

Unconfirmed Meeting Minutes: IEEE 802.3 10 Mb/s Single Twisted Pair Ethernet Study Group

September 12-13, 2016  
Fort Worth, TX, USA

Prepared by Jon Lewis

IEEE 802.3 10 Mb/s Single Twisted Pair Ethernet Study Group (10SPE) Study Group meeting convened at 8:33 AM, Monday, September 12, 2016 by David Law, 802.3 Working Group Chair.

Attendance is listed in Appendix A

### **ADMINISTRATIVE MATTERS**

Mr. Law appointed Jon Lewis as recording secretary for this session.

Mr. Law explained that the Working Group chair appoints the study group Chair, and the study group would confirm the appointment. Mr. Law then reminded the group that he had announced his intention to appoint George Zimmerman Study Group Chair at the July Closing Plenary, and he then appointed George Zimmerman Study Group Chair.

**Motion #1: Confirm George Zimmerman as the IEEE 802.3 10 Mb/s Single Twisted Pair Ethernet Study Group Chair.**

**M: Alan Flatman S: Chris Diminico**

**Y: 25 N: 0 A: 0**

**MOTION PASSES (>= 75%)**

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Mr. Law turned the meeting over to Study Group Chair George Zimmerman.

**Presentation:** [agenda\\_10SPE\\_01d\\_0917.pdf](#)

NOTE: The agenda filename incorrectly specifies the year as 2017 when in fact this pertains to 2016.

**Presenter:** George Zimmerman, Chair.

The Chair called for introductions and affiliations, the participants introduced themselves, and the Chair then proceeded with the agenda.

The Chair reviewed the agenda. Mr. Zimmerman turned to presentation [agenda\\_10SPE\\_01d\\_0917.pdf](#) and reviewed the schedule of presentations for the meeting.

**Motion #2: Approve the agenda from [agenda\\_10SPE\\_01d\\_0917.pdf](#)**

**M: Jon Lewis S: Mick McCarthy**

**Approved by voice vote without objection (Procedural > 50%)**

The Chair then resumed the review of presentation [agenda\\_10SPE\\_01d\\_0917.pdf](#):

- Mr. Zimmerman noted that there should be no recording or photography without permission.
- Mr. Zimmerman asked if anyone was attending from the press including those who would run a public blog on this meeting – there were no indications from the group,

Mr. Zimmerman then continued review of the presentation, Big Ticket items for this meeting, to develop PAR, 5 Criteria, and Objectives for 10 Mb/s Single Twisted Pair Ethernet.

Mr. Zimmerman reviewed the goals for the meeting, access to the reflector and website, and ground rules.

**IEEE Patent Policy**, Mr. Zimmerman read aloud the patent policy for study groups from [agenda\\_10SPE\\_01d\\_0917.pdf](#), page entitled “Guidelines for IEEE-SA Meetings” (8:54 am).

Mr. Zimmerman reviewed the standards development process for IEEE and where this study group is in the process.

Mr. Zimmerman reviewed the WG motion from the November plenary meeting of the 802.3 WG to establish the Study Group.

### **LIAISONS**

The Chair moved to liaisons, and noted that there were no liaisons for the Study Group at this time.

**Attendance**, Mr. Zimmerman advised the group of the IEEE meeting attendance tool and procedures, including both the attendance sheet and the web attendance tracking tool.

The Chair completed review of the presentation.

### **PRESENTATIONS**

The Chair then moved to the presentations for the meeting.

NOTE: Abstracts are given when supplied by the presenter.

**Title:** 10SPE - 10 Mb/s Single Twisted Pair Ethernet Study Group Ad Hoc Report ([jones\\_10spe\\_01\\_0916.pdf](#))

**Abstract:** The presenter outlined the work done in the 3 meetings prior to the September interim including 16 presentations and 103 attendees.

**Presenter:** Peter Jones, Cisco, Chair, Study Group Ad Hoc

**Title:** 10 Mb/s Single Twisted Pair Ethernet Process Industry Requirements ([Graber 10SPE 01a 0916.pdf](#))  
**Abstract:** The presentation will give a short introduction about actual installations (e. g. fieldbus) and then explain the requirements from process industry point of view and give some background about the requirements and potential impacts on the new Ethernet physical layer (e. g. power requirements, cable types, installation methods, intrinsic safety requirements, EMC requirements).  
**Presenter:** Steffen Graber, Pepperl+Fuchs

**Title:** Automotive Requirements for 10SPE ([matheus buntz 10SPE 01 0916.pdf](#))  
**Abstract:**  
**Presenter:** Kirsten Matheus, BMW

**Title:** 10BASE-T1 for Connected Lighting ([wendt 10SPE 01 0916.pdf](#))  
**Abstract:** About the connected lighting market and the predominantly used DALI bus in digitally controlled systems.  
**Presenter:** Matthias Wendt, Philips Lighting Research

**Title:** Legacy Industrial Protocols ([voss 01 0916.pdf](#))  
**Abstract:**  
**Presenter:** Robert Voss, Panduit

**Break at 10:42am. Resumed at 11:08am.**

**Title:** Cabling in non-automotive applications ([Hormmeyer 10SPE 00 0916.pdf](#))  
**Abstract:** Specific application characteristics, topologies and brief signal integrity parameters for cabling.  
**Presenter:** Bernd Hormmeyer, Phoenix Contact GmbH & Co.KG

**Title:** Link Segment Characteristics IEEE 802.3 10 Mb/s Single Twisted Pair Ethernet Study Group ([diminico 01 0916.pdf](#))  
**Abstract:** Considerations for Link Segment 10 Mbs SPE Specifications.  
**Presenter:** Chris DiMinico, MC Communications/Cu-Test/Panduit

**Title:** 10 Mb/s Single Twisted Pair Ethernet Preliminary Cable Properties  
([Graber 10SPE 02a 0916.pdf](#))  
**Abstract:** Abstract showing a few measurements, a simple (preliminary) insertion loss model for the cable and some return loss ideas.  
**Presenter:** Steffen Graber, Pepperl+Fuchs

**Lunch Break at 12:07pm to resume at 1:20pm.**

**The Study Group meeting resumed at 1:23pm.**

**Title:** Channel Framework for 10SPE Automotive Point-to-Point Links  
([chini buntz 10SPE 01b 0916.pdf](#))  
**Abstract:** Proposes a channel framework to discuss various cabling parameters and provides initial measurements for existing automotive cables for single pair 10Mbps full-duplex operation with the given cost and link segment objectives.  
**Presenter:** Ahmad Chini, Broadcom Limited

**Title:** Objectives Affecting PHY Design Choices for 10SPE Automotive  
([chini 10SPE 01b 0916.pdf](#))  
**Abstract:** Discusses some of the objectives for 10SPE and how they affect PHY design choices. It also highlights some questions and areas for further study and analysis.  
**Presenter:** Ahmad Chini, Broadcom Limited

**Title:** Feasibility Framework for 10SPE Automotive  
([cordaro chini 10SPE 01a 0916.pdf](#))  
**Abstract:** Proposes a framework to discuss technical and economic feasibility and provides an initial analysis for technical options for single pair 10Mbps full-duplex operation with the given cost, power, and link segment objectives.  
**Presenter:** Jay Cordaro, Broadcom Limited

**Afternoon Break at 3:13pm.**

**Meeting resumed at 3:36pm.**

**Title:** PHY Feasibility: The Impact of Signaling on Power and Area  
([gauthier 10SPE 01a 09132016.pdf](#))  
**Abstract:** We're investigating signaling schemes for the automotive-reach, and quantifying the impact on EMC, power, and area.  
**Presenter:** Claude Gauthier, OmniPHY

**Title:** Thoughts on Low-pin-count Low-power Media Independent Interface ([cordaro\\_thaler\\_10SPE\\_01a\\_0916.pdf](#))

**Abstract:** Given the cost constraints, it is essential to review the options for low-pin count, low-power media independent interface.

**Presenter:** Jay Cordaro, Broadcom Limited

**Title:** 10 Mb/s Single Twisted Pair Ethernet Implementation Thoughts – Proof of Concept ([Graber\\_10SPE\\_03\\_0916.pdf](#))

**Abstract:** Current implementation ideas P+F is working on, transmitting 10 Mbit/s over 1000 m of Fieldbus cable type A (modulation scheme, frequency, analog frontend echo canceller ...).

**Presenter:** Steffen Graber, Pepperl+Fuchs

**Title:** IEEE 802.3 10 Mb/s single twisted pair Ethernet for Process Industry ([Harald\\_Mueller\\_Endress\\_Hauser\\_rev1.pdf](#))

**Presenter:** Harald Mueller, Endress+Hauser

**THE MEETING RECESSED FOR THE DAY AT 5:04PM, TO RECONVENE TUESDAY AT 8:30AM in Crystal C**

**THE MEETING RECONVENED TUESDAY AT 8:32AM**

The Chair called for introductions and affiliations, the participants introduced themselves, and the Chair then proceeded with the agenda ([agenda\\_10SPE\\_01d\\_0917.pdf](#)).

- Mr. Zimmerman noted that there should be no recording or photography without permission.
- Mr. Zimmerman asked if anyone was attending from the press including those who would run a public blog on this meeting – Peter Jones, Cisco Systems, indicated that occasionally he blogs but this is limited to publically available information.

Mr. Zimmerman then continued review of the presentation, Big Ticket items for this meeting, to develop PAR, 5 Criteria, and Objectives for Next Generation Enterprise Access BASE-T.

Mr. Zimmerman reviewed the goals for the meeting, access to the reflector and website, and ground rules.

**IEEE Patent Policy**, Mr. Zimmerman read aloud the patent policy for study groups from [agenda\\_10SPE\\_01d\\_0917.pdf](#), page entitled “Guidelines for IEEE-SA Meetings” (8:47 am).

Mr. Zimmerman reviewed the standards development process for IEEE and where this study group is in that process.

The meeting then resumed presentations per the agenda.

**Title:** Optional Powering based on PoDL for 10SPE  
([gardner\\_10SPE\\_01\\_0916.pdf](#))

**Presenter:** Andy Gardner, Linear Technology

**Title:** Support for Optional Bus Topology in 10SPE ([chini\\_10SPE\\_02\\_0916.pdf](#))  
**Abstract:** Automotive data networks available today provide for bus topology support. This includes Lin, CAN, FlexRay and Most. In particular, FlexRay (10Mbps) Bus architecture is reviewed. With P2P Ethernet PHY and switch, daisy chained wiring provides for an alternative bus topology. Such solution however is more costly. Inherent fault tolerance, lower latency and partial networking capabilities of P2MP bus architecture are additional benefits. 10SPE support for optional P2MP bus topology is beneficial and feasible.

**Presenter:** Ahmad Chini, Broadcom Limited

**Title:** Industrial Automation Bus Topology ([brandt\\_10SPE\\_02\\_0916.pdf](#))

**Presenter:** David D. Brandt, Rockwell Automation

**Title:** 10SPE -Study Group : Reflections of AdHocChair -September 2016  
([jones\\_10spe\\_02\\_0916.pdf](#))

**Presenter:** Peter Jones, Cisco, Chair, Study Group Ad Hoc

**Morning break at 10:42am.**

**The Study Group meeting resumed at 11:10am.**

The Chair noted that the current agenda would be suspended to allow the Working Group Chair to participate in the PAR discussions.

**Title:** Major PAR form questions ([PAR\\_10SPE\\_Wkqdraft.pdf](#))

**Presenter:** George Zimmerman, Chair

The Chair then presented the proposed PAR for Study Group discussion. During the discussion it was decided to send out the proposed "Need for the Project" to the reflector to allow consensus during the lunch break.

**Lunch Break at 12:23pm to resume at 1:30pm.**

**The Study Group meeting resumed at 1:32pm.**

The Chair reminded the Study Group to sign in via IMAT and in the attendance log.

Discussion on the proposed PAR continued.

**Motion #3:**

- Move to adopt the PAR text , as per [10SPE PAR DRAFT.pdf](#)

**M: Peter Jones     S: Ludwig Winkel**

**Y: 34   N: 0   A: 4 Technical (>= 75%)**

**Motion Passes (2:42PM)**

The Chair asked if there was any objection to moving directly to the CSD responses, none responded.

**Title:**            IEEE 802.3 Criteria for Standards Development (CSD)  
[\(CSD 10SPE 01a Wkgdraft.pdf\)](#)

**Presenter:**    George Zimmerman, Chair

Discussion and consensus building on the CSD objects.

**Break at 3:09pm.**

**The Study Group meeting resumed at 3:35pm.**

**Discussion continued on the CSD objects.**

**Motion #4:**

- Move to adopt the “CSD Managed Objects” response, as per [CSD 10SPE 01b Wkgdraft.pdf](#).
- **M: S. Carlson         S: L. Winkel**
- **Y: 33   N: 0   A: 0 Technical (>= 75%)**
- **Motion Passes**

**Motion #5:**

- Move to adopt the “CSD Coexistence” response, as per [CSD 10SPE 01b Wkgdraft.pdf](#).
- **M: M. McCarthy     S: B. Voss**
- **Y: 33   N: 0   A: 0 Technical (>= 75%)**
- **Motion Passes**

**Motion #6:**

- Move to adopt the “CSD Broad Market Potential” response, as per [CSD 10SPE 01b Wkqdraft.pdf](#).
- M: T. Brillhart      S: M. Chadha
- Y: 31 N: 0 A: 0 Technical (>= 75%)
- Motion Passes

**Motion #7:**

- Move to adopt the “CSD Compatibility” response, as per [CSD 10SPE 01b Wkqdraft.pdf](#).
- M: J. Marvin          S: C. Jones
- Y: 34 N: 0 A: 0 Technical (>= 75%)
- Motion Passes

**Motion #8:**

- Move to adopt the “CSD Distinct Identity” response, as per [CSD 10SPE 01b Wkqdraft.pdf](#).
- M: M. Wendt S: L. Yseboodt
- Y: 34 N: 0 A: 0 Technical (>= 75%)
- Motion Passes

**Motion #9:**

- Move to adopt the “CSD Technical Feasibility” response, as per [CSD 10SPE 01b Wkqdraft.pdf](#).
- M: A. Chini    S: L. Winkel
- Y: 34 N: 0 A: 0 Technical (>= 75%)
- Motion Passes

**Motion #10:**

- Move to adopt the “CSD Economic Feasibility” response, as per [CSD 10SPE 01b Wkqdraft.pdf](#).
- M: H. Sedarat      S: M. McCarthy
- Y: 34 N: 0 A: 0 Technical (>= 75%)
- Motion Passes

**Title:** Proposal for 10SPE Automotive Objectives  
([tazebay 10SPE 01 0916.pdf](#))

**Presenter:** Ahmad Chini, Broadcom Limited

**Title:** Proposal for 10SPE Industrial Automation Objectives  
([brandt 10SPE 01 0916.pdf](#))

**Presenter:** David D. Brandt, Rockwell Automation

Discussion commenced on the objectives presented.

During the discussion, a common set of objectives ready for adoption were identified and placed in a presentation file objectives\_10SPE\_01\_0917.

**Motion #11:**

- **Move to adopt the “Noncontroversial Objectives” from slide 2 of [objectives\\_10SPE\\_01\\_0917.pdf](#)**
- **M: K. Matheus S: D. Brandt**
- **Y: N: A: Technical (>= 75%)**
- **Motion Passes/Fails**

NOTE: The objectives\_10SPE\_01\_0917.pdf filename incorrectly specifies the year as 2017 when in fact this pertains to 2016

**Motion #12:**

- **Move to amend Motion #11 to except “Support Full Duplex” from the objectives to adopt.**
- **M: C. Jones S: L. Yseboodt**
- **Motion Passes by voice**

**Motion #11(Amended) :**

- **Move to adopt the “Noncontroversial Objectives” from slide 2 of [objectives\\_10SPE\\_01\\_0917.pdf](#), excepting “support full duplex operation”**
- **M: K. Matheus S: D. Brandt**
- **Y: 29 N: 0 A: 0 Technical (>= 75%)**
- **Motion Passes**

NOTE: The objectives\_10SPE\_01\_0917.pdf filename incorrectly specifies the year as 2017 when in fact this pertains to 2016

**Title:** Proposed Liaison Letter to ISO/IEC JTC1 SC25 WG3 and (similar) TIA TR42 ([shariff\\_10spe\\_01\\_0916.pdf](#))

**Presenter:** Masood Shariff, Commscope

**Motion #13:**

- **Move to direct the Study Group Chair to request 802.3 Working Group forward the liaison letter in [shariff\\_10spe\\_01\\_0916.pdf](#) to ISO/IEC JTC1 SC25 WG3, and a liaison letter with similar content to TIA TR42 with editorial license.**
- **M: P. Jones S: M. Shariff**
- **Motion Passes by voice vote without objection**

**FUTURE MEETINGS**

Mr. Zimmerman reviewed future meetings locations from the agenda presentation.

Peter Jones announced that the next ad-hoc meeting would be Monday, September 26, 2016 at 9:00AM Pacific time.

No further motions of business were offered.

**Adjournment**

**Motion #14.**

- **To adjourn the meeting**
- **M: J. Lewis S: T. Brillhart**
- **Motion Passes by Voice without Opposition**

**The Meeting was adjourned at 6:28PM, Thursday, September 13, 2016.**

*Appendix A: Attendees at the IEEE 802.3 10 Mb/s Single Twisted Pair Ethernet Study Group Meeting, September 12-13, 2016*

IEEE 802.3 10 Mb/s Single Twisted Pair Ethernet Study Group Meeting				9/12/16	9/13/16
Last Name	First Name	Employer	Affiliation	Monday	Tuesday
Abramson	David	Texas Instruments	Texas Instruments		X
Agnes	Andreas	ST Microelectronics	ST Microelectronics	X	X
Ahmed	Mohammad	TE Connectivity	TE Connectivity	X	X
Amason	Dale	NXP	NXP	X	X
Brandt	David	Rockwell Automation	Rockwell Automation	X	X
Brillhart	Theo	Fluke Electronics	Fluke Electronics	X	X
Carlson	Steve	High Speed Design	High Speed Design	X	X
Chabot	Craig	UNH-IOL	UNH-IOL		X
Chadha	Mandeep	Microsemi	Microsemi	X	X
Chini	Ahmad	Broadcom Ltd.	Broadcom Ltd.	X	X
Cordaro	Jay	Broadcom Ltd.	Broadcom Ltd.	X	
DiMinico	Christopher	MC Communications	Panduit	X	
Donahue	Curtis	UNH - IOL	UNH - IOL	X	
Flatman	Alan	LAN Technologies	LAN Technologies	X	
Gardner	Andrew	Linear Technologies	Linear Technologies		X
Gauthier	Claude	OmniPHY	OmniPHY		X
Goldberg	Jonathan	IEEE-SA	IEEE-SA	X	
Graber	Steffen	Pepperl+Fuchs	Pepperl+Fuchs	X	X
Hess	Dave	Cord Data	Cord Data	X	X
Hoglund	David	Johnson Controls	Johnson Controls	X	X
Hormmeyer	Bernd	Phoenix Contact	Phoenix Contact	X	X
Hyakutake	Yasuhiro	Adamant Co., Ltd	Adamant Co., Ltd	X	
Johnson	Stephen	UNH-IOL	UNH-IOL	X	
Jones	Chad	Cisco	Cisco		X
Jones	Peter	Cisco	Cisco	X	X
Lane	Brett	Panduit	Panduit	X	
Law	David	Hewlett Packard Enterprise	Hewlett Packard Enterprise	X	X
Lewis	Jon	Dell   EMC	Dell   EMC	X	X
Marris	Arthur	Cadence	Cadence		X
Marvin	Jeff	Linear Technologies	Linear Technologies	X	X
Matheus	Kirsten	BMW	BMW	X	X
McCarthy	Mick	Analog Devices	Analog Devices	X	X
Mueller	Harold	Endress+Hauser	Endress+Hauser	X	X
Muir	Ron	JAE	JAE	X	X

IEEE 802.3 10 Mb/s Single Twisted Pair Ethernet Study Group Meeting				9/12/16	9/13/16
Last Name	First Name	Employer	Affiliation	Monday	Tuesday
Nadolny	James	Samtec	Samtec	X	X
Norimatsu	Takayasu	Hitachi	Hitachi		X
Pérez-Aranda	Rubén	RDPOF	RDPOF	X	
Picard	Jean	Texas Instruments	Texas Instruments		X
Sedarat	Hossein	Aquantia	Aquantia		X
Shariff	Masood	Commscope	Commscope		X
Sparrowhawk	Bryan	Leviton	Leviton	X	X
Thompson	Geoff	GraCaSI SA.	Independent	X	
Umnov	Alexander	Corning	Corning	X	X
Vaden	Sterling	Surtec, Ind.	Vaden Enterprises	X	X
Vanderlaan	Paul	Berk-Tek LLC	Berk-Tek LLC	X	X
Wendt	Matthias	Philips Lighting	Philips Lighting	X	X
Winkel	Ludwig	Siemens	Siemens	X	X
Wucher	Markus	Endress+Hauser	Endress+Hauser	X	X
Xu	Qing	Belden	Belden	X	X
Yseboodt	Lennart	Philips Lighting	Philips Lighting	X	X
Zimmerman	George	CME Consulting	Commscope, Aquantia, LTC, CME Consulting	X	X