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Physical Interfaces & Carriers North America TC Chapter

Meeting Summary and Minutes

NA Standards Fall Meetings 2022

Wednesday, November 9, 10:00 – 12:00 Noon Pacific

SEMI Global Headquarters, Milpitas, California, and via Official Virtual TC Chapter Meeting (OVTCCM)

TC Chapter Announcements

Next TC Chapter Meeting

NA Standards Spring Meetings 2023

Wednesday, April 5, 10:00 – 12:00 Noon Pacific

SEMI Global Headquarters, Milpitas, California/USA

Table 1 Meeting Attendees

Italics indicate virtual participants

Co-Chairs: Matt Fuller (Entegris), Melvin Jung (Intel)
SEMI Staff: Laura Nguyen

Company	Last	First	Company	Last	First
Acteon NEXT Corporation	*Komatsu*	*Shoji*	*Intel*	*Shim*	*Hyun*
Brooks Automation	*Babbs*	*Daniel*	Lam Research	Gould	Richard
Brooks Automation	*Carlson*	*Robert*	*Nordson SONOSCAN*	*Martell*	*Steve*
Entegris	*Fuller*	*Matthew*	*Nova*	*Shichtman*	*Alex*
KLA	*Johanson*	*Eric*	*LK Semiconductor Consulting Services*	*Kwakman*	*Laurens*
Hine Automation	*Gomez*	*Luis*	Tokyo Electron Limited	Mashiro	Supika
Intel	*Jung*	*Melvin*	Tokyo Electron Limited	Machida	Ryo
Intel	*Patil*	*Deepak*	UA Associates	Hartsough	Larry
Intel	*Radloff*	*Stefan*	SEMI	Nguyen	Laura

Table 2 Leadership Changes

WG/TF/SC/TC Name	Previous Leader	New Leader
Electron Microscopy Workflow Task Force	Laurens Kwakman (Self)	Laurens Kwakman (Self) Kyoichiro Asayama (JEOL) *[New]*

Table 3 Committee Structure Changes

None

Table 4 Ballot Results

None

Table 5 Activities Approved by the GCS between meetings of the TC Chapter

None

Table 6 Authorized Activities

Listing of all revised or new SNARF(s) approved by the Originating TC Chapter.

None

#1 SNARFs and TFOFs are available for review on the SEMI Web site at:

http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF

Table 7 Authorized Ballots

None

Table 8 SNARF(s) Granted a One-Year Extension

None

Table 9 SNARF(s) Abolished

None

Table 10 Standard(s) to receive Inactive Status

None

Table 11 New Action Items

Item #	Assigned to	Details
2022Nov#01	Larry Hartsough	Put together a slide on how to add other things to consider in the future (such as, how to resolve different types of conflict; ex: SEMI E131 and E15.1 conflict) Ongoing.

Table 12 Previous Meeting Action Items

Item #	Assigned to	Details
2017April#04	Laura Nguyen	To identify which documents under the global task force, belong to which committees. Ongoing. Unsure how this should be done.
2022Mar#01	Larry Hartsough	Larry to check Five-Year docs for "must", "shall", and other PM related items. Ongoing.
2022Mar#02	Laura Nguyen	Laura to check internally to share top formatting examples to TF leaders. Ongoing.
2022Mar#03	Stefan Radloff	Prepare another SNARF for LoadPort, possibly by West. Ongoing.
2022July#01	Larry Hartsough	Provide tutorial for Inactive Standards. Ongoing.

1 Welcome, Reminders, and Introductions

Matt Fuller (Entegris) called the meeting to order at 10:07. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

Attachment: SEMI Standards Required Meetings Elements (File name: Required Element Nov 2020 Rev1)

2 Review of Previous Meeting Minutes

The TC Chapter reviewed the minutes of the previous meeting.

Motion:	To accept the previous meeting minutes as written.
By / 2ⁿᵈ:	By: Shoji Komatsu / Acteon NEXT LLC Second: Laurens Kwakman / LK Semiconductors Consulting Services
Discussion:	None.
Vote:	8-0 in favor. Motion passed.

Attachment: [2022West] PIC NA TC Chapter Meeting Minutes FINAL

3 Liaison Reports

3.1 *Physical Interfaces & Carriers Japan TC Chapter*

Laura Nguyen (SEMI HQ) reported for the Physical Interfaces & Carriers Japan TC Chapter. Of note:

<u>Meeting Information</u>

- Last meeting
    - Friday, September 2,2022 at the SEMI Standards Japan Fall Meetings (Official Virtual TC Chapter Meeting/ SEMI Japan Office (Hybrid)
- Next Meeting:
    - Thursday, December 15, 2022, in conjunction with SEMICON Japan 2022 (Tokyo Big Sight, Tokyo/ OVTCCM (Hybrid)

<u>Organization Chart</u> (*See attachment)*

<u>Ballot Results</u>

Doc#	Document Title	TC Chapter Action
6898	Revision to SEMI E181, - SPECIFICATION FOR PANEL FOUP FOR PANEL LEVEL PACKAGING	**Passed,** as balloted
6899	Revision to SEMI E181.1, - Specification for Panel FOUP for 510 to 515 mm Panel Size and 12 Slots	**Passed,** as balloted
6900	Revision to SEMI E181.2, - Specification for Panel FOUP for 510 to 515 mm Panel Size and 6 Slots	**Passed,** as balloted
6901	Revision to SEMI E181.3, - Specification for Panel FOUP for 600 to 600 mm Panel Size and 12 Slots	**Passed,** as balloted
6902	Revision to SEMI E181.4, - Specification for Panel FOUP for 600 to 600 mm Panel Size and 6 Slots	**Passed,** as balloted

<u>Task Force Highlights</u>

- Panel Level Packaging(PLP) Panel FOUP TF

【FOUP】

- Waiting for the publication of line-item Ballot 6750, 6751 and 6752

- The FOUP standard required many modifications due to the indication of KLA-Eric.

- (#6898,6899,6900,6901,6902) submitted to Cycle4 2022 with no objections and no comments. Passed as ballot at the JA PIC TC Meeting.
    - SEMI E181 - 0321 —Specification for Panel FOUP for Panel Level Packaging
    - SEMI E181.1 - 0321 —Specification for Panel FOUP for 510 to 515 mm Panel Size and 12 Slots
    - SEMI E181.2 - 0321 —Specification for Panel FOUP for 510 to 515 mm Panel Size and 6 Slots
    - SEMI E181.3 - 0321 —Specification for Panel FOUP for 600 to 600 mm Panel Size and 12 Slots
    - SEMI E181.4 - 0321 —Specification for Panel FOUP for 600 to 600 mm Panel Size and 6 Slots

【Loadport】

- The Panel FOUP Loadport standard, including two subordinate standards, was published in June,2021.
    - SEMI E182 -0621 — Specification for Panel FOUP Loadport for Panel Level Packaging

o SEMI E182.1-0621 — Specification for Panel FOUP Loadport for 510 to 515 mm Panel Size

o SEMIE182.2-0621 — Specification for Panel FOUP Loadport for 600 to 600 mm Panel Size

<u>Five-Year Review</u>

Designation#	Standard Title	Action By	Assigned to
SEMI E84-1109 (Reapproved 1217)	Specification for Enhanced Carrier Handoff Parallel I/O Interface	2023/12/29	**Global PIC Maintenance TF**

<u>Staff Contact:</u> Mami Nakajo (mnakajo@semi.org)

Attachment: JA_PIC_Liaison_20220920_v1.1

3.2 *SEMI Staff Report*

Laura Nguyen (SEMI) gave the SEMI Staff Report. Of note:

<u>SEMI Global 2022 & 2023 Calendar of Events</u>

- [2022] SEMICON Europa (Nov 15-17; Munich, Germany), SEMICON Japan (December 15-17; Tokyo)

- [2023] SEMICON Korea (Feb 1-3; Seoul, Korea), SEMICON China (Mar 22-24; Shanghai, China)

<u>Upcoming NA Meetings</u>

- NA Standards Spring Meetings

  o April 3-6, 2023, at SEMI HQ, Milpitas, California/USA

<u>Critical Dates for SEMI Standards Ballots</u>

- Cycle 8-2022: Ballot Submission Due: Oct 4/Voting Period: Oct 18 – Nov 17

- Cycle 9-2022: Ballot Submission Due: Nov 15/Voting Period: Nov 29 – Dec 29

2023 Cycle dates can be found here: http://www.semi.org/en/Standards/Ballots

<u>Standards Publications Report</u>

Cycle	New	Revised	Reapproved	Withdrawn
July 2022	0	3	0	0
August 2022	0	5	0	2
September 2022	2	3	6	1
October 2022	3	8	0	0

Total in portfolio – 1,069 (includes 320 Inactive Standards)

<u>New Standards</u>

Cycle	Designation	Title	Committee	Region
September 2022	SEMI F120	Test Method for the Electrochemical Critical Pitting Voltage Testing of Stainless Steel Used in Corrosive Gas Systems	Gases	NA
September 2022	SEMI E120.2	Specification for Protocol Buffers for Common Equipment Model (CEM)	Information & Control	NA
October 2022	SEMI E125.2	Specification for Protocol Buffers for Equipment Self Description (EqSD)	Information & Control	NA
October 2022	SEMI E134.2	Specification for Protocol Buffers of Data Collection Management	Information & Control	NA
October 2022	SEMI E142.4	Specification for SECS II Protocol for Substrate Mapping Using Item Transfer	Information & Control	NA

Publications Backlog

Processing Queue: 37   YTD Published: 93
- 5/5/2022 A&R cycle: 8   - New Standards: 11
- 6/30/2022 A&R cycle: 11   - Revisions: 43
- 8/18/2022 A&R cycle: 9   - Reapprovals: 36
- 10/12/2022 A&R cycle: 9   - Withdrawals: 3

Contributing Factors
- Increased A&R cycles have resulted in a constant rate of documents for processing.
- Ballots are becoming more complex and require more time to process.
- As the Regulations, Procedure Manual, and Style Manual are updated, there is the potential for delays in processing documents (e.g., ensuring documents comply).

NEW! SEMI Corporate PPT Template

- SEMI launched a new corporate PPT template earlier this year
  o Standards is among the first to use the new template ⭐
- We encourage TFs to begin transitioning over to the new template
  o Please reach out to your Staff contact for assistance
  o Templates will be sent out by Staff and can be found on the SEMI Web site www.semi.org/standards (under Tools for Developing Standards)

Five-Year Review

Designation #	Standard Title	Action By	Original TF assigned to:
SEMI E117s-0117	Specification for Reticle Load Port	January 2022	Global PIC Maintenance Task Force (NA)
SEMI E19-0417	Specification for Standard Mechanical Interface (SMIF)	April 2022	Global PIC Maintenance Task Force (NA)
SEMI E19.4-0417	Specification for 200 mm Standard Mechanical Interface (SMIF)	April 2022	Global PIC Maintenance Task Force (NA)
SEMI E112-1017	Specification for a 150 mm Multiple Reticle SMIF Pod (MRSP150) Used to Transport and Store Multiple 6 Inch Reticles	October 2022	Global PIC Maintenance Task Force (NA)
SEMI E111-1017	Specification for a 150 mm Reticle SMIF Pod (RSP150) Used to Transport and Store a 6 Inch Reticle	October 2022	Global PIC Maintenance Task Force (NA)

Attachment: Staff Report Nov 2022 v6_PIC

4 Ballot Review

Listing of documents authorized by the Originating TC Chapter for Letter Ballot.

None

5 Subcommittee and Task Force Reports

5.1 Electron Microscopy Workflow Task Force

Laurens Kwakman (LN Semiconductor Consulting) reported for this Task Force. Of note *{See attachment for images}*:

Agenda

- Activity update since July 13, 2022, PIC meeting
  o Actions following withdrawal of Thermo Fisher Scientific as active participant in EM Workflow TF
  o Proposal for continued TF activities in 2023

- o   Revision of time planning
- Motion to approve: Organizational changes
- SEMI Standards Excellence Award

Activity Update

- Following TFS announcements in the PIC TC meeting of July 13, 2022:
  - o   With the suspension of active TFS engagements in the EM Workflow Taskforce, all further activities have temporarily been discontinued to review this unexpected and new situation and its impact on the continuity of our Taskforce.
  - o   After the summer holiday period, Hitachi, JEOL, Peter Wagner and Laurens Kwakman have reviewed the new situation without the key contributor that Thermo Fisher Scientific has been over the past years.
  - o   It was concluded that continuing the Standardization activities remains in the interest of the industry as a whole and that customers (microscopy workflow end-users) as well as microscopy suppliers will benefit from it.
- different scenarios for the new organization of the Taskforce activities were discussed, and agreement was reached on the following:
  - o   continuation of the Taskforce activity under the North American PIC TC organization.
  - o   Peter Wagner and Laurens Kwakman will continue to contribute as before as independent consultants, kindly supported by JEOL and Hitachi.
  - o   Peter Wagner will remain responsible for the editing of the Standards documents for LCC and LC shipping containers.
  - o   Laurens Kwakman will remain the acting Taskforce leader and become technical advisor to the microscopy suppliers.
  - o   Kyoichiro Asayama from JEOL kindly volunteers to become co-leader of the NA Taskforce – to be approved by the PIC TC.
  - o   Tsuyoshi Onishi and Kyoichiro Asayama from Hitachi and JEOL will continue to lead and drive the Japanese liaison TF activities with their local partners.
- Preliminary, revised time planning for LCC and LC shipping box SNARFs:
  - o   Below revised planning still needs to be discussed and approved by the Taskforce members
  - o   TF activities have been on hold since April 2022 and will restart in January 2023
  - o   TF activities have taken longer due to different design changes (LC marking related) and time needed to *experimentally* verify and validate design choices for LCC.
- Motion:

Motion:	Appoint Kyoichiro Asayama from JEOL as co-taskforce leader next to current TF leader Laurens Kwakman
By / 2nd:	By: Shoji Komatsu / Acteon NEXT LLC
	Second: Laurens Kwakman / LK Semiconductors Consulting Services
Discussion:	None.
Vote:	8-0 in favor. Motion passed.

Next Steps

- All Taskforce members have been informed about the new organization and the proposed restart of the TF activities:
  - o   all active TF members from across the entire value chain have reacted positively and confirmed their continued active support to our Taskforce mission!
- a next TF meeting will be organized early December 2022 to restart the activities that, unfortunately, have been on hold in the past 7 months…

Recognition & Awards

- The relevance of our Taskforce activities was also confirmed by the SEMI International Standards Excellence Award 2022 that honored the leadership team Richard Young (TFS), Tsuyoshi Onishi (Hitachi), Kyoichiro Asayama (JEOL), Laurens Kwakman and Peter Wagner (consultants)

Attachment: SEMI EM TF - PIC Update november 9 2022 final

5.2 Global PIC Maintenance Task Force

Larry Hartsough (UA Associates) reported for this Task Force. Of note:

TF Status
- JA Leader: Shoji Komatsu – Acteon NEXT
- NA Leader: Larry Hartsough – UA Associates
- Current NA activity on 5-year review
  - E63 (BOLTS-M): Line Item Ballot (Doc 6918) passed procedure review
  - E72 (Equipment Footprint, Hgt &Wgt): SNARF for Major Revision Ballot & TFOF formed at NA Spring Meetings 2022.
- Current JA activity on 5-year review
  - E92 (Bolts/Light): Doc. 6897, passed, awaiting Ratification Ballot
  - E84 (Carrier Handoff Parallel I/O Interface): Reapproval Ballot will be held at JA-PIC in September
- Standards for Next 5-Year Review
  - SEMI E19   Specification for Standard Mechanical Interface (SMIF) [1991]
  - SEMI E19.1   Specification for 100 mm (4 in.) Port for Standard Mechanical Interface (SMIF) [1991]
  - SEMI E19.2   Specification for 125 mm (5 in.) Port for Standard Mechanical Interface (SMIF) [1991]
  - SEMI E19.3   Specification for 150 mm (6 in.) Port for Standard Mechanical Interface (SMIF) [1991]
  - SEMI E19.4   Specification for 200 mm Standard Mechanical Interface (SMIF) [1992]
  - SEMI E111   Specification for a 150 mm Reticle SMIF Pod (RSP150) Used to Transport and Store a 6 Inch Reticles [2001]
  - SEMI E112   Specification for a 150 mm Multiple Reticle SMIF Pod (MRSP150) Used to Transport and Store Multiple 6 Inch Reticles [2001]
  - SEMI E117   Specification for Reticle Load Port [2002]

[date originally published] Proposal: Let all go Inactive?

Attachment: PIC SMTF Report Nov 2022

5.3 Packaging Tape Frame Handling Task Force

Stefan Radloff (Intel) reported for this Task Force. Of note: *{See attachment for images}*

- TF meeting ~monthly starting early 2022 – we are making slow progress…
- Goal: standardize similar carriers that are currently on the market
- Scope:
  - FFF (Film Frame FOUP) – 10mm pitch, 13 capacity FOUP for film frames (ring frames, frame carriers)
  - FFF load port / BOLTS interface
  - updates / clarification to G74
- Initial ballot H1'23

Attachment: SEMI Film-Frame Handling TF Standardization - 11_22 update

5.4 SEMI E72 Revision Task Force

Supika Mashiro (TEL) reported for this Task Force. Of note:

<u>TF Members *{See Attachment}*</u>

<u>Previous Status</u>

- At the first TF meeting held on 7/12 in conjunction with SEMICON WEST 2022 Standard meetings, the TF agreed to start the activity with conducting a survey to understand current status of;
    - E72 conformance/non-conformance by equipment types, and
    - E72 adoption/exceptions by Fabs.
- TF leader took an action item to come up with the Survey strawman.

<u>Survey Results *{See Attachment for table of respondents}*</u>

- Conducted between 9/27-10/10

- 31 responses

- Date created: Saturday, September 10, 2022

- Completed responses: 31

<u>To obtain more response to survey</u>

- Observation: The survey results don't seem to indicate pressing need for revising current E72 specs/guidance

- To decide actions to get more responses to the survey from IDMs and other important players
    - Maybe some improvement on the survey questionnaire/ sequence of each question?
        - The survey was structured to prevent some responder to complete the Survey. Need improvements by reordering questionnaire
    - Maybe dedicated survey format per responders' business types
        - To solicit more response from IDMs, maybe we should ask equipment supplier to ask their customer to respond the survey
        - To tap into adjacent SEMI Technology Communities for soliciting responses especially IDMs
        - To improve introductory part of the Survey to clarify the objective (including financial aspect)
        - Readability improvement for the introduction (Reduction of word count, bigger font
    - I think the survey can be divided into sections ...
        - Must have responses
        - Must have source of response(above)
        - Nice to have

Fall meeting TF: Supika to coordinate with Stefan and Alpay

Attachment: E72Revision TF Report_20221109NA-Fall

6 Old Business

None

7 New Business

7.1 SEMI E131 (For IMM manufacturers) and for E15.1 (300mm Tool load port) conflict

- Work offline with Alex Shichtman (Nova) offline.

8 Action Item Review

8.1 New Action Items are noted in Table 11. Previous action items are noted in Table 12 in 'red' and for recent updates in 'blue'. There is no further business.

9 Next Meeting and Adjournment

9.1 The next meeting is tentatively scheduled for the week of April 3-6, in conjunction with SEMI Standards NA Spring Meetings 2023. Schedule details TBD. Please check www.semi.org/standards for updates.

Tentative Schedule:

Tuesday, April 4

- (May meet the week before) TBD? Packaging Tape Frame Handling TF
- (May meet the week before) TBD, EM Workflow TF
- 16:30-17:30, SEMI E72 Revision TF

Wednesday, April 5

- 09:00-10:00, Global PIC Maintenance TF
- 10:00-12:00 Noon, PIC NA TC Chapter Meeting

Adjournment: 11:41.

Respectfully submitted by:

Laura Nguyen

Sr. Coordinator, International Standards

SEMI Global Headquarters

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Minutes tentatively approved by:

Matthew Fuller (Entegris), Co-chair	<Date approved>
Melvin Jung (Intel), Co-chair	<Date approved>

Minutes officially approved by: **PIC NA OVTCCM on XXX.**

Table 13 Index of Available Attachments[#1]

Title	*Title*
Required Element Nov 2020 Rev1	SEMI EM TF - PIC Update november 9 2022 final
[2022West] PIC NA TC Chapter Meeting Minutes draft	PIC SMTF Report Nov 2022
JA_PIC_Liaison_20220920_v1.1	SEMI Film-Frame Handling TF Standardization - 11_22 update
Staff Report Nov 2022 v6_PIC	E72Revision TF Report_20221109NA-Fall