(Unconfirmed)
IEEE P802.3bn EPoC PHY Task Force
September 3-5, 2013
York, England, United Kingdom
Chair: Mark Laubach
Recording Secretary: Duane Remein

Summary:

The P802.3bn EPoC PHY Task Force met for two and one half days in York, England. A total of 19 presentations were reviewed and 14 Technical motions were passed; including 1 baseline proposal. A summary of decisions can be viewed at decisions and baseline proposals. Additionally, a Work Items document was created at the meeting as a Call for Focus for the next meeting in Dallas in November, 2013.

Tuesday, 3 Sep 2013

8:14 AM Mark Laubach (Chair) opened the meeting at 8:14 AM.
Steve Shellhammer was acting secretary temporarily until the Task Force secretary arrived.
The Task Force had its first meeting one year ago in Geneva.
Welcome and Introductions

Motion #1

Motion to approve the minutes from 16-18 July 2013, Geneva, Switzerland meeting:
unconfirmed_minutes_3bn_01a_0713.pdf

Moved: Jorge Salinger
Second: Marek Hajduczenia

Procedural (> 50%)
Passed by Voice without opposition

[Note from Chair: these approved minutes are available on the P802.3bn web site as:
16-18 July 2013 TF meeting minutes (rev 01)(approved 3 Sept 2013)]

Opening comments by the Chair

The Chair reviewed meeting decorum, goals, reflector, web site (private & public), ground rules, and IEEE structure as presented in the Meeting Agenda.

Patent Policy and Call for Patents
Chair asked if anyone was not familiar with the IEEE patent policy, and everyone was familiar with the IEEE patent policy. The Chair asked if anyone was aware of any potentially essential patent claims to bring to the attention of the Chair. No one brought up any potentially essential patent claims.

Additional Opening comments by the Chair
Timeline requires that we complete all the baselines by the November meeting.
Chair updated the proposed agenda moving the FEC presentation to Wednesday.
No comments on the agenda.

Motion #2

Motion to approve the amended Agenda for this meeting.

Moved: Marek Hajduczenia
Second: Jorge Salinger
Procedural (> 50%)
Passed by Voice without opposition

Presentations

All presentations listed in the following format:
Author(s) **Title** **Affiliation**
Notes

Steve Shellhammer **Opening report: TDD sub-Task Force** **Qualcomm**
Summary of TDD ad hoc activities since Geneva.

Steve Shellhammer **Opening report: RF Spectrum ad hoc report** **Qualcomm**
Summary of RF Spectrum ad hoc activities since Geneva.

9:00 AM Steve Shellhammer assumed the Chair while Mark presented

Mark Laubach **Opening report: Combined PHY sub-groups** **Broadcom**
Summary of activities and open items from PHY and PHY Link sub task forces.

9:15 AM Mark Laubach resumed the Chair

Marek Hajduczenia **Clause 101 status update** **ZTE**
Brief overview on status of CL 101.

9:25 AM Steve Shellhammer assumed the Chair while Mark presented

Mark Laubach **PHY Checklist Update** **Broadcom**
Brief review of existing technical decisions and open items remaining for upstream and downstream.

9:50 AM Mark Laubach resumed the Chair

Haleema Mehmood **Cable Channel and Noise Characteristics-** **Huawei, Stanford University**
(Syed Rahman presented) **Simulation and Impact on Bit-loading**
This presentation provided the results of simulations on channel noise and impairments to be expected within the cable plant.

10:40 AM Steve Shellhammer assumed the Chair while Mark presented

Avi Kliger, Mark Laubach (presenter) **Downstream PHY High Level Block Diagram – Starting Point** **Broadcom**

Proposed a block diagram for the downstream PHY.

11:00 AM Mark Laubach resumed the Chair

Duane Remein **EPoC PHY Link** **Huawei**

This presentation reviewed existing decisions on downstream PHY Link frame and proposed an upstream frame and overall PHY Link protocol.

Duane Remein **PHY Discovery** **Huawei**

This presentation proposed a method for allowing new stations to join an EPoC Network (also see PHY Link Draft in private area).

Syed Rahman, Sunfang Lin **Update on Burst Marker detection in EPoC** **Huawei**

Burst marker proposal based on pilot power rather than pilot correlation based detection. Power based detection is significantly better when SNR is higher (~> 10 dB when using 8 resource elements).

12:30 -1:45 PM The task force recessed for Lunch.

Straw Poll #1

I support the power based burst marker detection scheme for both upstream and downstream as described in slides 3, 4, and 6 in rahman_syed_3bn_01_0913.pdf.

Yes: 11
No: 0
Abstain: 9
Too soon: 3

Straw Poll #2

In order to perform PHY RTT estimation and Offset calculation I would prefer to use:

Timestamp method (sl 9): 11
Random delay method (sl 10): 5
Random Window Response: 1
Frame ID and Random delay: 0
(not illustrated)
Other: 1
Abstain: 5
WAAAAY Too early: 1

Straw Poll #3

I prefer the timing offset used to align the CNU to the "PHY Link" frame to be:

16 bits (± 160 us): 2
24 bits (± 40.9 ms): 14
Other: 0
  list:
Abstain: 6
Too Early: 3

Straw Poll #4

I agree we should define a timeout period after the CNU's response to an initial PHY Discovery window after which the CNU should begin the discovery process again.

Accepted by voice without opposition

Straw Poll #5

Map each device's 48 bit MAC address to an N bit EPoC Device ID (DA/SA). Reserve uppermost 8 addresses for special purposes, such as broadcast and 0x00 for CLT address.

Agree N = 9: 0
Agree N = 10: 8
Agree N = other: 1
  list: 12
Disagree use MAC: 12
Abstain: 2

Straw Poll #6

I would prefer the Data Count sub-field in the OPCODE to refer to a range of:

1..32: 4
0..31: 9
Abstain: 8

Straw Poll #7

PHY_Config field should be:
A) Transmitted every frame as part of fixed overhead
B) Transmitted in a PHY Instruction as needed

Option A: 19
Option B: 1
Other: 0
  list:
Abstain: 2

Straw Poll #8

FEC Pointer field should be:
A) Transmitted every frame as part of fixed overhead
B) Transmitted in a PHY Instruction as needed

Option A: 20
Option B: 0
Other: 0
list:
Abstain: 3

Straw Poll #9

The US PHY Link Frame (excluding PHY Discovery Response) requires a minimum preamble (in symbols) of:

0: 15
1: 1
2: 0
3: 0
4: 0
5: 0
6: 0
>6: 0
Abstain: 10

Straw Poll #10

I support the US PHY Link Frame structure as outlined in slides 13 & 14 of remein_3bn_01_0913.pdf.

Yes: 14
No: 1
Abstain: 12

Straw Poll #11

I would prefer the DS PHY Link to include a timestamp field of 16-32 bits.

Yes: 20
No: 0
Abstain: 6

Straw Poll #12

Do you support shellhammer_03bn_03_0913.pdf Slides 5-11, as baseline for the TDD downstream data detector?

Yes: 17
No: 0
Abstain: 2

Steve Shellhammer, Andrea Garavaglia **Data Detector for TDD Downstream** **Qualcomm**

This presentation provided a proposal for downstream data detector for TDD mode. Basically same as Data Detector in EPON plus; timer to carry burst over time of no data and method to ensure transmission of a non-idle character in the even there is no data at the beginning of a DS burst time.

Straw Poll #13

The FDD Upstream frequency band will be 5 MHz to at least 234 MHz.

Agree: 18
Disagree: 1
Abstain: 6

Straw Poll #14

The standard shall support a middle TDD frequency band from 277 MHz to 750 MHz.

Agree: 2
Disagree: 0
Abstain: 22

Straw Poll #15

The frequency band from 277 MHz to 750 MHz may be supported by a standards compliant device.

Agree: 8
Disagree: 0
Abstain: 18

Straw Poll #16

A standard compliant TDD device shall support either the low band (10 MHz - 277 MHz), or the high band (750 MHz - 1800 MHz), or both.

Agree: 9
Disagree: 1
Abstain: 16

5:00 PM The Chair reviewed the day's progress.

5:45 PM The Task Force recessed for the day

Wednesday, 4 September 2013

8:08 AM The Chair called the meeting to order

BZ Shen **Correction on one LDPC code for Active plant** **Broadcom**

Typo found in presentation given in Geneva.

Marek Hajduczenia **FEC Writeup** **ZTE**

Review of proposed textual description of DS FEC write-up.

Rich Prodan, BZ Shen, Mark Laubach **Encoding/Decoding Scheme to Achieve Standard Compliant Mean Time to False Packet Acceptance** **Broadcom**

This presentation proposed adding a 40 bit CRC to the FEC encoding mechanism to ensure that EPoC achieved an acceptably large MTTFPA.

Christian Pietsch, Stefan Brueck, Steve Shellhammer (presenter) **Performance analysis of EPoC FEC for passive coax plants** **Qualcomm**

Provided additional simulation results for FEC code intended for passive plants.

Rich Prodan, BZ Shen **Evaluation of Proposed FEC Codes for EPoC** **Broadcom**

This presentation reviewed the performance and complexity of the 7 proposed FEC Codes. Spectral efficiency, AWGN performance, were examined. The presentation recommended adopting "active plant" code for FDD and "passive plant" codes for TDD.

11:00 AM The TF meeting was recessed while the RF Spectrum ad hoc convened, Steve Shellhammer presiding

RF ad hoc open discussion.

Naoki Agata, Keiji Tanaka **The feasibility study on higher frequency band for EPoC downstream** **KDDI**

This presentation reviewed some applications which may be particular to Japanese operators. These applications drive requirements for higher frequency bands (~2.1-2.6 GHz) use for DS EPoC. The feasibility of using this spectrum range was investigated with positive results indicated but additional research is required.

The ad hoc discussed specified RF operating ranges (54-1212 DS, 10-234 US) vs. equipment implementation which cannot simultaneously meet both full ranges.

12:20 PM The RF ad hoc dismissed for lunch.

2:00 PM The Task Force reconvened

The Editors demonstrated a comment resolution session using comments against D0.10. A comment resolution file (draft_0p01_all_comment_responses_final.pdf) was generated.

[*Note from Chair: the above PDF file is contained in a RAR package file that is accessible by the above hyperlink*.]

Motion #3

Move to accept the comment resolution as recorded in draft_0p01_all_comment_responses_final.pdf.

Moved: Duane Remein
Second: Edwin Mallette

For: 23
Against: 0
Abstain: 2

Technical (>= 75%) Motion Passed

[*Note from Chair: the above PDF file is contained in a RAR package file that is accessible by the above hyperlink*.]

3:15 PM The Chair held a general discussion on project timeline, progress and future work plan (see file workitems_3bn_01a_0913.pdf or latest revision).

5:25 PM The TF recessed for the Day

Thursday, 5 September 2013

8:10 PM The Chair called the meeting to order.

TDD ad hoc Report closing report and motions

Motion #4

Adopt shellhammer_3bn_03_0913.pdf slides 5-11 as the baseline for the TDD downstream data detector.
Moved: Steve Shellhammer
Second: Bill Powell

For: 17
Against: 0
Abstain: 3

Technical (>= 75%) Motion Passed

RF Spectrum ad hoc closing report and motions

Motion #5

The FDD Upstream frequency band shall be from 5 MHz to 234 MHz.
Note: This modifies motion #6 from the July 2013 Plenary.

Moved: Steve Shellhammer
Second: Michel Allard

For: 21
Against: 0
Abstain: 0

Technical (>= 75%) Motion Passed

TDD Closing report and motions

Motion #6

A TDD PMD shall support the low band (5 MHz - 277 MHz) or the high band (750 MHz to 1800 MHz), or both.
Note: This is a refinement of motion #7, motion #21, and motion #22, from the July 2013 Plenary.

Moved: Steve Shellhammer
Second: Jorge Salinger

For: 13
Against: 2
Abstain: 9

Technical (>= 75%) Motion Passed

PHY ad hoc closing report and motions

Motion #7

Move to:
Approved kliger_3bn_01a_0913.pdf (page 2) as the starting point for the high level downstream PHY transmit block diagram.

Moved: Rich Prodan
Second: Sanjay Goswami

For: 26
Against: 0
Abstain: 0

Technical (>= 75%) Motion Passed

Motion #8

Move to:
Adopt the typo-corrected LDPC (5940, 5040) code for active plant EPoC FEC as presented in shen_3bn_01_0913.pdf, page 2.

Moved: BZ Shen
Second: Edwin Mallette

For: 25
Against: 0
Abstain: 0

Technical (>= 75%) Motion Passed

Motion #9

Move to:
Incorporate data encoding/decoding scheme to achieve the MTTFPA objective as presented in prodan_3bn_02a_0913.pdf slides 14, 18, 19, and 20 for the downstream and upstream.

Moved: Rich Prodan
Second: BZ Shen

For: 22
Against: 0
Abstain: 4

Technical (>= 75%) Motion Passed

Motion #10

Move to:
Adopt hajduczenia_3bn_01a_0913.pdf (with changes per motion #9, this meeting) as baseline text for downstream FEC encoding/decoding and incorporate in Clause 101 in the next draft version.

Moved: Marek Hajduczenia
Second: BZ Shen

For: 26
Against: 0
Abstain: 0

Technical (>= 75%) Motion Passed

Motion #11

Move to:
Adopt that FDD mode shall use the three LDPC FEC codes (as adopted in Technical Decision #81, Motion #15 from Geneva 2013 meeting) for Node + N, N ≥ 0.

Moved: Rich Prodan
Second: BZ Shen

For: 28
Against: 0
Abstain: 0

Technical (>= 75%) Motion Passed

Motion #12

TDD mode shall use the four LDPC FEC codes on Slides 5 and 6 of pietsch_3bn_01a_0913.pdf for both downstream and upstream.

Moved: Steve Shellhammer
Second: Saifur Rahman

For: 18
Against: 0
Abstain: 7

Technical (>= 75%) Motion Passed

Motion #13

Move to adopt the power based burst marker detection scheme for both upstream and downstream described in slides 3 and 6 in rahman_syed_3bn_01_0913.pdf.

Moved: Syed Rahman
Second: Michael Peters

For: 17
Against: 0
Abstain: 11

Technical (>= 75%) Motion Passed

Motion #14

Move to adopt the upstream probing scheme with the option for sub-carrier skipping described in slides 4,5,6, and 7 (option-2) in rahman_syed_3bn_01_0313.pdf.

Moved: Syed Rahman
Second: Jorge Salinger

For: 27
Against: 0
Abstain: 4

Technical (>= 75%) Motion Passed

Motion #15

Accept the remein_3bn_03a_0913.pdf as PHY Link starting point for the baseline text.

Moved: Duane Remein
Second: Leo Montreuil

For: 30
Against: 0
Abstain: 2

Technical (>= 75%) Motion Passed

Editors closing report and motions

Motion #16

Authorize the Editors to create Draft 0.2 from Draft 0.1 by incorporating approved baseline material from the July or September 2013 meetings.

Moved: Duane Remein
Second: Bill Powell

For: 27
Against: 0
Abstain: 1

Technical (>= 75%) Motion Passed

10:50 AM Chair's closing summary and continued discussion on future work plan.

Closing

Future Meetings
11/11-15 Dallas
Wk of Jan 20 – Indian wells
Wk of Mar 16 – Beijing China

The Chair took the required future meeting straw polls

Motion# 17

Move to adjourn.

Moved: Jorge Salinger
Second: Marek Hajduczenia
Passed by Voice without opposition

11:23 AM The meeting was adjourned.

Meeting Attendance

The following represents the meeting attendance as initialed in the attendance binder that was passed around the meeting each day. 32 individuals indicated their attendance for this meeting. If an attendee has an affiliation in addition to or different from their Employer for this meeting, it should be so noted.

Lastname	Firstname	Employer	Affiliation (If Different)	Tue	Wed	Thu
Agata	Haoki	KDDI		X	X	X
Allard	Michel	Cogeco Cable		X	X	X
Arunarthi	Venkat	Cortina Systems		X	X	X
Brophy	Tim	Cisco		X	X	
ElBakoury	Hesham	Huawei		X	X	X
Frazier	Howard	Broadcom		X		
Goswami	Sanjay	Broadcom		X	X	X
Hajduczenia	Marek	ZTE Corp		X	X	X
Knittle	Curtis	CableLabs		X	X	X
Laubach	Mark	Broadcom		X	X	X
Law	David	HP			X	X
Li	Dou	Peking University		X	X	X
Lin	Rujian	Shanghai Luster Teraband Photonics		X	X	X
Lin	Wei	Huawei		X	X	X
Mallette	Edwin	Bright House Networks		X	X	X
Mehmood	Haleema	Stanford University	Huawei	X	X	
Montreuil	Leo	Broadcom		X	X	X
Peters	Michael	Sumitomo		X	X	X
Powell	Bill	Alcatel-Lucent		X	X	X
Prodan	Rich	Broadcom		X	X	X
Rahman	Saifur	Comcast		X	X	X
Rahman	Syed	Huawei		X	X	X
Remein	Duane	Huawei		X	X	X
Salinger	Jorge	Comcast		X	X	X
Schmitt	Matt	CableLabs		X	X	X
Shellhammer	Steve	Qualcomm		X	X	X
Shen	BZ	Broadcom		X	X	X
Tian	Yutiang	Beijing Luster Lighttech		X	X	X
Zhang	Li	Huawei		X	X	X
Zhang	Jin	Marvell Semiconductor		X	X	X
Zhao	Yuping	Peking University		X	X	X
Zhou	Xiaoping	Huawei		X	X	X