

ISO/IEC SC25/WG3 Meeting

Bordeaux: 23-27 February 2004

- Structured Cabling Systems -

report for IEEE 802 by Alan Flatman



42 Experts

18 Nations

Highlights

- residential cabling FDIS planned
- industrial cabling 1st draft by 12/04
- WAP cabling guide approved as TR
- mid-span powering guide to be TS
- cabling EM performance progress
- 10GBASE-T cabling being defined

ISO/IEC 24702

Industrial Premises Cabling

- **being developed with CENELEC + TIA**
- **connector choice dominated agenda**
 - » **issue is the outer shell/sealing interface**
 - » **2-pair, 4-pair copper and optical required**
 - » **numerous variants being standardised**
 - » **a selection process is being established**
- ***MICE* tables are now largely complete**
 - » **electromagnetic performance strawman**
- **CD is expected to be released 4Q04**
- **earliest date of approval is start 2006**

ISO/IEC 24702

Industrial Premises Cabling Environmental Classification

	Class I (commercial)	Class II (light industrial)	Class III (heavy industrial)
M echanical	M₁	M₂	M₃
I ngress (IP rating)	I₁	I₂	I₃
C limatic	C₁	C₂	C₃
E lectromagnetic	E₁	E₂	E₃

- environmental classes may be mixed (eg $M_1I_2C_3E_2$)
- environmental classes apply to cabling + containment
- MICE requirements are fulfilled by component choice and channel requirements are met “by design”
- only EMC immunity applies, not RF emission

ISO/IEC TR 24704

Cabling Guide for Wireless Access Points

features:

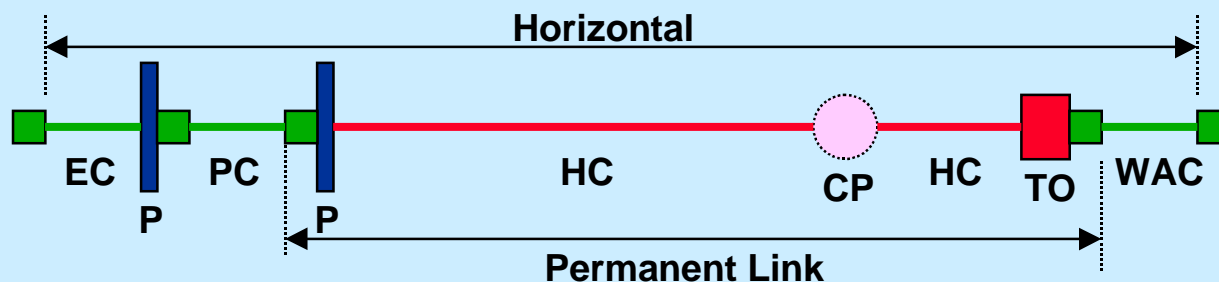
- additional cabling as grid in/on ceiling
- support 802.11-series, DECT, Bluetooth
- grid spacing recommended to be 12m
- TO cabling to be Class D (5e) minimum
- elec power may be provided from a TR

status:

- now approved for publication as a TR

Cabling Guide for Mid-Span Power Insertion

- implementation details to support IEEE 802.3af
- to be defined as ISO/IEC Technical Specification
- based on March 2002 liaison statement to 802.3af
 1. When mid-span power insertion equipment replaces a generic cabling component, it shall meet the performance requirements of the component(s) it replaces, regardless of the interfaces used for input/output connections.
 2. Placement of mid-span power insertion equipment shall be external to the permanent link.



Electromagnetic Performance of Balanced Cabling

- **generic specification for all cable constructions**
 - » need to define cabling for industrial applications
 - » need to manage alien crosstalk for 10GBASE-T
- **10BT/100BTX/1000BT data to determine immunity**
- **EMC analysis presented for 10BT/100BTX/1000BT**
 - » immunity requirements more stringent than emission
- **strawman channel spec to be affirmed June 2004**
- **strawman to IEEE 802.3 for information/comment**

Balanced Cabling EM Performance E₁

		UTP	FTP	STP
crosstalk parameters	alien crosstalk	\geq channel PSNEXT (ffs)	\geq channel PSNEXT(ffs)	\geq channel PSNEXT (ffs)
unbalance attenuation	TCL	40-10log(f) 1MHz to max f for Class	40-10log(f) 1MHz to max f for Class	to be considered
	ELTCTL	30-20log(f) 1-30MHz	30-20log(f) 1-30MHz	to be considered
screen parameters	screening attenuation	not applicable	not specified	40dB
	coupling attenuation	not specified	40-20log(f/100) 30-1000MHz	50-20log(f/100) 30-1000MHz

Balanced Cabling EM Performance E₂

		UTP	FTP	STP
crosstalk parameters	alien crosstalk	\geq channel PSNEXT (ffs)	\geq channel PSNEXT(ffs)	\geq channel PSNEXT (ffs)
unbalance attenuation	TCL	50-10log(f) 1MHz to max f for Class	45-10log(f) 1MHz to max f for Class	to be considered
	ELTCTL	40-20log(f) 1-30MHz	35-20log(f) 1-30MHz	to be considered
screen parameters	screening attenuation	not applicable	not specified	50dB
	coupling attenuation	not specified	50-20log(f/100) 30-1000MHz	60-20log(f/100) 30-1000MHz

Balanced Cabling EM Performance E₃

		UTP	FTP	STP
crosstalk parameters	alien crosstalk	\geq channel PSNEXT (ffs)	\geq channel PSNEXT(ffs)	\geq channel PSNEXT (ffs)
unbalance attenuation	TCL	60-10log(f) 1MHz to max f for Class	45-10log(f) 1MHz to max f for Class	to be considered
	ELTCTL	50-20log(f) 1-30MHz	35-20log(f) 1-30MHz	to be considered
screen parameters	screening attenuation	not applicable	not specified	60dB
	coupling attenuation	not specified	60-20log(f/100) 30-1000MHz	80-20log(f/100) 30-1000MHz

10GBASE-T Cabling

- **Nov 2003 10GBASE-T liaison requests welcomed**
- **16 expert/12 nation ad hoc group briefed by WG3 to:**
 - » **define tentative cabling channel for 10GBASE-T**
 - » **identify any shortfalls of ISO/IEC 11801:2002**
 - » **consider implementation-specific criteria**
- **set of channel parameters were agreed by ad hoc**
- **agreed to adopt upper freq required by IEEE 802.3an**
 - » **currently recognised as 625 MHz**
- **agreed to adopt single formula for each parameter**
- **agreed to consider extrapolated Class E & F limits**
- **agreed to study PSANEXT limit of $90-15\log(f)$ dB**

10GBASE-T Channel Parameters

both near- and far-end alien crosstalk need to be defined

- **Alien Crosstalk (AXT)**
- **AXT-to-Insertion Loss Ratio (AXTIR)**
- **EM Parameters (SA, CA, TCL, ELTCTL)**

- **Insertion Loss**
- **Return Loss**
- **PSNEXT**
- **PSELFEXT**

↑
new parameters to be
defined up to 625 MHz (TBC)

←
ISO/IEC 11801 parameters
to be extended to 625 MHz (TBC)

Future Meetings

ISO/IEC SC25 WG3	21 - 24 June 2004	Hokaido, Japan
ISO/IEC SC25 Plenary	25 June 2004	Hokaido, Japan
Industrial Cabling	30 Sep - 02 Oct	USA
ISO/IEC SC25 WG3	10-14 January 2005	Mexico (TBC)

Questions?