

ISO/IEC SC25/WG3 Meeting

Chitose, Japan: 21-24 June 2004

- Structured Cabling Systems -

report for IEEE 802.3an by Alan Flatman

Items

1. update on cabling EM performance
2. input from IEC on cable ANEXT
3. NWIP for new & re-characterised Class E and Class F cabling
4. response to IEEE 802.3an liaison requests forwarded Nov03, Mar04
5. ISO 3N711 liaison correspondence addressing items 3 and 4 above



49 Participants

18 Nations

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
- **EMC analysis presented for 10BT/100BTX/1000BT**
 - » signal spectrum, emission & immunity requirements
- **analysis made available to 802.3 for review 03/04**
- **SC25 WG3 thanks 802.3 for questions/comments**
- **Q+As issued to assist interpretation/use 3N709A**
- **EMC analysis slightly revised, issued as 3N685A**

documents posted in 802.3 public area

Balanced Cabling EM Performance E₁

		unscreened	screened
crosstalk parameters	alien crosstalk	\geq channel PSNEXT (ffs)	\geq channel PSNEXT(ffs)
unbalance attenuation	TCL	$64-20\log(f)$ 1MHz to max f for Class	ffs
	ELTCTL	$30-20\log(f)$ 1-30MHz	ffs 1-30MHz
screen parameters	screening attenuation	not applicable	not specified
	coupling attenuation	not specified	$39-20\log(f/100)$ 30-1000MHz

Balanced Cabling EM Performance E₂

		unscreened	screened
crosstalk parameters	alien crosstalk	\geq channel PSNEXT (ffs)	\geq channel PSNEXT(ffs)
unbalance attenuation	TCL	74-20log(f) 1MHz to max f for Class	ffs
	ELTCTL	40-20log(f) 1-30MHz	ffs 1-30MHz
screen parameters	screening attenuation	not applicable	not specified
	coupling attenuation	not specified	49-20log(f/100) 30-1000MHz

Balanced Cabling EM Performance E₃

		unscreened	screened
crosstalk parameters	alien crosstalk	\geq channel PSNEXT (ffs)	\geq channel PSNEXT(ffs)
unbalance attenuation	TCL	$84-20\log(f)$ 1MHz to max f for Class	ffs
	ELTCTL	$50-20\log(f)$ 1-30MHz	ffs 1-30MHz
screen parameters	screening attenuation	not applicable	not specified
	coupling attenuation	not specified	$59-20\log(f/100)$ 30-1000MHz

IEC SC46C Work on Alien Crosstalk

- **alien crosstalk test methods are being defined and round robin testing conducted by members**
- **alien crosstalk may be worse when 10GBASE-T cables are surrounded by other cable types**
 - » e.g. Cat 6+ with Cat 6, Cat 5e or Cat 5 UTP cables
 - » additional testing planned to characterise to 625MHz
- **direct relationship found between ANEXT and Coupling Attenuation for UTP, FTP, STP cables**

New & Re-characterised Class E+F Cabling

- **NWIP being forwarded for member nation vote**
 - » **Technical Report for re-characterised Class E/F legacy cabling for 10GBASE-T applications**
 - » **ISO/IEC 11801 Edition 2.1 for new Class E/F**
- **NWIP supported by “strawman” specifications**
 - » **result of extensive consultation at meeting**
 - » **intended for national review & comment**
 - » **not conformance limits/subject to change**
- **NWIP outcome to be determined 24 Jan 2005**

Summary of Main Parameters in ISO/IEC NWIP “Strawman”

Channel Parameter	Class E/F Ed.2 Capabilities	Class E Ed.2.1	Class F Ed.2.1
Return Loss	Ed.2 RL extrapolated to 625 MHz + 6dB plateau	Ed.2 RL extrapolated to 625 MHz + 8dB plateau @ 250 MHz	Ed.2 RL extrapolated to 1000 MHz + 8dB plateau @ 250 MHz
Insertion Loss	Ed.2 Class E IL extrapolated to 625 MHz	Ed.2 Class F IL extrapolated to 625 MHz	~8% lower than Ed.2 Class F IL extrapolated to 1000 MHz
NEXT	Ed.2 Class E NEXT extrapolated to 330 MHz, $31-50\log(f/330)$ in range 330-625 MHz	Ed.2 Class E NEXT extrapolated to 625 MHz, with request for nations to consider need to relax at high frequencies	Ed.2 Class F NEXT extrapolated to 1000 MHz
PSNEXT	Ed.2 Class E NEXT extrapolated to 330 MHz, $28-42\log(f/330)$ in range 330-625 MHz	Ed.2 Class E NEXT extrapolated to 625 MHz, with request for nations to consider need to relax at high frequencies	Ed.2 Class F NEXT extrapolated to 1000 MHz
ELFEXT	Ed.2 Class E ELFEXT extrapolated to 625 MHz	Ed.2 Class E ELFEXT extrapolated to 625 MHz	Improved Ed.2 Class F ELFEXT extrapolated to 1000 MHz
PSELFEXT	Ed.2 Class E ELFEXT extrapolated to 625 MHz	Ed.2 Class E ELFEXT extrapolated to 625 MHz	Improved Ed.2 Class F ELFEXT extrapolated to 1000 MHz
PSANEXT	$47-15\log(f/100)$ to 625 MHz	$60-15\log(f/100)$ to 625 MHz	$75-15\log(f/100)$ to 1000 MHz

Future Meetings

Industrial Cabling	30 Sep-02 Oct 2004	Houston, USA
ISO/IEC SC25 WG3	24-28 Jan 2005	Ixtapa, Mexico
ISO/IEC SC25 WG3	26-29 Sep 2005	UK (TBC)
ISO/IEC SC25 Plenary	30 Sep 2005	UK (TBC)