

Presentations

All presentations are in the following format:

| Title | Presenter | Affiliation |
|----------|-----------|-------------|
| Comments | | |
| FileRef | | |

PCS State Diagrams plus Duane Remein Huawei Technologies
This presentation proposed state diagrams and functional specifications for the upper layers of the PCS (Input/Output SD, Line Code, and Scrambler functions).
remin_3ca_1_0118.pdf

Transmission line-code mapping into LDPC Heaven Gao Huawei Technologies
This presentation summarized potential line codes and their mapping to the adopted downstream LDPC FEC.
gao_3ca_1_0118.pdf

FEC Codeword Format and Alignment Mechanism Glen Kramer Broadcom
This presentation looked at line code mapping (assuming 256B/257B line code) and FEC parity concluding that there is an opportunity to define a FEC Parity Delimiter signal in the first FEC parity block. An ONU FEC Parity alignment state diagram was included.
kramer_3ca_1_0118.pdf

1/23/2018 10:55 AM Break, reconvened 11:16 AM

Data Rate to Line Rate Conversion Glen Kramer Broadcom
This presentation examined the data rate differences between the MAC and the PMD assuming 256B/257B line coding.
kramer_3ca_4_0118.pdf

| Motion #3 | |
|--|---------------------|
| Adopt 256B/257B line coding for downstream | |
| Moved: Marek Hajduczenia | Second: Glen Kramer |
| For: 21 | Against: 0 |
| Abstain: 4 | |
| Technical (≥75%) | Motion Passed |

| Straw Poll #1 | |
|---|--|
| I agree to use remaining bits or padding bits for synchronization | |
| Yes: 10 | |
| No: 1 | |
| Don't care: 12 | |

More efficient LDPC Parity Code Matrix and downstream FEC draft text Mark Laubach Broadcom
This presentation suggested a minor improvement to the adopted DS FEC.
laubach_3ca_1b_0118.pdf

H_c parity code matrix Mark Laubach Broadcom
This file provided the detailed back-up material for laubach_3ca_1b_0118.pdf.
han_3ca_1_0118.txt

LDPC FEC encoder Mark Laubach Broadcom
This file provided detailed text material for laubach_3ca_1b_0118.pdf.
han_3ca_2a_0118.pdf and han_3ca_2a_0118_CMP.pdf

1/23/2018 12:25 AM Lunch break, reconvened 1:32 PM

Upstream FEC Selection Mark Laubach Broadcom
This presentation suggested using the adopted downstream FEC for the upstream.
laubach_3ca_3a_0118.pdf

FEC for Upstream: 8K LDPC Code Jun Shan Wey ZTE Corporation
This presentation suggested an 8K LDPC upstream FEC.
wey_3ca_1a_0118.pdf

Sync and delimiter patterns for 25GEPON Frank Effenberger Huawei Technologies
This presentation examined synchronization and burst delimiter patterns and suggested that: 1) we should use a PN pattern of the same length as the line code, 2) the Sync pattern is a repetition of this PN pattern and 3) the Burst Delimiter is the inverse of this PN pattern.
effenberger_3ca_1_0118.pdf

Burst Delimiter Options Glen Kramer Broadcom
This presentation examined burst synch patterns and burst delimiters and proposed a specific bit pattern for burst delimiter.
kramer_3ca_2_0118.pdf

Upstream Burst Structure Marek Hajduczenia Charter
This presentation investigated lock/loss of lock probabilities for the various line codes proposed and concluded that 64B/66B is not acceptable, 125B/126B code is marginal, and the 256B/257B code is overkill (but safe).
hajduczenia_3ca_1_0118.pdf, hajduczenia_3ca_1_0118.pptx

During the discussion following the above three presentations on burst sync and delimiters it was suggested that we allow the sync pattern and burst delimiter to be programmable by the OLT.

1/23/2018 3:00 PM break, reconvened 3:30 PM

2x25G EPON wavelength plan Dekun Liu Huawei Technologies
This presentation suggested that the TF rescinded the restriction on the use of the 2nd upstream channel in Motion #12 from the Nov 2017 meeting.
liu_3ca_1_0118.pdf

25G upstream wavelength Dekun Liu Huawei Technologies
This presentation suggested that the 1310nm channel in the approved Wavelength plan be moved to 1300 nm.
liu_3ca_2_0118.pdf

Asymmetric 25GEPON and Wavelength Plan Eugene Dai Cox Communications
This presentation suggested keeping the 10G-EPON and use TDM to combine it with the 25G-EPON wavelength in the US direction in the same spectral range.
dai_3ca_1b_0118.pdf

Converged Wavelength Plan for 25GEPON and 50GEPON Eugene Dai Cox Communications
This presentation suggested that the wavelength plan proposed in dai_3ca_1b_0118.pdf could migrate to 2x25, 25+50 or 2x50.
dai_3ca_2a_0118.pdf

IEEE P802.3ca Objectives - Draft Glen Kramer Broadcom
This presentation suggested changes to the Task Force objectives.
kramer_3ca_3a_0118.pdf

1/23/2018 5:57 PM Recessed

1/24/2018 9:00 AM Reconvened

The Chair held Introductions and made some opening statements. The group continued reviewing presentations.

Analysis of Dynamic Range in 100G EPON with SOA as Pre-amplifier Dekun Liu Huawei Technologies
This presentation examined SOA gain control and concluded that use of SOA preamplifiers in NG-EPON may require dynamic control of SOA gain.
liu_3ca_3_0118.pdf

Gain control of SOA preamplifier Daisuke Umeda Sumitomo Electric
This presentation looked at SOA gain and dynamic range. It concluded that we should support SOA gain control mechanisms and that changes in ONT discovery may be needed to support variable SOA gain.
umeda_3ca_1_0118.pdf

Transmitter power and penalty specs John Johnson Broadcom
This presentation examined optical power budget specification methods and suggested using a normative transmitter power and penalty specification be in the form of minimum launch power or OMA minus transmitter and dispersion penalties.
johnson_3ca_1_0118.pdf

LDPC FEC gain downstream Bill Powell Nokia
This proposal compared projected gains of several LDPC FEC (all 18,493 CW size) and proposed to select 1.4 dBo as the downstream FEC gain compared to 10G EPON RS(255,223).
powell_3ca_1a_0118.pdf

25G EPON PR30 downstream power budget Ed Harstead Nokia
This presentation suggested a downstream optical power budget with: 1)a receive sensitivity specification of -25.5 dBm at 1e-2 with an ER of 8 dB, and 2) a transmitter specification of AVPmin = 5 dBm with a minimum ER of 8 dB.
harstead_3ca_1a_0118.pdf

1/24/2018 10:26 AM Break, reconvened 10:48 AM

Sensitivity of 25G APD receiver for 25G-EPON ONU transceiver

Hanhyub Lee

ETRI

This presentation suggested an optical power budget with a receive sensitivity specification of -26.2 dBm.

lee_3ca_1b_0118.pdf

25G/50G dual rate verification

Dekun Liu

Huawei Technologies

This presentation examined dual rate receivers (25G NRZ and 50G PAM4) and concluded that a dual rate clock recovery is technically feasible.

liu_3ca_4_0118.pdf

EPON suitability for Fronthaul

Mark Laubach

Broadcom

This presentation looked at the published delay specifications for various CPRI related standards and concluded that a common requirement of 100 μ s over a transmission distance of 10 km can be assumed. Thus, for NG-EPON ~50 μ s can be assumed for all delays up to the eCPRI interface of which ~6 μ s would be used for FEC (assuming the characteristics of the adopted downstream FEC are used).

laubach_3ca_2a_0118.pdf

1/24/2018 12:07 PM Lunch, reconvened 1:07 PM

The Task Force reviewed received comments and proposed responses against Draft 0.6.

802d3ca_D0_6_proposed.pdf

Motion Madness

Motion #4

Move to adopt the figures, tables, and definitions on slides 3-11 of remain_3ca_1b_0118.pdf and the Scrambler/Descrambler definitions per 49.2.6/49.2.10 (no changes to the draft at this time).

Moved: Duane Remein Second: Glen Kramer

For: 27 Against: 0 Abstain: 1

Technical ($\geq 75\%$) Motion Passed

Upstream Burst Delimiter and Sync Pattern Assignment

Marek Hajduczenia

Charter Communications

This presentation summarized a compromise for Sync Pattern and Burst Delimiter.

hajduczenia_3ca_2a_0118.pdf

Motion #5

Move to adopt slides 3-7 of hajduczenia_3ca_2a_0118 as baseline for Sync Pattern and Start of Burst announcement in 100G-EPON. No changes to the draft at this time.

Moved: Marek Hajduczenia Second: Frank Effenberger

For: 27 Against: 0 Abstain: 1

Technical ($\geq 75\%$) Motion Passed

Data Rate to Line Rate Conversion

Glen Kramer

Broadcom

Reviewed a revision of this presentation previously presented in the meeting.

kramer_3ca_4a_0118.pdf

Motion #6

Accept the rate adjustment mechanism as outlined in the 2nd approach on slides 4-5 of kramer_3ca_4a_0118.pdf (based on gao_3ca_1_0118.pdf, slide 4).

Moved: Glen Kramer Second: Gao Bo

For: 25 Against: 0 Abstain: 5

Technical ($\geq 75\%$) Motion Passed

LDPC FEC gain downstream

Bill Powell

Nokia

Reviewed a revision of this presentation previously presented in the meeting.

powell_3ca_1b_0118.pdf

25G EPON PR30 downstream power budget Ed Harstead

Nokia

Reviewed a revision of this presentation. During the review the presentation was further changed.

harstead_3ca_1b_0118.pdf and harstead_3ca_1c_0118.pdf

Motion #7

The 25G EPON PR30 specifications proposed in harstead_3ca_1b_0118

25G ONU receiver sensitivity: -25.7 dBm at BER= 1e-2 and ER=8 dB

25G OLT transmitter: AVPmin = 4.8 dBm and ER min = 8 dB

shall be adopted.

Moved: Ed Harstead Second: John Johnson

For: 16 Against: 2 Abstain: 12

Technical ($\geq 75\%$) Motion Passed

1/24/2018 3:15 PM

Break, reconvened 3:37 PM

Motion #8

The normative transmitter power and penalty specifications shall be in the form of minimum launch power minus transmitter and dispersion penalties. Informative text should be added to the standard to explain alternate simplified field measurements.

Moved: John Johnson Second: Ed Harstead

For: 22 Against: 0 Abstain: 9

Technical ($\geq 75\%$) Motion Passed

The Task Force reviewed Table 122-10 from 802.3bs D3.5 which illustrates a use of Avg. launch Power minus TDP. In this case there are informative notes about OMA Rx Sensitivity, Tx Power and Stressed Rx Sensitivity.

Motion #9

802.3ca specify the transmitter power and penalty specifications in the following form:

1) specify the minimum launch power as normative

2) specify the maximum TDP as normative

Moved: Dekun Liu Second: Frank Effenberger

For: 18 Against: 0 Abstain: 10

Technical ($\geq 75\%$) Motion Passed

Motion #10

Adopt the draft text and figures in han_3ca_2a_0118.pdf for the downstream FEC, removing figure "x2 – Parity Check Matrix Image".

Moved: Mark Laubach Second: Bill Powell
For: 20 Against: 0 Abstain: 9
Technical (≥ 75%) Motion Passed

Motion #11

The upstream shall use the same LDPC method, parity code matrix, and interleaver as adopted for the downstream.

Moved: Mark Laubach Second: Duane Remein
For: 15 Against: 5 Abstain: 11
Technical (≥ 75%) Motion Passed

The mover requested a roll call vote, the details of the roll call vote are recorded below.

Motion #12

Move the upstream wavelength plan option 1 (US0-A) for the first 25G and new 10G (EQ based) channel to 1300+/-10nm

Moved: Dekun Liu Second: Young Guo
For: 22 Against: 1 Abstain: 5
Technical (≥ 75%) Motion Passed

Motion #13

Adopt 256B/257B line coding for upstream.

Moved: Glen Kramer Second: Duane Remein
For: 22 Against: 0 Abstain: 6
Technical (≥75%) Motion Passed

Motion #14

IEEE P802.3ca Task Force instructs the editor to produce draft version D0.7 from current draft version D0.6 by incorporating changes as recorded in 802d3ca_D06_approved.pdf.

Moved: Marek Hajduczenia Second: Duane Remein
Technical (≥75%) Motion Passed by voice without opposition

1/24/2018 5:22 PM Recessed

1/25/2018 9:00 AM Reconvened

Choice of US1 wavelength

John Johnson

Broadcom

This presentation reviewed past contributions on considerations for selecting a wavelength and proposed a US1 at 1320 ± 4nm.

johnson_3ca_2a_0118.pdf

Total solution

Frank Effenberger

Huawei

This presentation outlined a complete (US and DS) wavelength plan. Channel A is at $1358 \pm 1.5\text{nm DS}$ and $1300 \pm 10\text{nm US}$. Channel B is at $1335 \pm 1.5\text{ DS}$ and $1270 \pm 10\text{nm US}$. The 25/10G ONUs would use the same US for both 25G and 10G. 25G systems and 50G systems coexist on both channel A or B. The 100G system would use both Channel A and B.

effenberger_3ca_2_0118.pdf

Motion #15

Adopt $1320 \pm 2\text{nm}$ as one of the upstream channels.

Moved: John Johnson

Second: Daisuke Umeda

For: 15 Against: 3 Abstain: 10

Technical ($\geq 75\%$) Motion Passed

The Chair requested a Roll Call vote, the details of the roll call vote are recorded below.

Motion #16

Move to table Motion #15

Moved: Dekun Liu

Second: Yong Guo

For: 8 Against: 13 Abstain: 7

Procedural ($> 50\%$) Motion Failed

1/25/2018 10:25 AM Break, reconvened 10:45 AM

There was a short review of kramer_3ca_3b_0118.pdf followed by a discussion of changes to the Task Force objectives.

Straw Poll #2

1. I prefer 802.3ca to support 100Gb/s over two fiber strands
2. I prefer to remove 100Gb/s objective
3. No opinion

Count

| | |
|----|----|
| 1: | 8 |
| 2: | 13 |
| 3: | 7 |

Motion #17

Approve the changes to the P802.3ca objectives as shown on slide 3 of kramer_3ca_3b_0118.pdf.

Moved: Glen Kramer

Second: Alan Brown

For: 30 Against: 0 Abstain: 1

Technical ($\geq 75\%$) Motion Passed

The Chair reviewed the major ticket items and assigned action points as documented in the file tf_tasks_3ca_1_0118.pdf.

Motion #18

Moved to adjourn

Moved: Duane Remein

Second: Dekun Liu

Procedural ($>50\%$) Passed by voice without opposition

1/25/2018 12:24 PM Adjourned

Roll Call Votes

Geneva, CH

Jan 2018, Interium

| Roll Call Votes | | Motion # | |
|--------------------|--------------------------|---------------|---------------|
| Full Name | Affiliation | 11 | 15 |
| Rene Bonk | Nokia / Nokia, Bell Labs | A | Y |
| Alan Brown | Adtran | Y | Y |
| Yuguang Chang | FiberHome | A | A |
| Eugene Dai | Cox Communication | Y | - |
| Claudio Desanti | Google | Y | A |
| Liang Du | Google | Y | A |
| Frank Effenberger | Huawei | Y | Y |
| Bo Gao | Huawei | N | N |
| Dan Geng | ZTE Corp | A | A |
| Yong Guo | ZTE Corp | A | N |
| Marek Hajduczenia | Charter | Y | Y |
| Ed Harstead | Nokia / Nokia, Bell Labs | Y | Y |
| Wanhui (Wilson) He | Accelink | A | A |
| John Johnson | Broadcom LTD. | Y | Y |
| Curtis Knittle | CableLabs | Y | - |
| Glen Kramer | Broadcom LTD. | Y | Y |
| Mark Laubach | Broadcom LTD. | Y | Y |
| Hanhjub Lee | ETRI | A | Y |
| David Li | Ligent | - | A |
| Dekun Liu | Huawei | N | N |
| Kevin Noll | Tibit Communication | A | Y |
| Bill Powell | Nokia | Y | Y |
| Duane Remein | Huawei | Y | A |
| Hal Roberts | Calix | A | A |
| Ken-Ichi Suzuki | NTT | Y | Y |
| Steve Swanson | Corning | A | - |
| Daisuke Umeda | Sumitomo | Y | Y |
| Edward Walter | AT&T | A | Y |
| Jun Shan Wey | ZTE Corp | N | Y |
| Liquan Yaun | ZTE Corp | N | A |
| Shaul Shulman | Intel | N | A |
| Abbott John | Corning | A | - |
| | Yea | 15 | 15 |
| | Nea | 5 | 3 |
| | Abstain | 11 | 10 |
| | Motion | Passed | Passed |

Attendees

| Full Name | Affiliation | 23-Jan | 24-Jan | 25-Jan |
|--------------------|--------------------------|--------|--------|--------|
| John Abbott | Corning | | X | |
| Rene Bonk | Nokia / Nokia, Bell Labs | X | X | X |
| Alan Brown | Adtran | X | X | X |
| Yuguang Chang | FiberHome | X | X | X |
| Eugene Dai | Cox Communication | | X | |
| Claudio Desanti | Google | X | X | X |
| Liang Du | Google | | X | X |
| Frank Effenberger | Huawei | X | X | X |
| Bo Gao | Huawei | X | X | X |
| Dan Geng | ZTE Corp | X | X | X |
| Jonathan Goldberg | IEEE | X | | |
| Yong Guo | ZTE Corp | X | X | X |
| Marek Hajduczenia | Charter | X | X | X |
| Ed Harstead | Nokia / Nokia, Bell Labs | X | X | X |
| Wanhui (Wilson) He | Accelink | X | X | X |
| Kenneth Jackson | Sumitomo | | X | |
| John Johnson | Broadcom LTD. | X | X | X |
| Curtis Knittle | CableLabs | X | X | X |
| Glen Kramer | Broadcom LTD. | X | X | X |
| Mark Laubach | Broadcom LTD. | X | X | X |
| Hanhyub Lee | ETRI | X | X | X |
| David Li | Ligent | | | X |
| Dekun Liu | Huawei | X | X | X |
| Kevin Noll | Tibit Communication | X | X | X |
| Bill Powell | Nokia | X | X | X |
| Duane Remein | Huawei | X | X | X |
| Hal Roberts | Calix | X | X | X |
| Shulman Shaul | Intel | X | X | X |
| Ken-Ichi Suzuki | NTT | X | X | X |
| Steve Swanson | Corning | | X | |
| Daisuke Umeda | Sumitomo | X | X | X |
| Alexander Umnov | Corning | | X | X |
| Edward Walter | AT&T | X | X | X |
| Jun Shan Wey | ZTE Corp | X | X | X |
| Yu Xu | Huawei | | X | |
| Liquan Yaun | ZTE Corp | | X | X |