

BICSI Standards Update December 2009

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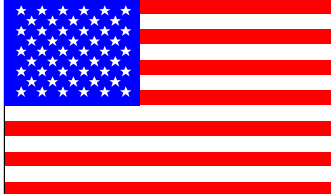

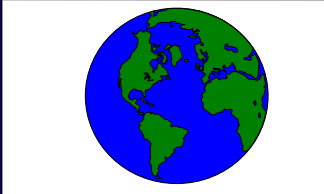
Standards

What are Standards?

- Standards represent the minimum required to maintain compliance
- Principally about achieving common minimum performance from products / standards driven by applications - not end users!
- Product always available before Standards issued (manufactures are part of development group)
- Standards vary between countries for a number of reasons, often historical.
- Whilst there is considerable and ongoing harmonisation between the standards generated, this is by no means to be relied upon.
- Standards are considered to be living documents.
- Therefore, the efforts to ensure harmonisation between the standards and regulations prevalent within the different disciplines, does not necessarily guarantee that all of the unique requirements for a specific engineering design are covered.
- It is important that the country or region specific standards are quoted in the design and implementation.

Regional Standards Bodies

Who are the national or regional standards bodies?

AMERICA'S	EMEA	INTERNATIONAL
EIA / TIA	CENELEC	ISO / IEC
		

- The International Standards Organisation (ISO) produces worldwide standards generated by country members.
- European Committee for Electrotechnical Standardisation (Comité Européen de Normalisation Electrotechnique) CENELEC produces European standards generated by EU country members.
- American National Standards Institute (ANSI) produces North American standards.

Who Else Is Out There?

Standards and guidance is generated to support
Design, Implementation, Methods and Product Interoperability

There are many ways of doing the job

- Trade Bodies and Standards publication
 - ETSI (European Telecommunications Standards Institute)
 - ITU (International Telecommunication Union (formerly CCITT))
 - NECA (National Electrical Contractors Association)
 - ASHREA (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc)
 - IEEE (Institute of Electrical and Electronics Engineers, Inc)
- Manufacturers recommendations
- Methods Manuals
- Design Guidelines

The BICSI Standards...

ANSI/BICSI-002, Data Center Design
Standard and Recommended Practices

ANSI/NECA/BICSI-568-2006, Standard
for Installing Commercial Building
Telecommunications Cabling

ANSI/NECA/BICSI-607,
Telecommunications Bonding and
Grounding Planning and Installation
Methods for Commercial Buildings

ANSI/BICSI-001-2009--Information
Transport Systems Design Standard for
K-12 Educational Institutions

ANSI/BICSI-003 International Cabling
Standard

ANSI/BICSI-New Post-Secondary

ANSI/BICSI-New Home Technology

ANSI/BICSI-New Healthcare

ANSI/BICSI-New Industrial

ANSI/BICSI-New Electronic Safety and
Security

The BICSI Manuals...

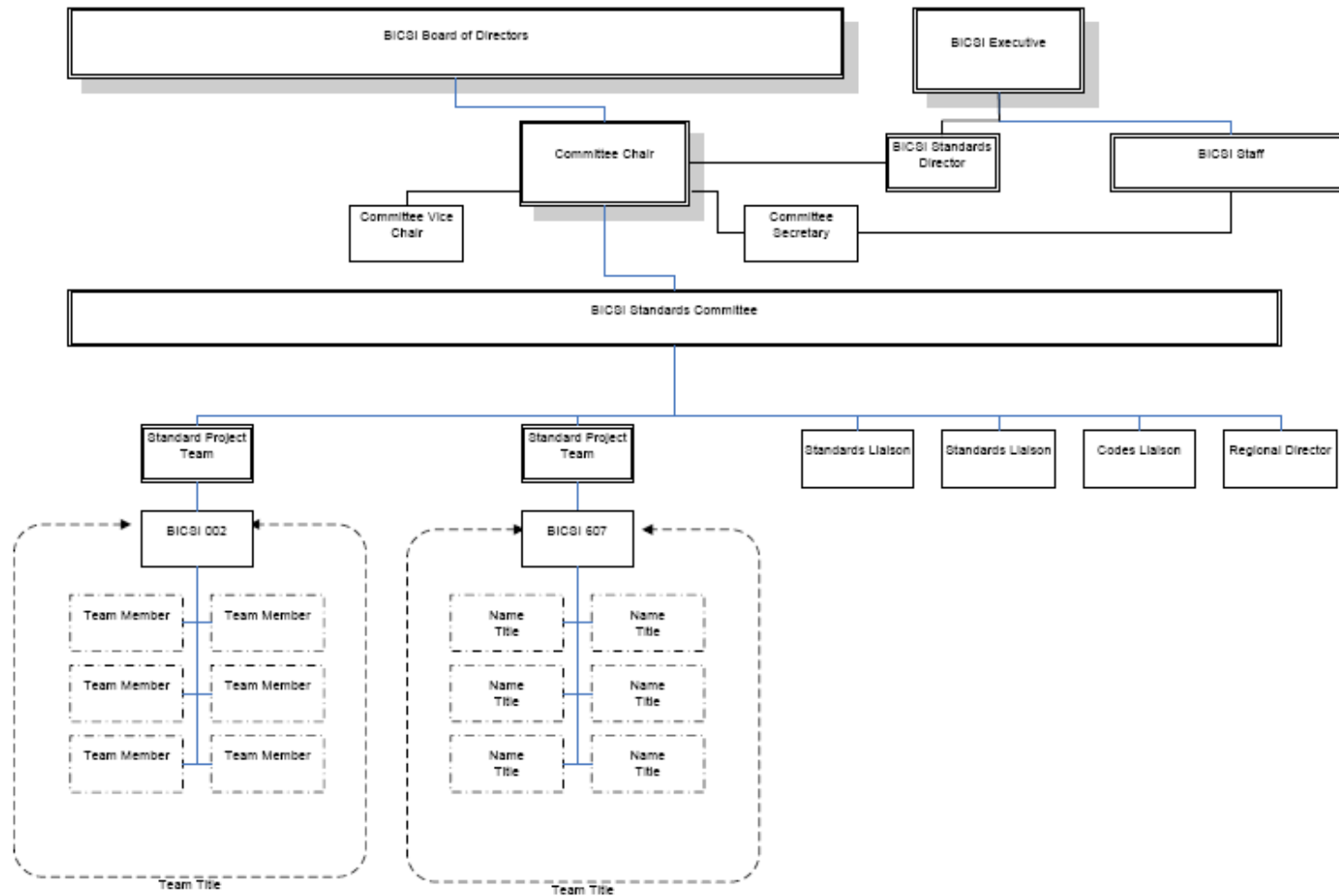
Telecommunications Distribution
Methods Manual (TDMM)
Network Design Reference Manual
(WDRM)
Wireless Design Reference Manual
(NDRM)
Electronic Safety and Security Design
Reference Manual (ESSD)

Audio-Visual Design Reference Manual
Outside Plant Design Reference Manual
Information Transport Systems
Installation Manual (ITSIM)
Home Technology Design Reference
Manual
BICSI Information Transport Systems
(ITS) Dictionary



How do we get these things written?

BICSI Committee Organisation



Standards

The Standards Committee is responsible for:

- Generating BICSI Standards
- Coordinating input and contributions to external bodies where BICSI is a contributor
- Providing a reporting forum for progress and activity in other standards bodies through liaison members

A Good Idea

- BICSI Standards Committee
- Members may propose the development of a standard to support a new application
- If agreed by the Standards Committee a project proposal, plan and budget are prepared for approval by BICSI Board
- No standard may be created without BICSI Board Approval



A Project Manager is Assigned

Project Manager - SMETL

Establishes a team of writers as Subject Matter Experts

- Assigns sections for expert subject contribution
- Assigns a schedule with interim deadlines
- Arranges for regular teleconference meetings
- Collects a completed set of chapters

Review of Standards

Depending on the parent publication process

- Periodic reviews are held on contributions until the PM feels a stable and complete document is ready for review
- Documents are frozen then posted out to an invited set of interested parties for external review. This group includes International, non BICSI people and industry experts
- Comments are collated and votes made on acceptance of the material
- The document and the comments are reviewed in an open meeting and a ballot of contributors is held to determine if the standard is complete

Hand-off to BICSI Publication Staff

The review ends and the in house editing begins

Preparation for publication

Some to and fro to confirm the context is not changed by the edits

One final ballot and if all is well

New Standard is presented to the parent publishing organization for issue.



Technical Information and Methods

The Technical Information and Methods (TI&M) Committee is responsible for :

- Writing and updating the BICSI technical manuals
- Development of technical publications.
- Informing the RSS Committee of changes that will affect the RCDD and the other specialty exams.



How do we get these things written?

DACUM

Develop A Curriculum

DACUM

Develop A Curriculum

- Volunteer Industry Experts
- Start from blank page
- 2 – 3 day process
- What should an expert in this field know?

Project Manager - SMETL

- Establishes a set of team leaders as Subject Matter Experts and writers
- Assigns sections from DACUM to the chapter SMETLs
 - Chapter SMETL's must scope out the new and revised content for their chapter, this must include the DACUM output
- Assigns a project schedule with interim deadlines
- Arranges for regular teleconference meetings with the chapter SMETLs
 - Chapter SMETL's arrange regular teleconference meetings for their chapter team of volunteer to review content and progress

Manual Editorial Review

At least one five day session

- All SMETLs, an RSS rep and others in one place
- “Locked” in a room from dawn to dark (no guns or WMD)
- Review each chapter page by page
- Identify gaps, errors, inconsistencies
- Deliver reviewed material to BICSI editors

Hand-off to BICSI Publication Staff

The editorial review ends and the editing begins

Preparation for publication

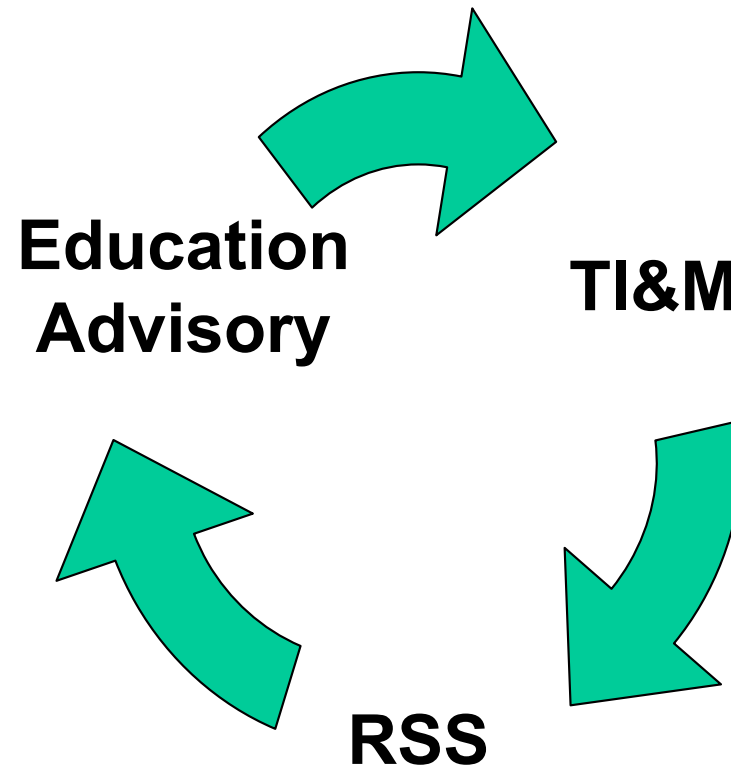
Establishment of course work upgrades

Review by RSS for new testing if appropriate

New manual is published.



Certifications, Testing and Renewal



BICSI Europe Activity

BICSI is launching a European Standards & Education Committee

Aim in Europe is:

- Collaboration with CENELEC, IEC, ITU-T.
- Adaptation of BICSI document to increase European relevance and accelerate adoption
- Dialog with EU Policy makers. BICSI to form a conduit between EU Government, ITS industry users, professionals and vendors
- Issue monitoring service. BICSI will monitor policy issues affecting the ITS industry and disseminate to BICSI members
- A task team with industry representatives from European countries met in Brussels on 4 November
- The next meeting is scheduled for 25 February

BICSI Europe Activity

Before the official committee launch, the task team will focus on:

- Cataloguing country-specific and pan European opportunities
- Develop an operational plan
- Develop a roadmap to act on issues/opportunities. This road map will be shared with industry and policy makers

Initial review revealed the following:

France: There is NO ITS training in existence in France today. Opportunity for BICSI to adapt materials and train professionals. Employee training is mandatory by law in France. ITS industry cannot fill this with relevant ITS training. Localisation and translation are key needs.

Greece: There is a need from Government to sponsor training and raise standards for a critical part of their development roadmap.

Ireland: Opportunities in apprenticeship. The BICSI Ireland Committee is already involved in a joint initiative with FOS, under accreditation of the NACC and FETAC, two Irish National education accreditation bodies.

How can I get involved?

We always need contributors and volunteers with subject matter expertise.

If you can make it better, then help us, please!

To volunteer you can:

- Send an email to Andrew or Steve
- Click on “committees” link on www.bicsi.org
- Buy Steve a Jack and Coke

Any questions?



TIA-B

The development of the TIA-B has been slower than expected.

The TIA-B has published its first IAN (Infrastructure Advisory Note) covering “FIRE PERFORMANCE SPECIFICATIONS FOR TELECOMMUNICATIONS CABLING AND EQUIPMENT” - currently available to host members. This supports the publication of BS 8492:2009.

In the pipeline for the beginning of the new year are two SIDs (Standards Interpretation Documents).

- first is to explain the segregation rules of BS EN 50174-2:2009 (more later on in the presentation)
- second relates to earthing of cabinets (the revisions in EN 50310 and the approved HD 60364-4-444 now provide the definitive statements).

The web-site has been updated and will be supplemented by a whole package of information from ECA-ITEC

CENELEC



CENELEC

The EN 50173 Series

There are 5 documents comprising EN 50173; the series includes:

- EN 50173-1, Information Technology—Generic cabling systems—Part 1: General requirements
- EN 50173-2, Information Technology—Generic cabling systems—Part 2: Office premises
- EN 50173-3, Information Technology—Generic cabling systems—Part 3: Industrial premises
- EN 50173-4, Information Technology—Generic cabling systems—Part 4: Homes
- EN 50173-5, Information Technology—Generic cabling systems—Part 5: Data centres

EN 50173

This series of standards provide the component standard and set out the requirements for manufacturers for performance of component products, copper and optical fibre. This series of standards provide “Reference Configurations” for validation of component testing to prove compliance with Permanent Link and Channel performance requirements.

Components are rated in Categories and configured to provide a Class of channel performance. For balanced cabling there are Category 5, 6, 6_A, 7, 7_A and BCT-B components

Channel specifications of all cabling classes are contained in Amendment 1, published September 2008.

CENELEC

CENELEC EN 50174-1 and EN 50174-2

There are 3 documents comprising EN 50174; the series includes:

- EN 50174-1, Information technology - Cabling installation - Part 1: Installation specification and quality assurance
- EN 50174-2, Information technology - Cabling installation - Part 2: Installation planning and practices inside buildings
- EN 50174-3, Information technology - Cabling installation - Part 2: Installation planning and practices outside buildings

NOTE: **EN 50174-3** is being revised and is expected 2010.

CENELEC EN 50310 Application of equipotential bonding and earthing in buildings with information technology equipment

This European Standard specifies minimum requirements for earthing networks and connections (bonds) in buildings in which information technology equipment is intended to be installed to protect that equipment and interconnecting cabling from electrical hazards.

An update is underway and expected to be published as Issue 2 in 2010.

Highlights from EN 50173-1

Introduces the concept of environmental classification M.I.C.E. (Mechanical, Ingress, Climatic and chemical, Electromagnetic) (Subclause 5.1)

	Environmental Class		
	1	2	3
Mechanical rating	M ₁	M ₂	M ₃
Ingress rating	I ₁	I ₂	I ₃
Climatic and chemical rating	C ₁	C ₂	C ₃
Electromagnetic rating	E ₁	E ₂	E ₃

The requirements of a given classification cover the requirements of a lower classification, i.e. channels designed to operate under environmental conditions defined by M₂ shall continue to operate under environmental conditions defined by M₁

Specifies channels for balanced and optical fibre cabling media

Specifies channels for coaxial cabling

Specifies the minimum component requirements in support of these cabling channels

Provides a list of applications supported by generic cabling systems

Highlights from EN 50173-1

Balanced Cabling

The 2007 issue of EN50173 does not include the provisions for Class E_A (category 6_A) or Class F_A (category 7_A). These changes are accommodated in amendments 1 and 2.

Classes for balanced cabling:

Class A: specified up to 100 kHz;

Class B: specified up to 1 MHz;

Class C: specified up to 16 MHz;

Class D: specified up to 100 MHz;

Class E: specified up to 250 MHz;

Class F: specified up to 600 MHz.

Channels of a given Class will support all applications of a lower Class.

Class CCCB: specified up to 0.1 MHz;

Class BCT-B specified up to 1000 MHz.

The insertion loss performance of BCT-B cabling is further subdivided into three sub-Classes, L, M and H.

Highlights from EN 50173-1

Optical Fibre

It is important to know that CENELEC cable attenuation specifications are for cabled optical fibre (finished product) not raw glass optical fibre.

New OF Classes introduced to accommodate the plastic optical fibre and plastic clad silica optical fibre cables for the industrial and residential cabling standards.

New singlemode fibre type introduced OS2 (zero water peak fibre).

New colour for multimode connector identification

- Multimode: beige or black
- Singlemode (physical contact): blue
- Singlemode (angled physical contact): green

Losses for connectors have more than one value

- 50% of mated connections shall be better than 0.35dB loss
- 0.5 dB for 95% of matings
- 0.75 dB for 100% of matings.

Highlights from EN 50173-1 Amd 1

Introduction of channel performance requirements to support 10GB Ethernet.

Defines the Channel performance for balanced twisted pair copper

- Class A: specified up to 0,1 MHz;
- Class B: specified up to 1 MHz;
- Class C: specified up to 16 MHz;
- Class D: specified up to 100 MHz;
- Class E: specified up to 250 MHz;
- Class E_A: specified up to 500 MHz;
- Class F: specified up to 600 MHz;
- Class F_A: specified up to 1 000 MHz.

Highlights from EN 50173-1 Amd 2

- Proposes a relaxation of electromagnetic parameters in the MICE classification
- Introduces new component Categories 6_A and 7_A in accordance with the channel Classes E_A and F_A defined in EN 50173-1 Amd 1
- Modifies insertion loss requirements for coaxial channels
- Modifies optical fibre Class OF-100 media and defines a new optical fibre Category OM4
- Amends and modifies connecting hardware requirements, defines both a new interface for 2 optical fibres and for 12 and 24 fibres
- Introduces limits for additional parameters in Annexes A, B and Clause D.2
- Revises Clause D.3 regarding test requirements for mechanical and environmental performance of connecting hardware
- Updates Annex F “Supported applications”
- Introduces a new normative Annex I “Test procedures to assess conformance with EN 50173 standards”

Highlights from EN 50173-2

EN 50173-2:2007 Information Technology—Generic cabling systems—Part 2: Office premises

There should be a minimum of one floor distributor for every 1 000 m² of floor space reserved for offices. A minimum of one floor distributor should be provided for every floor.

If a floor is sparsely populated (e.g. a lobby), it is permissible to serve this floor from the floor distributor located on an adjacent floor.

If a floor area extends beyond 1,000 m², additional floor distributors may be need to be installed to more effectively service the work area.

Telecomms Outlet (TO)

The design of generic cabling should provide for TOs to be installed throughout the usable floor space. A high density of TOs will enhance the ability of the cabling to accommodate changes. TOs may be presented singly, or in groups.

- each individual work area shall be served by a minimum of two TOs
- the first TO should be for four pair balanced cable
- the second TO may be for two optical fibres or four pair balanced cable
- each TO shall have a permanent means of identification that is visible to the user
- devices such as baluns and adapters, if used, shall be external to the TO
- Two pairs per TO may be used as an alternative to four pairs, however this requires pair reassignment and will not support some applications

Highlights from EN 50173-5

EN 50173-5:2007 Information Technology—Generic cabling systems—Part 5: Data Centres

Balanced Cabling

The electrical performance of balanced cables shall meet the Category 5, 6 or 7 requirements

The balanced twisted pair main distribution and zone distribution cabling shall be designed to provide a minimum of Class E channel performance.

When four connections are used in a channel, the physical length of the network access cable should be at least 15 m.

Optical fibre cables

The cabled multimode optical fibres shall meet the Category OM2 (50/125 μm) or OM3 requirements.

The cabled optical fibres shall meet the Category OS1 or OS2 requirements.

At the ENI

For singlemode optical cable the interface shall be EN 50377-7-3 (LC-APC Duplex)

For multimode optical cable the interface shall be EN 50377-7-1 (LC-PC Duplex)

Highlights from EN 50174-Part 1

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

EN 50174-1 is used during the specification phase. It addresses the:

- installation specification, quality assurance documentation and procedures
- documentation and administration
- operation and maintenance

The document is presented in a readable format setting out the requirements and recommendations. Clause 4 is primarily for owners of premises housing information technology systems.

The owners may delegate selected responsibilities to designers, specifiers, operators and maintainers of installed information technology cabling.

The party responsible for demonstrating conformance should be clearly stated in the appropriate section of the documentation.

The requirements and recommendations of Clause 5 are primarily for the installers of information technology cabling.

Highlights from EN 50174-Part 2

EN 50174-2:2008 Information Technology— Cabling installation - Part 2: Installation planning and practices inside buildings

Clause 6 Segregation of metallic information technology cabling and mains power cabling

Gone is the old simple table to provide separation and is replaced by a complex series of tables and calculations and assumptions. However there is a get out of gaol free card at the end if you want to jump to that.

Segregation assumes that:

- the EMC complies with EN 61000-6 series of standards for conducted and radiated disturbances (e.g. mains power cabling);
- the mains power supply is non-deformed
- the information technology cabling supports any applications listed in EN 50173-1

Highlights from EN 50174-Part 2

First select your cable type and performance to get the Segregation Classification

Information technology cable			
Screened	Unscreened	Coaxial/twinaxial	
Coupling attenuation at 30 MHz to 100 MHz dB	TCL at 30 MHz to 100 MHz dB	Screening attenuation at 30 MHz to 100 MHz dB	Segregation Classification
≥ 80 a	$\geq 70 - 10 \times \lg f$	≥ 85 d	d
≥ 55 b	$\geq 60 - 10 \times \lg f$	≥ 55	c
≥ 40	$\geq 50 - 10 \times \lg f$ c	≥ 40	b
< 40	$< 50 - 10 \times \lg f$	< 40	a

a Category 7 meets Segregation Classification "d".

b Screened Category 5 & Category 6 (EN 50173-1 2007) meet Segregation Classification "c". These cables may deliver performance of Segregation Classification "d" provided that the relevant coupling attenuation requirements are also met.

c Unscreened Category 5 & Category 6 (EN 50173-1 2007) meet Segregation Classification "b". These cables may deliver performance of Segregation Classification "c" or "d" provided that the relevant TCL requirements are also met.

d Category BCT-C meet Classification "d".

Highlights from EN 50174-Part 2

Take your cable type Segregation Classification and match that with the type of containment being used

Segregation Classification (from Table 3)	Separation without electromagnetic barrier	Containment applied to information technology or mains power cabling		
		Open metallic containment a	Perforated metallic containment b c	Solid metallic containment d
d	10 mm	8 mm	5 mm	0 mm
c	50 mm	38 mm	25 mm	0 mm
b	100 mm	75 mm	50 mm	0 mm
a	300 mm	225 mm	150 mm	0 mm

a Screening performance (0MHz to 100MHz) equivalent to welded mesh steel basket of mesh size 50mm x 100mm (excluding ladders). This screening performance is also achieved with steel tray (duct without cover) of less than 1.0mm wall thickness and more than 20% equally distributed perforated area.

b Screening performance (0MHz to 100MHz) equivalent to steel tray (duct without cover) of 1.0 mm wall thickness and no more than 20% equally distributed perforated area. This screening performance is also achieved with screened power cables that do not meet the performance defined in Note d

c The upper surface of installed cables shall be at least 10mm below the top of the barrier.

d Screening performance (0MHz to 100MHz) equivalent to a steel conduit of 1.5mm wall thickness. Separation specified is in addition to that provided by any divider/barrier.

Highlights from EN 50174-Part 2

Then multiply the separation distance by the power cabling factor based on the number of power cables

Electrical circuit type a, b, c	Quantity of circuits	Power cabling factor P
20 A 230 V 1-phase	1 to 3	0.2
	4 to 6	0.4
	7 to 9	0.6
	10 to 12	0.8
	13 to 15	1.0
	16 to 30	2.0
	31 to 45	3.0
	46 to 60	4.0
	61 to 75	5.0
	> 75	6.0
<p>a 3-phase cables shall be treated as 3 off 1-phase cables.</p> <p>b More than 20A shall be treated as multiples of 20A.</p> <p>c Lower voltage AC or DC power supply cables shall be treated based upon the their current ratings, i.e. a 100A 50VDC cable = 5 of 20A cables ($P=0.4$)</p>		

Highlights from EN 50174-Part 2

Get Out of Gaol Free or Zero Separation

No segregation is required between information technology cabling and mains power cabling (other than that required by national or local regulation) provided that all the following conditions are met:

- the environmental classification is E₁ (Offices, DC spaces)
- the power conductors:
 - form single phase circuits
 - provide a total current 32 (max)
 - comprising a circuit maintained in close proximity (e.g. within an overall sheath or twisted, taped or bundled together)

and either

the information technology cables meet the requirements of Segregation Classifications “b”, “c” or “d”

or

in circumstances where the cabling is application(s)-specific, the application(s) supports a zero segregation relaxation

New EN 50600 Data Centre Design Standard

CLC TC215 WG3 has started a new project EN 50600 Data centre facilities and infrastructures

- EN 50600 - Part 1: General concepts
- EN 50600 - Part 2-1: Building construction
- EN 50600 - Part 2-2: Power distribution
- EN 50600 - Part 2-3: Environmental control
- EN 50600 - Part 2-4: Telecommunications cabling infrastructure
- EN 50600 - Part 2-5: Physical security
- EN 50600 - Part 2-6: Management and operational information
- EN 50600 - Part 3-1: General design principles
- EN 50600 - Part 3-2: Measurement methodologies, test methods and report formats

This series of European Standards does not address the selection of information technology and network telecommunications equipment, software and associated configuration issues.

ISO/IEC



ISO/IEC

ISO/IEC11801 Amd 1

Channel specifications of all cabling classes are contained in Amendment 1, published September 2008.

ISO/IEC11801 Amd 2

Link and component specifications, All comments have been resolved the document received substantial approval at the Beijing meeting in September 2009 and as of October 15th 2009 the document has been passed onto FDAM status end of voting Feb. 2010. (no technical change editorial items only)

ISO/IEC 14763-3 Amd1

Approved for publication. Changes made require testing to be undertaken using reference light source and reference test cords. The one cord method is approved for Permanent Link testing and the three cord test method is approved for Channel testing. Results interpretation has been introduced to incorporate the variance of field testing equipment and new approved testing method.

ISO/IEC 61935

Standard for testing Copper Cabling to account for the ANEXT requirements of 10GB Ethernet.

ISO/IEC

ISO/IEC 24764 Information technology — Generic cabling systems for data centre

New Standard for Data Centre Cabling at FDIS status end of voting Feb. 2010. Highlights include:

- 2000m length of channel
- New terms EO - Equipment Outlet and LDP - Local Distribution Point
- Class EA minimum recommended for copper
- OM3 minimum recommended for optical fibre
- Array connectors for 12 and 24 optical fibres
- No field terminated cords (copper and fibre optic)

ISO/IEC TR 14763-2-1 Generic cabling – Implementation and operation of customer premises cabling – Identifiers within administration systems was published as a technical report (TR) type 3 in 2000. Since this was more than five years ago it is proposed to replace the TR with an international standard. To this effect SC 25/WG 3 has revised the text considerably and proposes to transform the TR to an international standard with revised text .

ISO/IEC 14763-2 Information technology - Implementation and operation of customer premises cabling - Part 2: Planning and installation. At FCD status (Final Committee Draft) This document is similar to EN50174-1 and EN50174-2.

Highlights from ISO11801 Amendment 1

Provides new Class E_A (Category 6_A) and Class F_A (Category 7_A) channel for 10Gb Ethernet

NOTE: Component definitions for Category 6_A and Category 7_A to make Class E_A Class F_A Permanent Links and Channels will be included in Amendment 2 Due to be published in 2010

Introduction of minimum and maximum lengths for the various elements of a channel; applicable to the creation of reference channels.

NOTE: Any combination of cable and connecting hardware may be used to create a channel so long as the channel is rated according to the lowest Category or performance of any component used in creating the channel. It is suggested that corroboration is sought from manufacturers to underwrite the cable and connector configurations required.

Category E_A components (defined in Amd 2) and Class E_A channel up to 500MHz (10Gb Ethernet)
Category F_A components (defined in Amd 2) and Class F_A channel up to 1000MHz (Performance not application)

Highlights from ISO11801 Amendment 1

New parameters introduced to cover the Alien XTALK terminology

AACR-F Attenuation to alien crosstalk ratio at the far-end

ACR-F Attenuation to crosstalk ratio at the far-end

ACR-N Attenuation to crosstalk ratio at the near-end

ANEXT Alien near-end crosstalk (loss)

AFEXT Alien far-end crosstalk (loss)

ELTCTL Equal level TCTL

PS AACR-F Power sum attenuation to alien crosstalk ratio at the far-end

PS AACR-Favg Average power sum attenuation to alien crosstalk ratio at the far-end

PS ACR-F Power sum attenuation to crosstalk ratio at the far-end

PS ACR-N Power sum attenuation to crosstalk ratio at the near-end

PS AFEXT Power sum alien far-end crosstalk (loss)

PS AFEXTnorm Normalized power sum alien far-end crosstalk (loss)

PS ANEXT Power sum alien near-end crosstalk (loss)

PS ANEXTavg Average power sum alien near-end crosstalk (loss)

Highlights from ISO11801 Amendment 2

Copper Cabling Items

Defines the component, Link and Channel performance for balanced twisted pair copper

Cable impedance 100Ω for Classes A to F_A or 120Ω for Classes A to C

Class C up to 16MHz (Token Ring and 10Mb Ethernet)

Class D up to 100MHz (1Gb Ethernet)

Class E up to 250MHz (Performance not application)

Class E_A up to 500MHz (10Gb Ethernet)

Class F up to 600MHz (Performance not application)

Class F_A up to 1000MHz (Performance not application)

Component definitions for Category 6_A and Category 7_A to make Class E_A Class F_A Permanent Links and Channels

Nominal conductor diameter for copper cabling 0.5 to 0.65 mm

Current carrying capacity modified to allow provision for Power over Ethernet Plus and recognition of the effects temperature where cables are bundled.

Highlights from ISO11801 Amendment 2

Copper Cabling Items

New IEC definitions of cable construction/design with corresponding IEC definitions for performance.

Including:

U/UTP Unscreened / Unscreened Twisted Pair

F/UTP Foil / Unscreened Twisted Pair

U/FTP Unscreened / Foil Twisted Pair

SF/UTP Screen and Foil / Unscreened Twisted Pair

SF/FTP Screen and Foil / Foil Twisted Pair

Testing Issues

If the coupling attenuation of Class E_A or F_A permanent links or CP links is at least 10dB better than the corresponding channel coupling attenuation requirements, and Class F_A permanent links or CP links are at least 25dB better than the corresponding channel coupling attenuation requirements, then the ANEXT requirements are met by design. Effectively this means that testing and validation for ANEXT is not required on site.

Highlights from ISO11801 Amendment 2

Optical Fibre Cabling Items

Channel loss per application per cable type in Annex F now includes Fibre Channel 1, 2, 4 and 8G variants

The optical fibre used in an OS1 cable shall be B1.1, B1.3 or B6_a.

The optical fibre used in an OS2 cable shall be B1.3 or B6_a.

OS1 variant B1.1 optical fibre is not recommended where channels may contain both OS1 and OS2 cabled optical fibre.

NOTE: This is of particular importance when considering the future expansion and compatibility of singlemode fibre.

B6_a optical fibre is recommended when it is expected that the optical fibre or the cable will have to support smaller bend radii than 25 mm

Highlights from ISO11801 Amendment 2

Classification of loss and bandwidth for multimode OM1, OM2, OM3 and OM4

	OM1, OM2, OM3 and OM4		OS1		OS2		
Wavelength	850nm	1300nm	1310nm	1550nm	1310nm	1383nm	1550nm
Attenuation	3.5	1.5	1.0	1.0	0.4	0.4	0.4

Category	Core Diameter µm	Minimum Modal Bandwidth		
		Overfill Bandwidth		Effective Laser Launch
		850nm	1300nm	850nm
OM1	50 or 62.5	200	500	Not Specified
OM2	50 or 62.5	500	500	Not Specified
OM3	50	1500	500	2000
OM4	50	3500	500	4700

Highlights from ISO11801 Amendment 2

Optical Fibre Cabling Items

Optical fibre adapters and connectors should be protected from dust and other contaminants, specifically while they are in an unmated state.

End faces of connectors shall be inspected according to ISO/IEC 14763-3 and subsequently cleaned when necessary, prior to connection

Maximum mated connector insertion loss

- 100% ≤ 0.75 dB
- 95% ≤ 0.50 dB
- 50% ≤ 0.35 dB

Coding of connectors and adapters, e.g. by colour, should be used to identify connections between

- different cabled multimode optical fibre types;
- incompatible single-mode connecting hardware (e.g. blue for connectors with PC ferrules and green for APC ferrules).

The TO shall present a duplexable LC connector that complies with IEC 61754-20. If you are using SC connectors and adapters today you may remain with the SC connector and adaptor for both existing and future additions.

Highlights from ISO/IEC 61935-1

Testing PS AXtalk

Selection of testable ports, The following port selection procedure shall be applied as a minimum.

Selection of disturbed links

- 1 % of the links in the cabling installation or 5 links, whichever is more, with the highest insertion loss.
- 1 % of the links in the cabling installation or 5 links, whichever is more, with the lowest insertion loss.
- 1 % of the links in the cabling installation or 5 links, whichever is more, with the insertion loss between the lowest and highest insertion loss.

Selection of disturbing links

- Select all of the links that are in the same cable bundle relative to the disturbed link as disturbing links.
- Add to the disturbing links those that occupy adjacent positions to the left, right, above and below connections on the disturbed link on patch panels or multiple outlets.

Screened cabling will normally have alien crosstalk below the noise level, and consequently only a few representative links or channels need to be measured to demonstrate the alien crosstalk level.

Any questions?

