November 11 – 14, 2013
Dallas, TX

IEEE 802.3bp Reduced Twisted Pair Gigabit Ethernet PHY Plenary meeting
802.3bp Task Force Chair: Steven B. Carlson

Tuesday 11/12/13
The Chair convened the meeting at 10:00am

Administrative Matters

- Appointment of Recording Secretary – Curtis Donahue
- Welcome and Introductions

Motion #1: Approve minutes from previous meeting (York, UK Interim)
Moved by: Mehmet Tazebay
Seconded by: Mandeep Chadha
Voice Vote
MOTION: Passes unanimously by voice without opposition

- Chair asks Geoff Thompson to read Patent Policy
    - Calls for Potentially Essential Patents
    - No Declaration of Patents were made

Channel Ad Hoc Definitions Report
Chris DiMinico - 10:35am

- Charter overview
- Review of Link Segment definition
    - IL, PSANEXT, PSAACRF baselines adopted
    - RL, Balance no baselines adopted yet

RTPGE Return Loss Proposal for 1-Pair Ethernet
Todd Herman - 10:50am

- Proposed limits were derived from 5m and 2.8m channel measurements and simulations.
- Conclusions: Modeled on several short channels, followed by support from measurements.
- Discussion: Questions were raised regarding a minimum cable length. Currently only a maximum cable length has been considered for specification. Automotive contributions provided specific baseline topologies that lead to the proposed return loss limit.

Motion #2: Move that the IEEE P802.3bp Task Force affirms that proposed RL specifications for the automotive link segment in herman_3bp_01_1113.pdf for inclusion in the 802.3bp baseline specification.
Moved by: Xiaofeng Wang
Seconded by: Mehmet Tazebay
Technical 75%

Y: 43 N: 0 A: 4
MOTION: Passes
11:10AM

RTPGE EMC & Noise Ad Hoc Report
Mehmet Tazebay - 11:10am

- Overview & Status report
- Two Ad Hoc meetings since York, UK interim
- Proposed baseline for mode conversion was derived from 15m UTP with 4 in-line connectors
- Discussion: Questions were raised regarding intentional in-band radiators.

Mode Conversion Measurement on Automotive Connecting Hardware
Gary Yurko - 11:25am

- Presenting S-parameter data verifying VNA calibration
- Data showing balance of in-line connector
- Data showing balance of in0line connector with short cable on each side of connector
- Conclusion: Verified test heads and setup against proposed baselines.
- Discussion: The use of an Ecal unit for calibrating the network analyzer was discussed.

IEEE 802.3bp Channel Measurements
Thomas Muller - 11:30am

- Analyzed Mode conversion, IL, RL of channels
- 3-port VNA stripline analysis
- PRBS10 and PAM-4 source Emission analysis
- Conclusion: Verified IL, RL, and Mode conversion baseline proposals.
- Discussion: Details regarding calibration and test head compensation were discussed. Fixture removal techniques were used to de-embed the test head from the measurements.

Sine Wave Interference Tolerance of RTPGE vs TX launch Voltage
Will Bliss - 11:45am

- Assumptions
    - PAM-2
    - 10% overhead
    - 4 in-line connector IL model
    - Latest proposed PSD mask
    - All filters
    - DFE RX with unlimited taps
- Presented modified PSD mask that meets original mask and a maximum peak voltage
- Conclusions: There is relatively small (~15%) loss in sine wave tolerance from dropping the TX drive from 2.6Vpp to 1Vpp
- Discussion: Questions were raised regarding how the results may be affected with different cable lengths. Details regarding the DFE design were also discussed.

The Chair called a break for lunch at 12:10pm

Reconvened the meeting at 1:30pm

Analysis of EMC Mode Conversion Measurement and Common Mode Impedance Effect
Shaoan Dai - 1:40pm

- 2-port and 3-port measurements were performed.
- 2-port and 3-port simulations were also performed.
- Common mode termination sweep from 25 – 500 Ohm.
- Conclusions: Simulated s-parameters measurements correlate well with time domain measurements.
- Discussion: Questions regarding the assumed modulation and the reasoning behind it were raised. Additionally, cable termination and balun characteristics were discussed.

RTPGE BCI Noise Analysis for Common Mode Termination & Grounding Effects
Ahmad Chini & Mehmet Tazebay - 2:40pm

- 3-port and 4-port VNA measurements were performed.
- S-parameter measurements were then imported to ADS for simulation of various common mode termination values and grounding options.
- Conclusion: Lower noise is observed when test heads are floating. Results suggest a common mode impedance of 25 – 300 Ohms.
- Discussion: Details regarding the adjustment of the common mode impedance during simulation was discussed, as well as test head de-embedding.

The Chair called a break at 3:30pm
Reconvened the meeting at 3:45pm

RTPGE Channel & Component Testing Experiences and Recommendations
Todd Herman - 3:50pm

- Cable testing specifications include
    - TIA-568-C.2
    - TIA-1183
    - ISO/IEC 11801
    - IEC 60603-7
- Conclusion: Methods and tools for accurate and consistent cable measurements. Guidelines for this testing should be documented.
- Discussion: How to properly capture channel and component testing methodologies was discussed.

Potential Broadband RFI in UHF Band
Xiaofeng Wang - 4:05pm

- Regulatory agencies may be repurposing UHF frequencies, this could potentially interfere with RTPGE bands
- Conclusion: Future mobile networks may use frequencies as low as 512MHz. Because of this it might be preferable to avoid frequencies above 500MHz, so PAM-2 may not be suitable.

EMC ad hoc BCI limit line survey
Stefan Buntz (presented by Mehmet Tazebay) - 4:35pm

- Survey outcome
- Daimler limit line graphs

Motion #3: Move that The IEEE P802.3bp Task Force affirms the proposed Mode Conversion limit line for the automotive link segment in Slide # 13 of tazebay_3bp_01a_0913.pdf for inclusion in 802.3bp baseline specification.
Moved by: Mehmet Tazebay
Seconded by: Gary Yurko
Technical 75%
Y: 33 N: 0 A: 5
MOTION: Passes
4:50PM

Motion #4: In the view of data for available RTPGE connectors & cabling, move that the IEEE P802.3bp task force affirms the suggested component level mode conversion limit line for the RTPGE connectors & cabling in slide #7 of tazebay_3bp_01a_0913.pdf for inclusion in 802.3bp informative annex.
Moved by: Mehmet Tazebay
Seconded by: Mike Gardner
Technical 75%
Y: 37 N: 0 A: 3
MOTION: Passes
4:55PM

The Chair recessed the meeting until 11/13/13 at 9:00am

Wednesday 11/13/13
The Chair reconvened the meeting at 9:00am

Agenda and General Information
Steven Carlson – 9:00am

- Calls up Dave Dwelley for an announcement
    - PoDL meeting tomorrow morning to map out work after becoming a Task Force
- TIA liaison letter
    - TIA: IEEE P802.3bp Task Force: Reduced Twisted Pair Gigabit Ethernet (RTPGE)

Motion #5: Motion to accept liaison response
Moved by: Mandeep Chadha
Seconded by: George Zimmerman
Voice Vote
MOTION: Passes unanimously by voice without opposition
9:15AM

- Future meetings
    - Next interim in January 2014 in Indian Wells, CA
    - (Straw Poll) Attending the January Interim?
        - Y: 20 M: 20 N: 0
    - Next Plenary in March is in Beijing, China
        - More details at the Closing plenary

RTPGE EMC & Noise Ad Hoc Report
Mehmet Tazebay – 9:20am

- Main topic is consistent and repeatable EMC setups
- Introducing "Suggested Testing Guidelines for RTPGE Cabling" from CommScope
- Discussion: A timeline regarding completing the testing guidelines for cabling was discussed.

Recessed until 1pm
Reconvened the meet at 1:15pm

Liaison Letter Response
Steven Carlson – 1:15pm

- ISO/IEC JTC1/SC 25 WG3: Information from IEC/SC 46C relevant to IEEE P802.3bp

Motion #6: Motion to accept liaison response
Moved by: Sasha Babenko
Seconded by: Bernd Horrmeyer
Voice Vote
MOTION: Passes unanimously by voice without opposition
1:20PM

Challenges of Future Cabin Networks EMC Requirements
Stefan Schneele - 1:20pm

- Cabin Networks – overview
- Up to 10,000 nodes per plane
- Concerned with disruption of navigation and communication controls
- Typical aeronautical cable characteristics: 75.2 Ohm, 24 AWG.
- Previously Successful applications: AFDX, CAN, Flexray
- Discussion: Previously implemented networks used in aeronautic environments were discussed. Questions regarding channel length and implementation timelines were raised.

Motion #7: Motion to adjourn
Moved by: Mehmet Tazebay
Seconded by: Farid Hamidy
Voice Vote
MOTION: Passes unanimously by voice without opposition

Adjourned at 1:40pm

APPENDIX A – Daily attendance sheets

P802.3bp Task Force Sign-In Sheet - November 2013

Name	Company	Affiliation	Email (optional)	T	W	Th
Steve Carlson	HSD	Marvell, Broadcom				
Chris DiMinico	MC Comm	PANDUIT				
Mandeep Chadha	Vitesse	Vitesse				
Tom Brown	Vitesse	Vitesse		TB	TB	
NIRMAL WARKE	TI	TI		NW	NW	
ANDY MCLEAN	TI	TI				
Thomas Müller	Rosenberger	Rosenberger				
Martin Zeltner	Rosenberger	Rosenberger				
Rainer Pöhmerer	LEONI	LEONI				
Will Bliss	Broadcom	"				
XIAOFENG WANG	Qualcomm	Qualcomm		XFW	XFW	
Sujan Pandey	NXP	NXP				
BZ Shen	Broadcom	Broadcom		BZS		
Stefan Schneele	EAOS	EAOS				
MAX ROBERTSON	TI	TI		MR		
Huang, Liang-wei	Realtek	Realtek		Benson	Benson	
Thomas Hogenmüller	Bosch	Bosch		TH	TH	
Albert Kuo	Realtek	Realtek		AL	AL	
Mitsuru Iwaoka	Yokogawa Elec	Yokogawa Elec.		M1		
RALPH MASON	MICROCHIP	MICROCHIP				
Farid Hamidy	Pulse	Pulse				
Gary Yurko	TE	TE				
Bernd Horrmeyer	PxC	PxC				
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Carlos Pardo	KDPOF	KDPOF				

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