July 15 -19, 2013
Geneva, Switzerland

Prepared by Richard Mei and Todd Herman

IEEE 802.3bp Reduced Twisted Pair Gigabit Ethernet PHY Plenary meeting convened at 09:00, Tuesday, July 16, 2012 by Steven B. Carlson, 802.3bp Task Force Chair

Attendance is listed in Appendix A

Tuesday, July 16, 2013

Administrative Matters

- Appointment of Recording Secretary – Richard Mei
- Welcome and Introductions
- Review Agenda

Motion #1: Approve Agenda
M: Steven Carlson S: Mehmet Tazebay
Voice Vote
MOTION: Passes Unanimous Without Oppostition

Channel Definitions Ad Hoc Report - Chris DiMinico
The presentation can be found at: Channel definition Ad Hoc Report

Update from the ad-hoc meeting on June 20, 2013

- Discussed link segment balance characteristics
    1. Volunteers to perform balance testing including round robin
    2. Sterling Vaden – OCC (test fixtures UTP/shielded)
    3. Sasha Babenko - Molex
    4. Michael – Delphi
- Link segment return loss
- Automotive and industrial cabling environments Link segment temperature dependencies for cables and connectors to 125 deg C
  Brief review: http://www.ieee802.org/3/bp/public/may13/Babenko_3bp_01_0513.pdf

Update from the ad-hoc meeting on June 27, 2013

- Reviewed presentation RTPGE EMC Limit Lines; Mehmet Tazebay & Ahmad Chini, Broadcom Corporation
    1. Basis for link segment mode conversion limit line presented.
    2. The limit line shown correlates with the levels suggested for TX PSD and RX BCI immunity levels.
    3. The same limit can be considered for MDI and inline connectors, CMC and PHY.
    4. Mode conversion for 1-pair UTP measurement compared against the limit line.
- Link segment return loss – Sterling Vaden OCC
    1. Modeling results reviewed in Vaden_02-06-13_Channel models.pdf
    2. Using compliant 6A connector and cable RL models a 15 m link segment topology of 1m, 2m, 9m, 2m, 1m was modeled and presented.

3. Summary: The modeled link segment (15 m) RL yielded ILD that will need to be considered in characterizing the link segment insertion loss beyondcurrent estimates for category cabling.

- Curtis Donahue (UNH-IOL) presented an IEEE 802.3bp Channel Test Setup Update

Summary - Channel definitions ad hoc to continue efforts in characterizing link segment specifications.

Review of Minutes from the May Interim Meeting in Victoria, BC, Canada

Motion #2: Approve Minutes
M: Steven Carlson S: Dave Dwelley
Voice Vote
MOTION: Passes Unanimous Without Opposition

Motion #3: Confirm Chief Editor - Marek Hajduczenia and PICS - Dave Estes
M: Steven Carlson S: Mehmet Tazebay
Voice Vote
MOTION: Passes Unanimous Without Opposition

- Task Force Decorum
- Review the Meeting Goals
- Reflector and Web location review
- Meeting Ground Rules Review
- Attendance policy and tool
- Important Bylaws and Rules
- Patent Policy was read and call made for Potentially Essential Patents. No Declarations of Patents were made.
- Review of the IEEE Structure and P802.3bp Status
- Great improvement has been made in terms of requesting time slot, and on-time submission of presentations

EMC Ad Hoc Report - Mehmet Tazebay, Stefan Buntz

7 conference calls have been held since the interim meeting in May. The presentation can be found at: EMC Ad Hoc Report
Updates in the following areas:

- Differential Channel Impairments
- EMC Modeling and Limit Lines
- EMC Channel Transfer Function
- Alien Crosstalk Modeling
- In-Car Background Noise
- Impulse Noise Measurements and Modeling
- Other Noise Sources

Summary –

- Progress for link segment parameters
- Large amounts of information have been gathered
- Based on the data that we have it is time to reach consensus on the TX PSD and mode conversion parameters so that we can start evaluating the baseline proposals

PRESENTATIONS per Agenda

RTPGE IoT Connectivity - Chris DiMinico (Presented right after ad-hoc report)

- IoT is about putting things on the Internet….. door locks, appliances, smart meters, video surveillance, health care devices, thermostats…sensors…
- Structured cabling and pathway standards continue to evolve to address connectivity between network devices;
    1. Industrial
    2. Building automation
    3. Health care
    4. Educational facilities
    5. "Intelligent Building" technologies
    6. Data centers

Summary - Considerations for reduced twisted pair Ethernet (RTPGE) for industrial and building automation applications and other sensor based network applications.

802.3 draft development process – Marek Hajduczenia

- IEEE 802.3 Q&A
- Life of IEEE 802.3 project draft Initial draft version (unofficial Task Force draft)
    1. Task Force Review (D1.x)
    2. Working Group Ballot (D2.x)
    3. Sponsor Ballot Ballot (D3.x)
    4. Final Approvals & Publication
- Baseline Proposals
- Tasks & Responsibilities of Project Editors

P802.3bp Draft D0.1– Marek Hajduczenia

P802.3bp Draft D0.1 Status

- Initial (and yet unofficial) draft version D0.1 was generated prior to meeting, containing typical legacy clauses projects update:
    1. Clause 1 with definitions and normative references
    2. Clause 30 with management objects
    3. Clause 45 with MDIO registers
- Two additional clauses are also included:
    1. Clause 34 covering introduction to 1000 Mb/s networks, to be extended by adding P802.3bp PHY
    2. Clause 98, which is where P802.3bp PHY will be defined in detail, subject to TF decision

RTPGE Channel Requirements Proposal for 1-Pair Ethernet – Todd Herman

Presented the baseline proposal for RTPGE channel requirements

- Insertion Loss Calculations with Variables
    1. Temperature
    2. Connector Count
    3. Frequency
    4. Conduction size (AWG & Area) – ILD Addition
- Return Loss
- PSANEXT
- PSAACRF
    1. Connector Count
    2. Frequency
    3. Length

Summary and Recommendation – The new improved proposed Return Loss limit is based on a 1-pair connector, not the compensated RJ-45 connector. Data from testing multiple channel bundles in two different labs show both the feasibility of compliance to these limits and reproducibility.

IEEE 802.3bp Sample Channel Characteristics – Curtis Donahue

The type of data is the IOL collecting

- Assemblies remain anonymous except for the following
    1. Length
    2. Gauge
    3. Conductor (solid or stranded)
    4. Topology (inline connectors)
    5. Number of pairs
- S-Parameters
    1. Differential
    2. Crosstalk
    3. Balance

Explained how one can submit assembly samples for testing

RTPGE Prototype Channel & Alien Test Results – Todd Herman

Study of two recommended worst cases for alien crosstalk – 1) Common Scenario 1A and 2) Special Scenario 6 from matheus_3bp_02_0113.pdf

- A round-robin test results between CommScope and UNH-IOL on alien crosstalk were presented
- The network analyzer tests with 4mm separation from ground plane are better suited for measuring cable and channel parameters, including alien crosstalk. These tests will not however replace EMC measurements such as stripline or BCI

RTPGE – Connector Systems Performance Evaluation – Sasha Babenko

- A coaxial line test fixture was introduced

- Test setup, test parameters, and test results were shared

Conclusions –

- Test results we obtained for impedance, intra-pair skew, IL and RL are very encouraging
- TCL/TCTL data is below or right on the proposed limit line
- There are connector systems available on the market today that can support RTPGE development, even though they were not specifically designed for RTPGE application, at least at the initial stages of the development.

Insertion/Return Loss vs. Temperature Performance of RTPGE Cable Assemblies - Sasha Babenko

Presenter emphasized the conclusion of this contribution that was made in the previous meeting. The IL and RL measurements were done with MDI connectors in place.

Signal Integrity & Balance Parameters on Unshielded Automotive Multi Pin Connectors Automotive Multi Pin Connectors - Bert Bergner

Study suitability of unshielded multi-pin automotive standard connectors for RTPGE application

- Signal Integrity Measurements (Sdd11/Sdd12)
- Balance Results, Reflected Conversions – 5 different set ups were presented
    1. Proposed limit is challenging for unshielded connectors
    2. Contact system seems to provide sufficient symmetry as a baseline
        - proposed Sdc limit met with highly symmetric test arrangements
    3. Surrounding metal has strong impact
        - limit definitions, connector designs & correlation to application need to be discussed
        - Test setup including reference ground requires high degree of symmetry

Optimization of physical layer components for RTPGE - Thomas Muller

- Channel definition
    1. MDI connector performance measurements
    2. Cable insertion loss over temperature
- EMC
    1. Evaluation of the influence of inline connectors on EMC by means of stripline VNA measurements
    2. Outlook on using system simulation for predicating stripline test results

Adjourned for the day, July 16, 2013

Wednesday, July 17, 2013

EMC Ad hoc Meeting started at 09:00
Channel Ad hoc Meeting was started at 13:30

Meeting was restarted at 14:30

Administrative Matters

- Attendance request
- Direction to the IEEE free Standards Download
  http://standards.ieee.org/about/get/802/802.3.html

Review of Presentation from Thomas Hogenmüller that was given in Victoria

- This presentation provided valuable information in the EMC efforts for this Task Force
- There was a support document, **Ergebnisse der Störimpulsanalyse**, that was supplied in German.
- The request from the Task Force has been made to provide this document translated in English.

REVIEW OF MAIN AUTOMOTIVE EMC TEST REQUIREMENTS RELEVANT TO RTPGE – Xavier Bunlon

- Review of automotive EMC integration methodology
- Provided a list of Automotive EMC Standards
- Provided emission masks that were compiled
- Review of different relevant test methods
- Review of specific requirements for communication data line transceivers

Editor's Report – Marek Hajduczenia

Review of the Draft 0.11

- Reviewed the initial structure of the Draft
- Direction was given on methods of referencing other areas and the need for detailed content

A review of those planning to attend the York Interim Meeting

Attending Count

Yes: 8
No: 11
Maybe: 12

Meeting was adjourned for the day and session, July 17, 2013

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

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