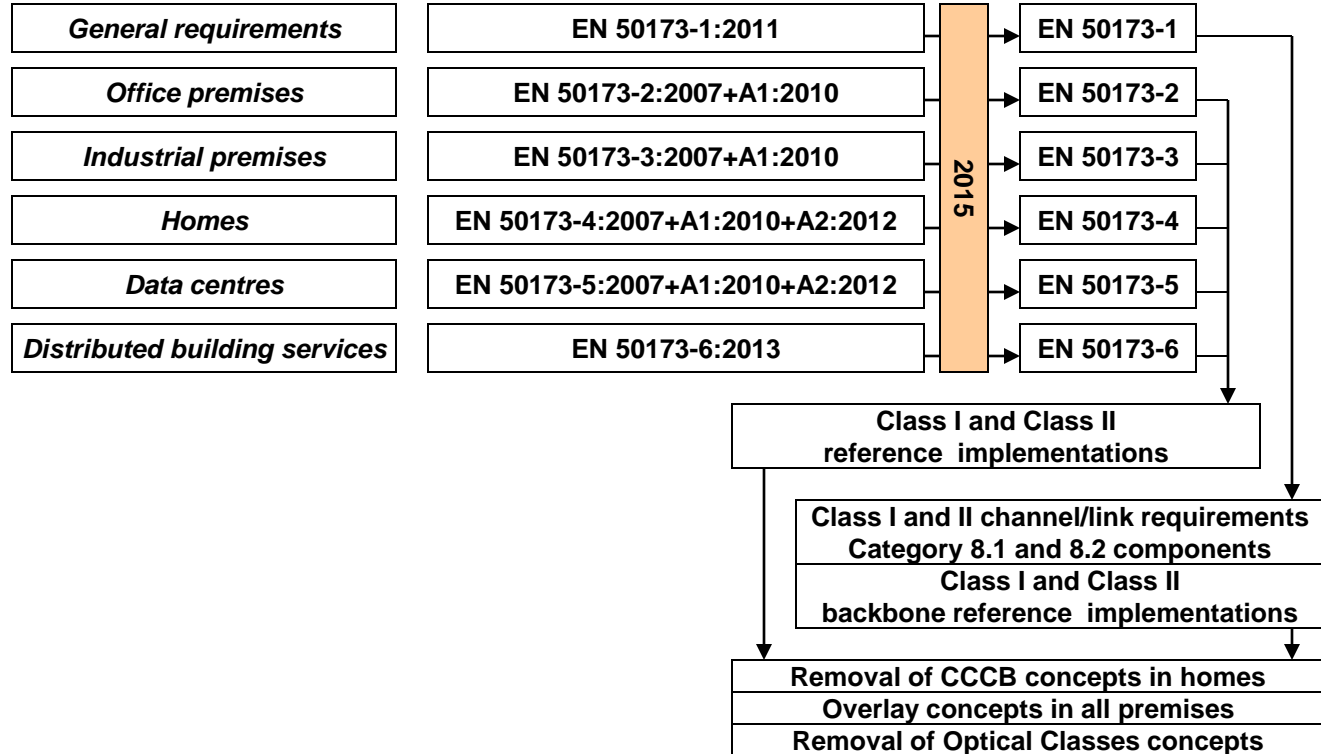
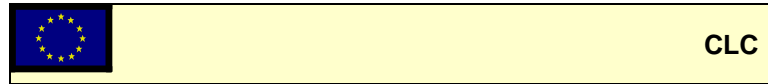
Cabling Design Standards

Cabling Installation Standards

Remote Powering

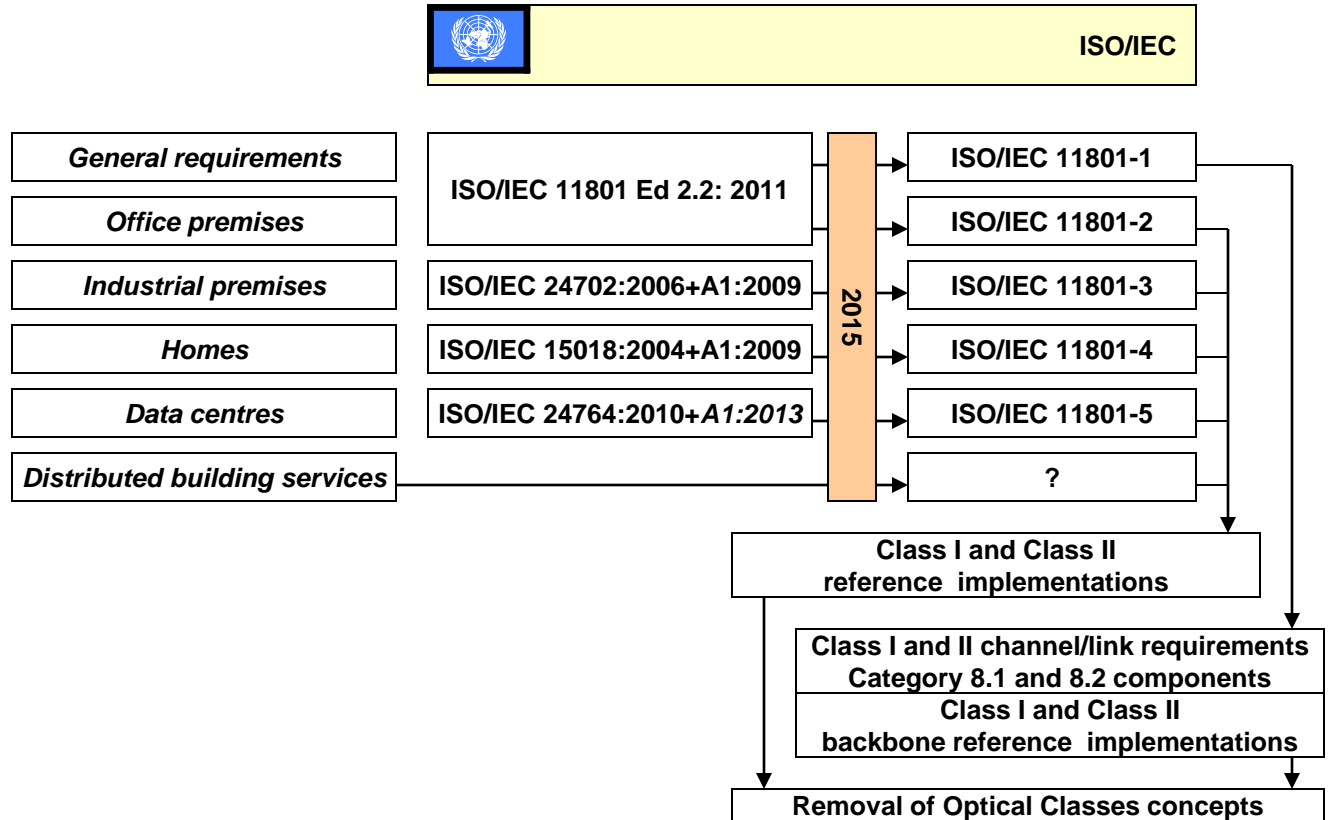
Cabling Testing

Associated Standards



ISO/IEC Standards

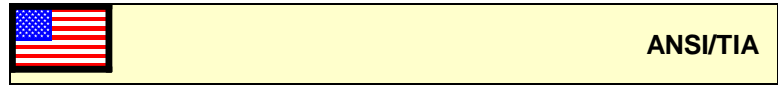
- Cabling Design Standards
- Cabling Installation Standards
- Remote Powering
- Cabling Testing
- Associated Standards



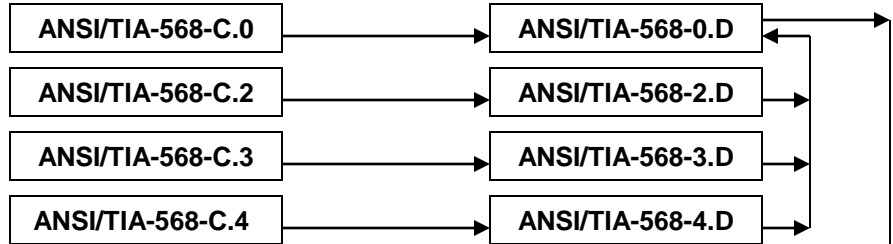
ISO/IEC 11801-x-y	Design of 0 and 1 connection channels Reference implementations using components of ISO/IEC 11801-1
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ANSI/TIA Standards

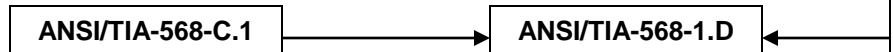
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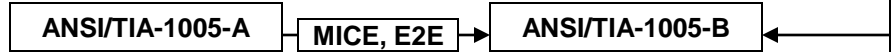
General requirements



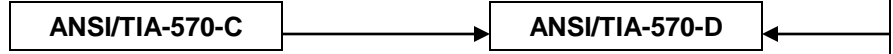
Office premises



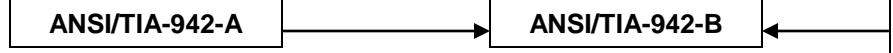
Industrial premises



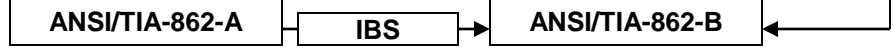
Homes



Data centres



Distributed building services



Health care facility application space standard

ANSI/TIA-1179

Education facility application space standard

ANSI/TIA-4966

Large building application space standard

ANSI/TIA-?

Cabling Installation Standards

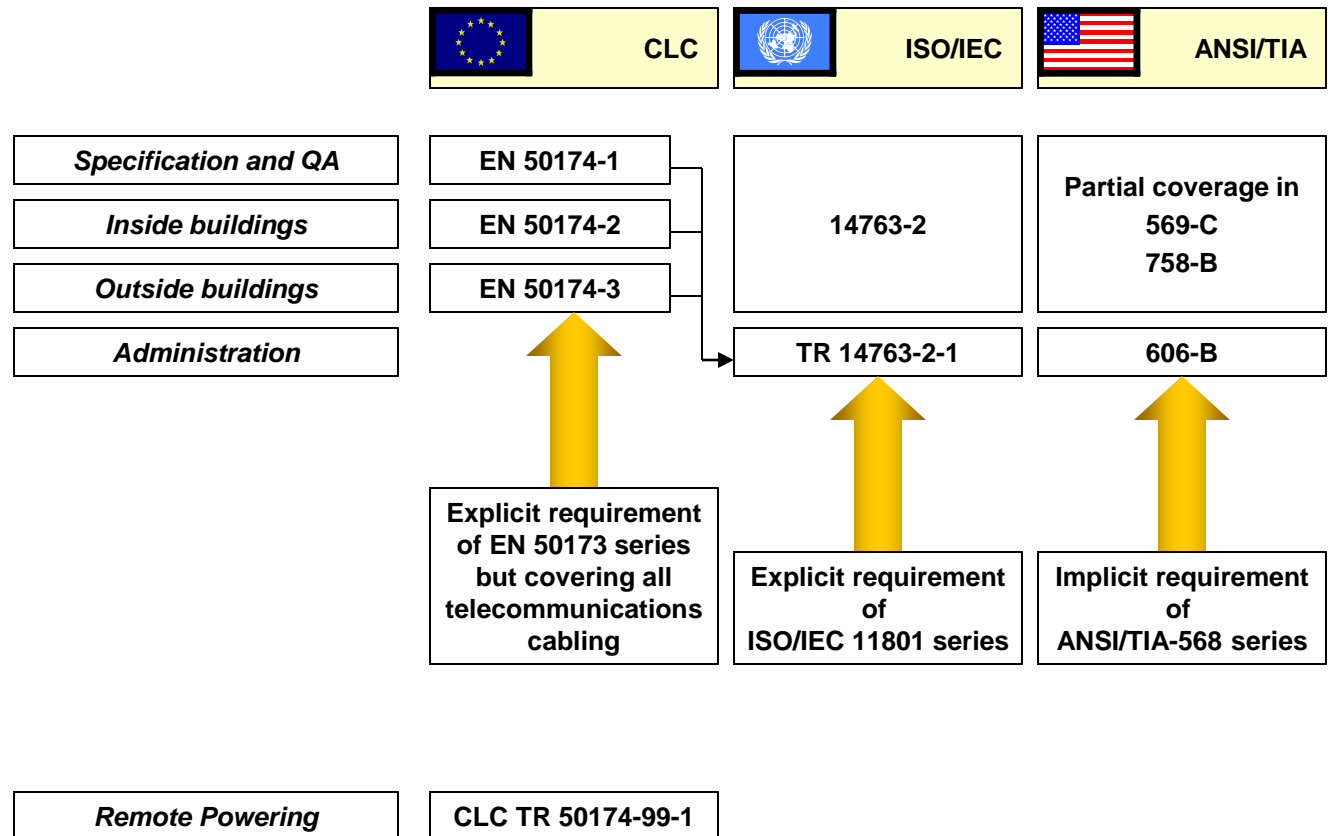
Cabling Design Standards

Cabling Installation Standards

Remote Powering

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Associated Standards



EN 50174 series

Cabling Design Standards

	EN 50174-1	Information technology - Cabling installation - Part 1: Installation specification and quality assurance
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Cabling Installation Standards

EN 50174-1:2009 +A1:2011

Remote Powering

A2:2014	Includes explanation of automated infrastructure management Links to <i>ISO/IEC 18598:2015</i>
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Cabling Testing

Associated Standards

	EN 50174-2	Information technology - Cabling installation - Part 2: Installation planning and practices inside buildings
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EN 50174-2:2009 +A1:2011

A2: 2014	Includes multi-tenant premises and planning for repair
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	EN 50174-3	Information technology - Cabling installation - Part 3: Installation planning and practices outside buildings
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EN 50174-3:2013	New edition and substantial re-work
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A1: 2014	Includes planning for repair
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Remote Powering


Cabling Design Standards

Cabling Installation Standards

Remote Powering

Cabling Testing

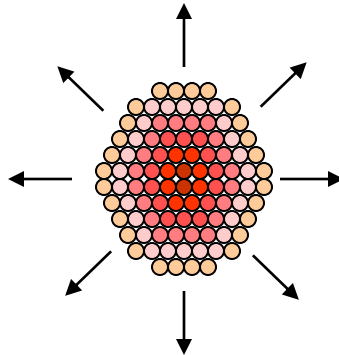
Associated Standards

The past	Incorporating IEEE 802.3af as Type 1: 2 prs: 175 mA per conductor/350 mA per pair
	Incorporating IEEE 802.3at as Type 2: 2 prs: 300 mA per conductor/600 mA per pair
The Future	IEEE Study Group: 4 prs: 300 mA per conductor/600 mA per pair
The Risks	<div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>8 Port 95W per Port Power over Ethernet Mega Midspan</p> <ul style="list-style-type: none"> • Full Power 95W per port • Gigabit Compatible • SNMP v2c Management Standard • 12.5K Detection • Diagnostic LEDs • Full Protection OVP, OCP, OTP • Compliant IEEE802.3at detection, disconnect, and voltage control </div> </div> <p style="text-align: center;">Download Datasheet</p>

ISSUES

Thermal impact on cables leading to restriction of supportable applications distance

Rsk of damage to connecting hardware during dis-connection under load



Sample image courtesy of Nexans

CLC TR 50174-99-1

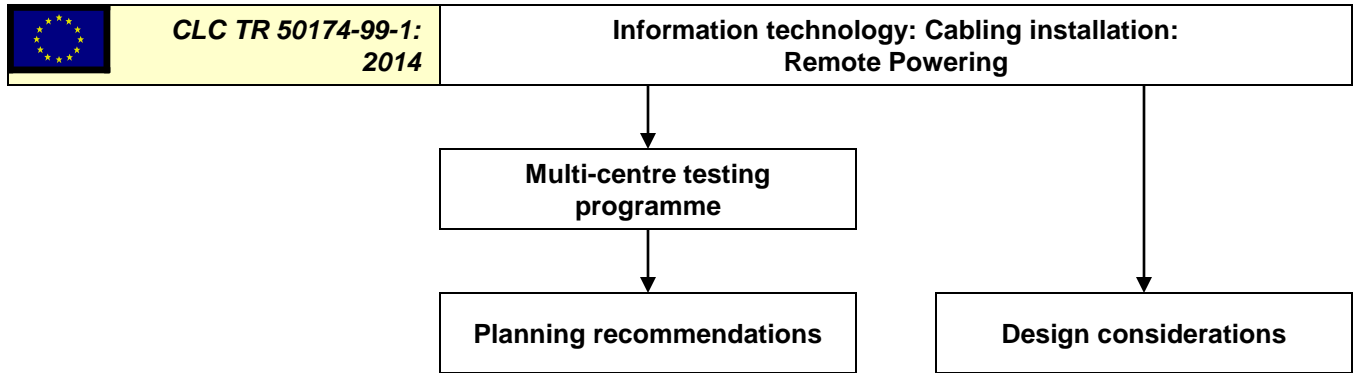
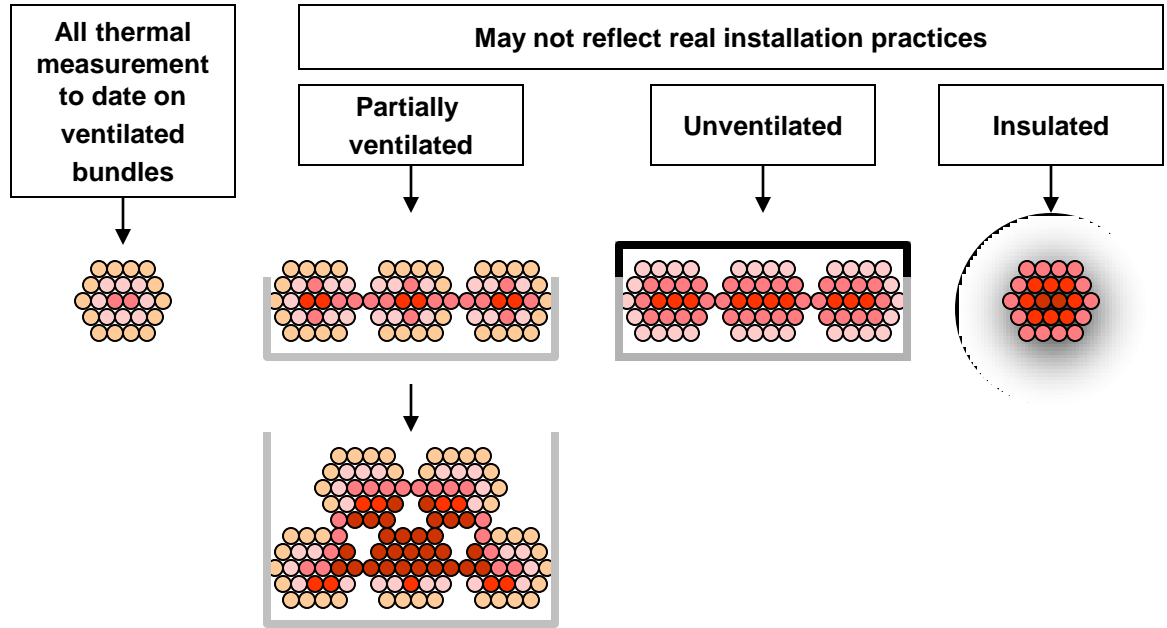
Cabling Design Standards

Cabling Installation Standards

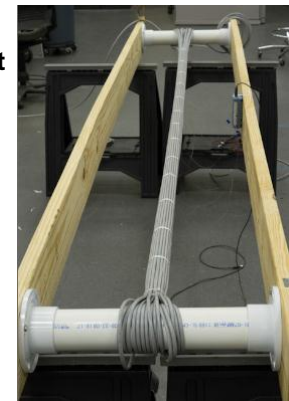
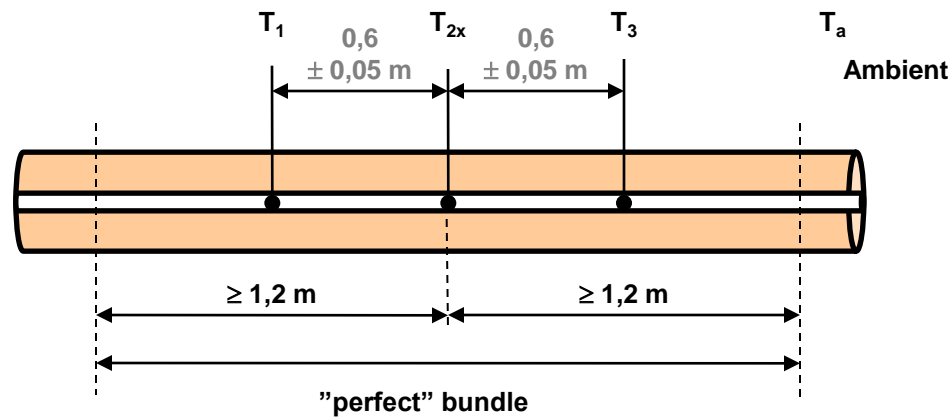
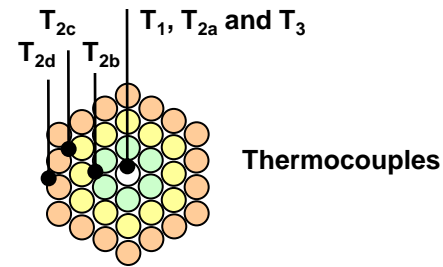
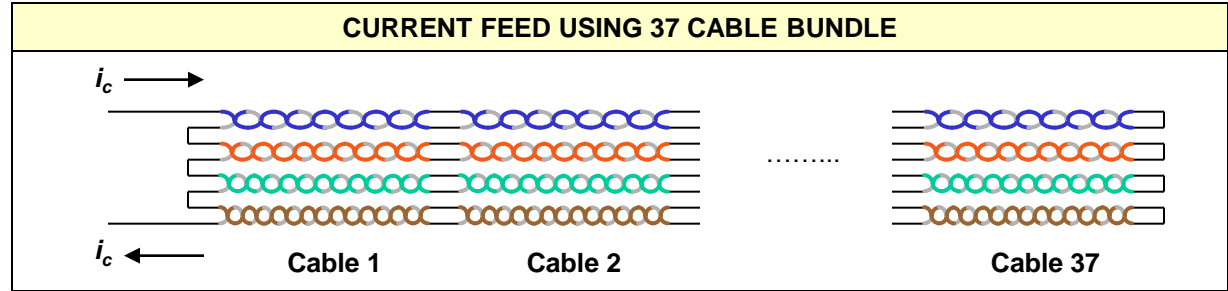
Remote Powering

Cabling Testing

Associated Standards



CLC TR 50174-99-1 Test Bed



Cabling Design Standards

Cabling Installation Standards

Remote Powering

Cabling Testing

Associated Standards

CLC TR 50174-99-1 - Early Results

Cabling Design Standards

Cabling Installation Standards


Remote Powering

Cabling Testing

Associated Standards

	ISO/IEC TR 29125	Information technology - Telecommunications cabling requirements for remote powering of terminal equipment
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37 cables	300 mA per conductor: all pairs powered	Fully ventilated	2,9 - 4,7 °C
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	CLC TR 50174-99-1: 2014	Information technology: Cabling installation: Remote Powering
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37 cables	300 mA per conductor: all pairs powered	Fully ventilated	1.2 °C
	450 mA per conductor: all pairs powered		4.3 °C
	900 mA per conductor: all pairs powered		20 °C

37 cables	300 mA per conductor: all pairs powered	Insulated (after 120 minutes)	5 °C
	450 mA per conductor: all pairs powered		11 °C
	900 mA per conductor: all pairs powered		49 °C
	300 mA per conductor: all pairs powered	Insulated (after 425 minutes)	7 °C
	450 mA per conductor: all pairs powered		17 °C
	900 mA per conductor: all pairs powered		75 °C

Cabling Testing Standards

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CABLING ACCEPTANCE TEST STANDARDS TEND TO LAG

<p>BALANCED CABLING IEC/EN 61935-1</p>	<ul style="list-style-type: none"> • specifies comprehensive test equipment requirements to 600 MHz • currently developing test method solutions to 1000 MHz • will evolve to support highest frequency of Category 8 - Class I/II
<p>OPTICAL FIBRE CABLING</p>	<ul style="list-style-type: none"> • subject to a territorial dispute between IEC and ISO/IEC • IEC standards are more pragmatic



The Fibreoptic Industry Association
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The Fibreoptic Industry Association
www.fibreoptic.org.uk

TECHNICAL SUPPORT DOCUMENT

FIA-TSD-2000-4-2-1

OPTICAL FIBRE CABLING
 -
 TESTING OF INSTALLED CABLING
 -
 LIGHT SOURCE AND POWER METER
 (LSPM)

FIA SHORTFORM GUIDANCE ON TEST PROCEDURES (Attenuation of installed optical fibre cabling)



The Fibreoptic Industry Association
www.fibreoptic.org.uk

TECHNICAL SUPPORT DOCUMENT

FIA-TSD-2000-4-2-2

OPTICAL FIBRE CABLING
 -
 TESTING OF INSTALLED CABLING
 -
 OPTICAL TIME DOMAIN REFLECTOMETER
 (OTDR)

Associated Standards

Cabling Design Standards

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DESIGN

FIBRE WITHIN THE "MULTI-TENANT SPACE" FOR BROADBAND CONNECTIVITY



EN 50700

Information technology - Premises distribution access network cabling to support deployment of optical broadband networks

INSTALLATION

TELECOMMUNICATIONS BONDING NETWORKS



EN 50310:2010

Application of equipotential bonding and earthing in buildings with information technology equipment



ANSI/TIA-607-B

Generic telecommunications bonding and grounding (earthing) for customer premises



ISO/IEC 30129:2015

Information technology - Telecommunications bonding networks for buildings and other structures

Automated Infrastructure Management

Cabling Design Standards

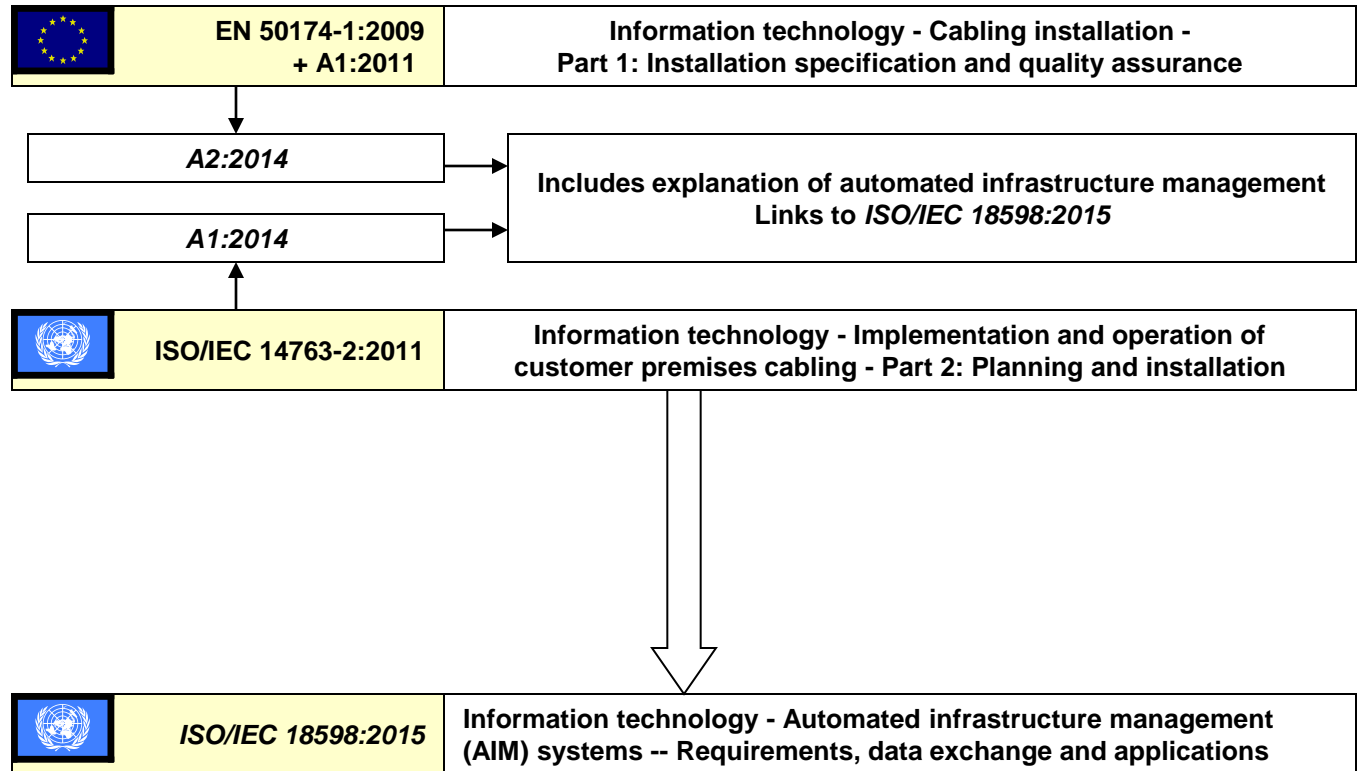
Cabling Installation Standards

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ADMINISTRATION AND BUILDING MANAGEMENT NETWORK INTEGRATION



Close

Cabling Design Standards

Cabling Installation Standards

Remote Powering

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CABLING STANDARDS REVIEW

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