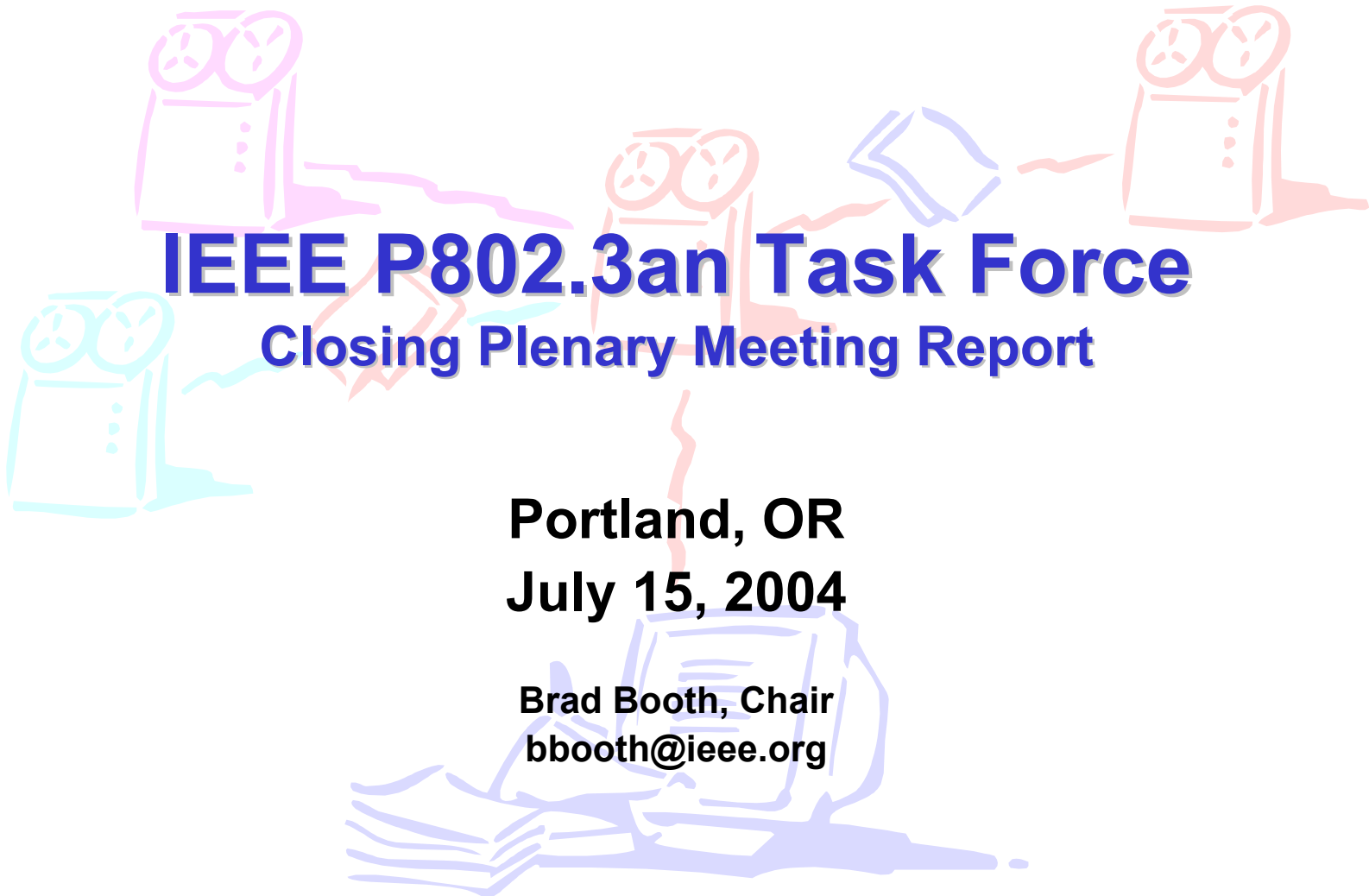


IEEE P802.3an Task Force

Closing Plenary Meeting Report

Portland, OR

July 15, 2004

Brad Booth, Chair
bbooth@ieee.org

Progress This Week

- Reviewed 15 presentations
- Draft D1.0
  - Adopted baseline for auto-negotiation and MDIO
  - Adopted PAM modulation
  - Adopted Tomlinson-Harashima precoding
  - Adopted LDPC coding
  - Adopted TIA TSB-155 NEXT, PSNEXT and Return Loss
  - Adopted upper frequency of 500 MHz
  - Adopt definitions of channel diagnostic functions
  - Investigate only PAM8 and PAM12
  - Adopt max. diff. p-p transmit voltage
  - Adopt part of the distortion methodology
  - Adopted ANEXT and IL values for augmented Class E/Cat 6
- Tasked editor with the creation and circulation of draft D1.0 for Task Force review

eMotions

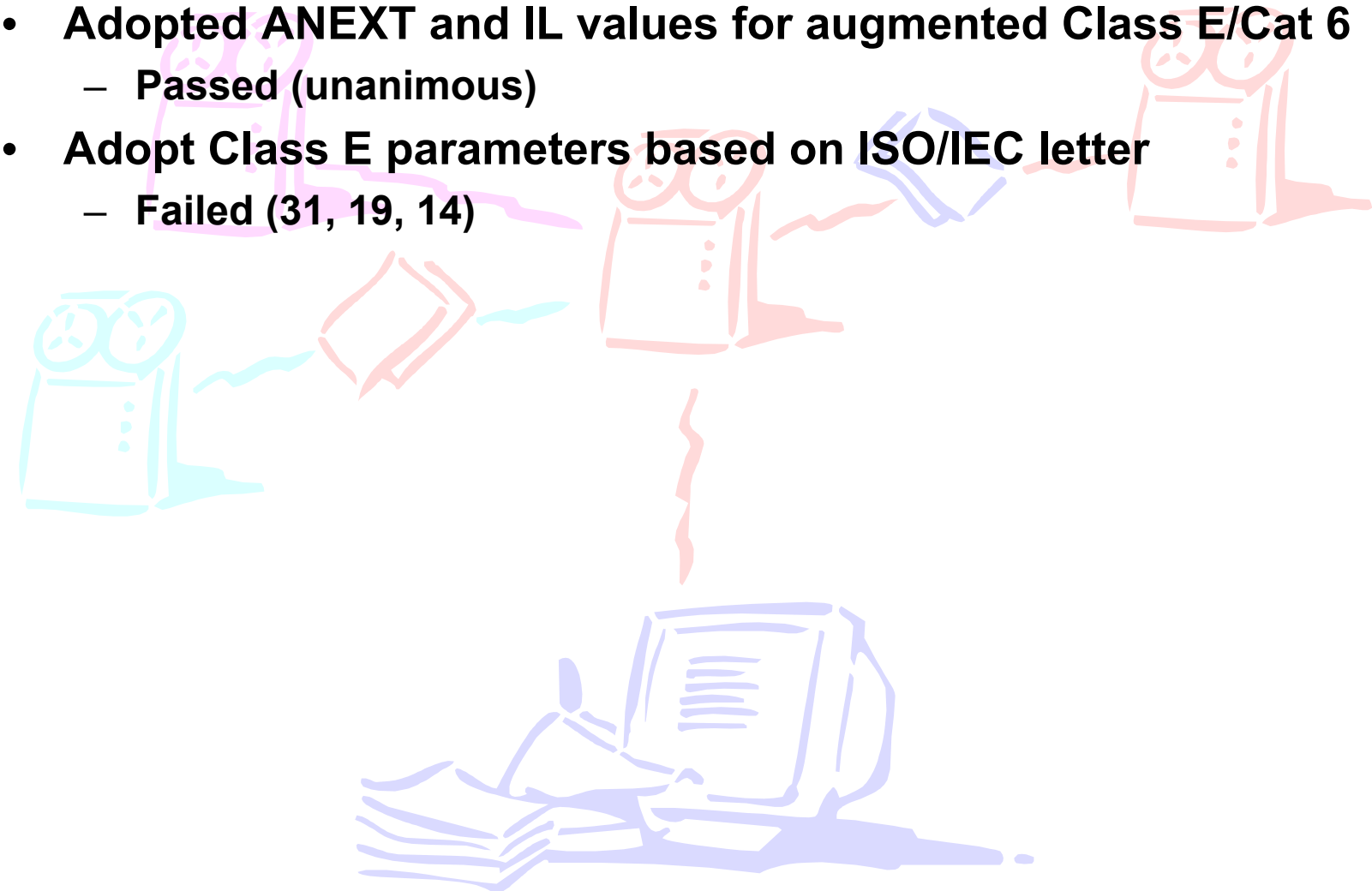
- Adopted baseline for auto-negotiation and MDIO
  - Passed (47, 7, 27)
- Adopted PAM modulation
  - Passed (unanimous)
- Adopted Tomlinson-Harashima precoding
  - Passed (unanimous)
- Adopted LDPC coding
  - Passed (78, 0, 11)
- Adopted TIA TSB-155 NEXT, PSNEXT and Return Loss
  - Passed (46, 11, 25)
- Adopted upper frequency of 500 MHz
  - Passed (67, 0, 12)
- Adopt MDI & environmental specifications
  - Failed (24, 11, 35)

eMotions (cont.)

- Adopt definitions of channel diagnostic functions
  - Passed (50, 6, 20)
- Investigate only PAM8 and PAM12
  - Passed (unanimous)
- Adopt PAM12 proposal
  - Failed (54, 20, 14)
- Adopt max. diff. p-p transmit voltage
  - Passed (unanimous)
- Adopt filter assumptions
  - Failed (21, 21, 17)
- Adopt part of the distortion methodology
  - Passed (unanimous)
- Adopt part of the common mode rejection methodology
  - Failed (25, 9, 24)

eMotions (cont.)

- **Adopted ANEXT and IL values for augmented Class E/Cat 6**
  - **Passed (unanimous)**
- **Adopt Class E parameters based on ISO/IEC letter**
  - **Failed (31, 19, 14)**



Motion: Auto-negotiation

- **Move that the Task Force adopt lynskey_1_0704.pdf as the basis for auto-negotiation and MDIO for D1.0.**

- **M: E. Lynskey**
- **S: H. Barrass**
- **TF: Y: 49 N: 7 A: 27**
- **802.3: Y: 35 N: 4 A: 11**
- **Technical (75%)**
- **PASS**
- **Motion to postpone until September interim meeting. (K. Brown, P. Thaler) 50%**
- **TF: Y: 25 N: 35 A: 24**

Motion: Modulation Code

- 10GBASE-T adopt single tone, baseband PAM as the modulation strategy
  - Moved by: L. Harrison
  - Seconded by: S. Rao
- TF Members: Y: unanimous N: A:
- IEEE Voters: Y: N: A:

Motion: Channel Equalization Approach

- **10GBASE-T adopt programmable Tomlinson-Harashima precoding as part of the channel equalization strategy**
  - **Moved by: Scott Powell**
  - **Seconded by: J. Jover**
- **Task Force Members: Y: unanimous N: A:**
- **IEEE Voters: Y: N: A:**

Motion: Channel Coding Approach

- **10GBASE-T adopt systematic Low Density Parity Check (LDPC) coding as the channel coding approach**
  - **Moved by: Vivek Telang**
  - **Seconded by: S. Rao**
- **Task Force Members: Y: 78 N: 0 A: 11**
- **IEEE Voters: Y: by voice N: A:**

Motion: TSB-155

Move that 802.3an Task Force adopt the D1.0 TSB-155 NEXT loss, Power sum NEXT and Return Loss channel equations for the Draft 1.0 Clause 55 Link Segment NEXT, Power sum NEXT Loss and Return Loss.

Moved By: Chris DiMinico
Seconded By: Larry Cohen
TF: Y: 46 N: 11 A: 25
802.3: Y: 28 N: 7 A: 14
Technical: 75% PASS

- **Amendment "for models 2, 3 & 4 ": T. Cobb, T. Boucino (75%)**
- **TF: Y: 17 N: 22 A: 37 FAIL**
- **Calling the question: Y: 33 N: 11 PASS**

Motion: Upper frequency

Move that 802.3an Task Force adopt 500 MHz as an upper frequency for the Clause 55 link segment specifications.

Moved By: Chris Di Minico
Seconded By: Paul Kish
TF: Y: 67 N: 0 A: 12
802.3: Y: 36 N: 0 A: 7
Technical: 75%
PASS

Motion: MDI and environment

The 802.3an task force adopt the baseline text as defined in the presentation cobb_1_0704, with the addition of immunity to the electromagnetic emissions, for the MDI specifications and Environmental specifications in Draft 1.0.

M: T. Cobb

S: S. AbuGhazaleh

Technical: 75%

Task Force	**Y: 24**	**N: 11**	**A: 35**
802.3 Voters	**Y: 15**	**N: 9**	**A: 15**

FAILS

Motion: cable diags

- **Move that the Task Force adopt into the baseline a definition of some channel diagnostic functions (the TF will investigate the inherent capabilities of the PHY to support these functions).**

- **M: H. Barrass**
- **S: D. Dove**
- **TF: Y: 50 N: 6 A: 20**
- **802.3: Y: 26 N: 2 A: 9**
- **Technical (75%)**
- **PASS**
- **H. Barrass to sponsor an ad hoc teleconference during the week of 7/26 to discuss the PHY capabilities and prepare draft text.**

Motion: Architecture Downselect

- **Task force narrow consideration of 10GBASE-T baseline approach to the PAM8 and PAM12 proposals described in rao_1_0704.pdf and powell_1_0704.pdf.**
  - **Moved by: Kevin Brown**
  - **Seconded by: J. Babanezhad**
- **Task Force Members: Y: by voice N: A:**
- **IEEE Voters: Y: N: A:**
- **PASS**

Motion: 10GBASE-T Baseline Approach

- **Task force adopt the multi-phy vendor proposal described in powell_1_0704.pdf as the baseline approach for 10GBASE-T. The main elements include: PAM-12, systematic LDPC coding, programmable Tomlinson-Harashima precoding, and clause 49-type framing modified for 64B/65B. All TBD and asterisked items (and dependents) to be determined prior to completion of Draft 1.**
  - **Moved by: Scott Powell**
  - **Seconded by: F. McCarthy**
- **Technical (75%)**
- **TF: Y: 54 N: 20 A: 14**
- **802.3: Y: 33 N: 9 A: 9**
- **FAILS**

- **Motion to postpone until September interim meeting. (J. Jover, D. Dove)**
- **TF: Y: 28 N: 49 A: 12**
- **FAILS**

Motion

- **Adopt the maximum peak to peak differential transmitted voltage of 2-2.5V at the MDI for the 10GBASE-T transmitter as summarized in slide #3, (exclusive of baseline wander) of the presentation gupta_1_0704.pdf and use that as the baseline for defining various transmitter test modes for Draft 1.0**

- Motion Type: Technical (75% required)
- Moved By: Sandeep Gupta
- Seconded by: J. Babanezhad
- TF Voters Y: by acclimation N: A:
- 802.3 Voters: Y: N: A
- Results:

Motion

- **Adopt the filter assumptions in slide 6 of the presentation gupta_1_0704.pdf for the purpose of defining transmit waveform templates. This is summarized as "At least two pole continuous time low pass filter with upper -3dB frequency varying from fs/2 to TBD, and a single pole continuous time high pass filter with pole ≤ 100kHz"**
- Motion Type: Technical (75% required)
- Moved By: Sandeep Gupta
- Seconded by: V. Telang
- TF Voters Y: 21 N: 21 A: 17
- 802.3 Voters: Y: N: A
- Results: FAILS

Motion

- **Adopt a part of the distortion methodology as specified in the slide 17 gupta_1_0704.pdf summarized as follows: "A normative spec is specified for the transmit distortion required for the interoperability of the far end device, and a recommended, though not normative, number provided for the local device to maintain link performance as a baseline for Draft 1.0"**
- Motion Type: Technical (75% required)
- Moved By: Sandeep Gupta
- Seconded by: J. Tellado
- TF Voters Y: by acclimation N: A:
- 802.3 Voters: Y: N: A
- Results: PASS

Motion

- **Adopt a part of the common mode rejection methodology as specified in the slide 21 of the presentation gupta_1_0704.pdf summarized as follows: "The common mode rejection spec of the receiver widened up-to 500MHz such that the common mode output signal that the transceiver has to tolerate while maintaining 10G link performance, should be ≤ 2.8V for f ε (1,f_1] MHz, and ≤ 2.8 * f_1/f for f ε (f_1,500] MHz, parameter f_1 subject to further investigation, (initial value for f_1 =80MHz) based on real environment conditions."**
- Motion Type: Technical (75% required)
- Moved By: Sandeep Gupta
- Seconded by: J. Babanezhad
- TF Voters Y: 25 N: 9 A: 24
- 802.3 Voters: Y: N: A
- Results: FAILS

Motion: ANEXT and IL for augmented Class E/Cat 6

Move that 802.3an Task Force adopt Ed2:2002 Class F insertion loss and ANEXT for augmented Category 6 (proposed Class E ed2.1) Cabling as per June 11, 2004 TR42 Liaison response to IEEE 802.3 on Augmented Category 6 Cabling and the 802.3an augmented Class E objective.

1. Augmented Category 6 (proposed Class E ed2.1) Channel Insertion Loss (IL) shall meet ISO/IEC11801 Ed2:2002 Class F channel specification

2. Augmented Category 6 (proposed Class E ed2.1)
Channel Power Sum Alien Near End Crosstalk (PSANEXT) shall meet:
$PSANEXT \geq 60 - 10\log(f)$, $1 \leq f \leq 100$ MHz
$PSANEXT \geq 60 - 15\log(f)$, $100 < f \leq 625$ MHz

Moved By: Paul Kish
Seconded By: Paul Vanderlaan
Y: by acclimation N: Abstain:
Technical: 75%

Motion: Class E parameters

- **Accept the cabling parameters for Class E cabling from the ISO liaison letter shown below.**
- **The changes are in bold red.**

	Existing cabling	New cabling
Return loss	1-10 MHz: 19 dB	1-10 MHz: 19 dB
	10-40 MHz: 24-5log(f) dB	10-40 MHz: 24-5log(f) dB
	40-400 MHz: 32-10log(f) dB	40-250 MHz: 32-10log(f) dB
	400-625 MHz: 6 dB	**250-625 MHz: 8 dB**
Insertion loss	(L/100)(1.05)(1.82sqrt(f)+.0169f +.25/sqrt(f))+4x.02sqrt(f)	**1.05(1.8sqrt(f)+.01f+.2/sqrt(f))+4x.02sqrt(f)**
NEXT	1-330 MHz: $-20\log\left(\left(1{,}928 \cdot 10^{-4} \cdot f^{0{,}75}\right)+\left(3{,}991 \cdot 10^{-5} \cdot f\right)\right)$	$-20\log\left(\left(1{,}928 \cdot 10^{-4} \cdot f^{0{,}75}\right)+\left(3{,}991 \cdot 10^{-5} \cdot f\right)\right)$
	330-625 MHz: 31-50log(f/330)	

- **Motioned: W. Larsen**
- **Seconded: T. Cobb**
- **Technical (75%) Results: FAIL**
- **Task Force: Yes: 31 No: 19 Abstain: 14**
- **802.3 members: Yes: No: Abstain:**

802.3 Motion: Liaison Letters

- **Move that**
  802.3 approve and forward the two liaison letters, with appropriate edits by the Chair, to TIA TR-42 and ISO/IEC 11801 JTC 1/SC 25/WG 3.
  - **TIA TR42: tia_1_0704.pdf**
  - **ISO/IEC: iso_1_0704.pdf**

- **M: B. Booth**
- **S: P. Vanderlaan**
- **Technical (>75%)**
- **802.3 Voters: Y: 44 N: 6 A:17**
- **PASSES**


Thank You!