

Unapproved Minutes

# IEEE P802.3ck 100 Gb/s, 200 Gb/s and 400 Gb/s Electrical Interfaces Task Force

Telephonic series for October-November 2020 Meeting:

October 13, October 14, ~~October 20, October 21, October 27, October 28,~~

~~November 10, November 11 and November 18, 2020~~

Online Meeting

Prepared by Beth Kochuparambil and Kent Lusted

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# IEEE P802.3ck 100 Gb/s Electrical Lane Task Force – October 13, 2020

*Prepared by Kent Lusted*

## Proposed Agenda:

- Approval of the Agenda
- Approve collective July-Aug Series Minutes (June 30-August 12)
- IEEE Participation Requirements reminder (<https://standards.ieee.org/ipr/index.html> )
- IEEE Copyright reminder (<http://www.ieee802.org/devdocs.shtml> )
- IEEE Patent Policy reminder (<http://www.ieee802.org/3/patent.html> )
- Ground Rules and Operations
- Chief Editor's Report
- Big Ticket Comment Resolution: 120F/163/163A: RX/TX Test Fixture
  - Keep TP0a or not
    - Benartsi\_3ck\_01\_1020
    - Ghiasi\_3ck\_01\_1020
    - brown\_3ck\_adhoc\_01a\_091620 (slide 6-9)
  - TP0a IL and informative/normative nature
    - Wu\_3ck\_04\_1020
  - Match RX Test Fixture to TX Test Fixture
    - brown\_3ck\_adhoc\_01a\_091620 (slide 12)
  - AC Common Mode at TP0v
    - Wu\_3ck\_01\_1020
- Big Ticket Comment Resolution: Eye Width (EW) and Eye Symmetric Mask Width (ESMW)
  - Dawe\_3ck\_01\_1020
  - Healey\_3ck\_01\_1020
- Big Ticket Comment Resolution: 162/163/120F/120G: Even-Odd Jitter
  - Calvin\_3ck\_01\_1020
  - Ran\_3ck\_01\_1020
- Big Ticket Comment Resolution: ERL
  - Adding ERL of Test Fixture and MTF
    - Kocsis\_3ck\_02\_1020
  - dERL & ERL Values
    - dERL proposals are in comments
    - Wu\_3ck\_02\_1020
    - Wu\_3ck\_03\_1020
  - N and Tfx parameters
    - Kocsis\_3ck\_01\_1020
- Big Ticket Comment Resolution: Common Mode Noise, RLCC, RLCD
  - Proposals in comments

Presentations posted at: [https://www.ieee802.org/3/ck/public/20\\_10/index.html](https://www.ieee802.org/3/ck/public/20_10/index.html)

Meeting began at ~7:05 a.m. Pacific by Beth Kochuparambil, IEEE 802.3ck Task Force Chair.  
(Note: all times are Pacific time zone unless otherwise indicated)

Beth welcomed attendees.

Meeting began with the agenda presentation:

[https://www.ieee802.org/3/ck/public/20\\_10/agenda\\_3ck\\_01\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/agenda_3ck_01_1020.pdf)

The chair reminded participants to indicate full names and employer/affiliation correctly for the meeting minutes. Reminded participants to mute lines when not speaking and reviewed the steps to unmute.

Presented the proposed agenda and noted that the agenda would cover the meetings on 13 and 14 October.

**Motion #1:**

Move to approve the agenda.

Moved by: Steve Sekel

Second by: Mike Dudek

Passed by unanimous consent

Chair thanked Kent Lusted for the minutes of the last meeting (July-August 2020). Chair noted that one participant's attendance (Joshua Kim) was not captured correctly in the posted minutes. Chair asked if there were any other corrections or modifications to be noted for the posted July-August series minutes. No one responded.

**Motion #2:**

Move to approve the July-August telephonic interim meeting minutes with the corrections noted.

Moved by: Jim Weaver

Second by: Joshua Kim

Passed by unanimous consent

Chair reminded participants of the IEEE Participation Requirements and showed the slide with the Participation requirements. (see: <http://www.ieee802.org/devdocs.shtml>) Reminded participants of the IEEE copyright policy. (See: <https://standards.ieee.org/ipr/index.html>) Chair reminded participants of the IEEE patent policy. (See: <http://www.ieee802.org/3/patent.html>) She asked if anyone was unfamiliar with the IEEE patent policy. No one responded. Chair made the call for patents. No one responded.

Chair provided an overview of the Task Force status. Chair noted that editors are using a “bucket” for comments deemed non-controversial. The bucket proposed responses would be adopted with motions later in the meeting series. The Task Force was working toward technical completeness and removing TBDs.

Reviewed the Draft 1.3 Telephonic interim meeting series. Chair noted the IEEE 802.3 Working Group November plenary series runs 9-19 November. The Task Force leadership would be looking for a path to pull in the start of the Working Group ballot.

Chair reviewed the ground rules.

Chair called for members of the press. No one responded.

Chair noted that offline consensus building and discussion was necessary to progress the draft forward.

Chair reviewed various operations aspects of the online meeting series. Late comments would be held until 26 October or later.

It was noted that comments currently collected in the “bucket” are to be reviewed by participants and if any of them are to be taken out of the bucket, participants are to notify leadership by 25 October, 2020. The proposed “bucket1” responses are posted at [https://www.ieee802.org/3/ck/comments/draft1p3/8023ck\\_D1p3\\_comments\\_proposed\\_bucket1.pdf](https://www.ieee802.org/3/ck/comments/draft1p3/8023ck_D1p3_comments_proposed_bucket1.pdf)

Reviewed the common (among several task forces) comment resolution process.

### **Chief Editor’s Report:**

Matt Brown

See: [https://www.ieee802.org/3/ck/public/20\\_10/editorsrep\\_3ck\\_01\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/editorsrep_3ck_01_1020.pdf)

- Matt thanked the editorial team and advisors for their work on the draft. Matt also thanked Piers Dawe for his review of the draft prior to publication.
- Received 280 comments from 19 reviewers.

- Matt noted that some comment proposed responses have an editor's note to draw attention to comments that need to close in order to resolve an incomplete part of the specification.

Chair noted that the first big ticket item was TX/RX test fixtures. There was a request to move the AC common mode at TP0v topic to be part of the Common Mode Big ticket agenda item. There was consensus to make the change.

#### **Presentation #1:**

"TP0v Recap and Objectives ", Liav Ben-Artzi

See: [https://www.ieee802.org/3/ck/public/20\\_10/benartsi\\_3ck\\_01\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/benartsi_3ck_01_1020.pdf)

- No questions were asked

#### **Presentation #2:**

"The Logic to Keep TP0a ", Ali Ghiasi

See: [https://www.ieee802.org/3/ck/public/20\\_10/ghiasi\\_3ck\\_01a\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/ghiasi_3ck_01a_1020.pdf)

- Updated version '01a' with a typo fix on slide 5.
- Discussed the picture on slide 8. TP0a was the pad of the fixture.
- Discussed possible calibration methods for the fixtures on slide 6.

#### **Presentation #3:**

"What to do with TP0a and TP5a ", Matt Brown

See:

[https://www.ieee802.org/3/ck/public/adhoc/sept16\\_20/brown\\_3ck\\_adhoc\\_01a\\_091620.pdf](https://www.ieee802.org/3/ck/public/adhoc/sept16_20/brown_3ck_adhoc_01a_091620.pdf)

- There were no questions

#### **Big Ticket Items Consensus Discussion Slides - Beth Kochuparambil**

See: [https://www.ieee802.org/3/ck/public/20\\_10/kochuparambil\\_3ck\\_02\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/kochuparambil_3ck_02_1020.pdf)

Showed slides 2-5 focused on test fixtures.

Discussed and compared TP0a vs. TP0v.

Chair noted that Straw Poll #1 was trying to determine if the TF was keeping TP0a or not.

**Straw Poll #1:**

I support keeping TP0v methodology as the normative specification (choose one)

Y: 27, N: 4, No Opinion: 11

**Straw Poll #2:**

Assuming we keep TP0v methodology, I support removing the example test fixture in 163.9.2.2

Y: 10, N: 17, No Opinion: 13

Break at ~8:55 a.m. Resumed at ~9:00 a.m.

**Presentation #4:**

“IL and ERL Specs at TP0a “, Mau-Lin Wu

See: [https://www.ieee802.org/3/ck/public/20\\_10/wu\\_3ck\\_04\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/wu_3ck_04_1020.pdf)

- Related to comment #204
- There was a request to share the test fixture S-parameter file.

**Big Ticket Items Consensus Discussion Slides - Beth Kochuparambil**

See: [https://www.ieee802.org/3/ck/public/20\\_10/kochuparambil\\_3ck\\_02\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/kochuparambil_3ck_02_1020.pdf)

Showed slides 6-7 focused on TP0 to TP0a IL.

**Straw poll #3:**

I support the test fixture TP0 to TP0a insertion loss being

A: a single value

B: a range

C: no opinion

Results: A: 18, B: 6, C: 8

**Straw poll #4:**

For the example test fixture, I support TP0 to TP0a insertion loss of: (Chicago rules)

A: 0 dB

B: between 0 and 2 dB

C: 2 dB

D: 2.5 dB

E: 3 dB

F: 3.5 dB

G: 4 dB

H: greater than 4 dB

I: no opinion

Results: A: 6, B: 4, C: 7, D: 13, E: 16, F: 10, G: 9, H: 1, I: 9

### **Big Ticket Items Consensus Discussion Slides - Beth Kochuparambil**

See: [https://www.ieee802.org/3/ck/public/20\\_10/kochuparambil\\_3ck\\_02\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/kochuparambil_3ck_02_1020.pdf)

Showed slides 8-9 focused on matching TX and RX.

### **Straw Poll #5:**

I support aligning RX to TP0v test fixture characteristics and methodology:

Y: 22, N: 1, No Opinon: 6

Meeting ended at ~10:05 a.m.

# IEEE P802.3ck 100 Gb/s Electrical Lane Task Force – October 14, 2020

*Prepared by Kent Lusted*

Continue approved agenda from 13 October

Presentations posted at: [https://www.ieee802.org/3/ck/public/20\\_10/index.html](https://www.ieee802.org/3/ck/public/20_10/index.html)

Meeting began at ~7:05 a.m. Pacific by Beth Kochuparambil, IEEE 802.3ck Task Force Chair.  
(Note: all times are Pacific time zone unless otherwise indicated)

Beth welcomed attendees.

Meeting began with the agenda presentation:

[https://www.ieee802.org/3/ck/public/20\\_10/agenda\\_3ck\\_02\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/agenda_3ck_02_1020.pdf)

Chair noted that the order of the big ticket items would change: even-odd jitter then eye width.

The chair reminded participants to indicate full names and employer/affiliation correctly for the meeting minutes. Reminded participants to mute lines when not speaking and reviewed the steps to unmute.

Chair reminded participants of the IEEE Participation Requirements and showed the slide with the Participation requirements. (see: <http://www.ieee802.org/devdocs.shtml>) Reminded participants of the IEEE copyright policy. (See: <https://standards.ieee.org/ipr/index.html>)

Chair reminded participants of the IEEE patent policy. (See: <http://www.ieee802.org/3/patent.html>) She asked if anyone was unfamiliar with the IEEE patent policy. No one responded. Chair made the call for patents. No one responded.

Comment resolution began.

There was a request to swap the order of the two presentations on even-odd jitter to be Adee Ran first then John Calvin. There was no objection. The order was swapped.

## **Presentation #5:**

“Even-Odd Jitter “, Adee Ran

See: [https://www.ieee802.org/3/ck/public/20\\_10/ran\\_3ck\\_01\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/ran_3ck_01_1020.pdf)

- No questions were asked.

### **Presentation #6:**

“Even-Odd Jitter (EOJ) Test Method “, John Calvin

See: [https://www.ieee802.org/3/ck/public/20\\_10/calvin\\_3ck\\_01\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/calvin_3ck_01_1020.pdf)

- Discussed the impact of the CR loop bandwidth on available instruments.
- A real-time scope was tried and the results are not comparable at this time due to limitations in the setup.

### **Big Ticket Items Consensus Discussion Slides - Beth Kochuparambil**

See: [https://www.ieee802.org/3/ck/public/20\\_10/kochuparambil\\_3ck\\_02a\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/kochuparambil_3ck_02a_1020.pdf)

Showed slide 10-12 focused on EOJ susceptibility and jitter.

Discussed and compared the various solutions to even-odd jitter.

### **Straw Poll #6**

To address EOJ measurement error susceptibility, I would support (Chicago rules):

- A: Changing the measurement method to use PRBS9Q instead of PRBS13Q
- B: Allowing a shorter odd-length pattern with all transitions (not a specific one)
- C: Specifying or allowing a lower CRU bandwidth
- D: Use the average of the 12 transition measurements rather than the worst case
- E: None of the above
- F: Don't care
- G: Need more information

Results: A: 6, B: 4, C: 13, D: 11, E: 1, F: 10, G: 7

### **Straw Poll #7**

For the EOJ limit, I would support (Chicago rules):

- A: Changing the limit to 0.035 UI
- B: Changing the limit to 0.025 UI
- C: No change to the limit (0.019 UI)
- D: Don't care
- E: Need more information

Results: A: 4, B: 14, C: 6, D: 10, E: 9

It was noted during voting that the straw poll #7 displayed had a typo on the option “Changing the limit to 0.0325 UI” that should be “Changing the limit to 0.035 UI”. Chair instructed participants to use the value 0.035 UI for this option.

**Straw Poll #8:**

For the EOJ limit, I would support (choose one):

- A: Changing the limit to 0.035 UI
- B: Changing the limit to 0.025 UI
- C: No change to the limit (0.019 UI)
- D: Don't care
- E: Need more information

A: 2, B: 8, C: 4, D: 9, E: 7

**Presentation #7:**

“Eye Specification in PAM4 C2M “, Piers Dawe

See: [https://www.ieee802.org/3/ck/public/20\\_10/dawe\\_3ck\\_01a\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/dawe_3ck_01a_1020.pdf)

- On slide 2, it was noted that “120G” should be “120E”. Author to send updated version ‘01a’ with correction.
- Discussed the 10 sided mask on slide 7.

**Presentation #8:**

“Ensuring Horizontal Margin in Annex 120G “, Adam Healey

See: [https://www.ieee802.org/3/ck/public/20\\_10/healey\\_3ck\\_01a\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/healey_3ck_01a_1020.pdf)

- Updated version ‘01a’ with VEC sensitivity to jitter. No objection
- On page 4, the x-axis is estimated ESMW taken from the COM tool.
- Reviewed the plots of VEC sensitivity to jitter.

Break at ~9:00 a.m. Resumed at ~9:05 a.m.

**Big Ticket Items Consensus Discussion Slides - Beth Kochuparambil**

See: [https://www.ieee802.org/3/ck/public/20\\_10/kochuparambil\\_3ck\\_02a\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/kochuparambil_3ck_02a_1020.pdf)

Showed slide 13-14 focused on EW and ESMW.

Discussed and compared the various directions for EW/ESMW solutions.

**Straw Poll #9:**

I support the EW/ESMW direction of (Chicago rules):

- A: Keep ESMW and eye width

B: Replace EH, ESMW, and eye width with an eye mask as proposed in daw\_3ck\_01\_1020

C: Remove ESMW and eye width and redefine EH and VEC as proposed in healey\_3ck\_01a\_1020

D: Remove ESMW and eye width and leave EH and VEC as is

Results: A: 9, B: 10, C: 24, D: 6

### **Presentation #9:**

“MTF ERL “, Sam Kocsis

See: [https://www.ieee802.org/3/ck/public/20\\_10/kocsis\\_3ck\\_02a\\_1020.pdf](https://www.ieee802.org/3/ck/public/20_10/kocsis_3ck_02a_1020.pdf)

- Updated version 02a with additional supporters.
- On slide 7, sample ID represents a variety of different fixture vendors, connectors, and lanes.
- Discussed the impact of the ERL value on the plots shown on slide 9.

Chair asked participants to build consensus offline to make progress forward on the draft.

Chair noted that comments currently collected in the “bucket” are to be reviewed by participants and if any of them are to be taken out of the bucket, participants are to notify leadership by 25 October, 2020. The proposed “bucket1” responses are posted at [https://www.ieee802.org/3/ck/comments/draft1p3/8023ck\\_D1p3\\_comments\\_proposed\\_bucket1.pdf](https://www.ieee802.org/3/ck/comments/draft1p3/8023ck_D1p3_comments_proposed_bucket1.pdf) There would be a updated proposed response related to comment #38 in bucket1 due to editorial error.

The “closed as a result” bucket for the 13-14 October meeting would be posted to the website soon. Comments against this bucket would be due Sunday, date 10/18.

Next week would be focused on comment resolution.

Meeting ended at ~10:05 a.m.

## Attendees