



# Physical Interfaces & Carriers North America TC Chapter

## Meeting Summary and Minutes

SEMICON West 2017 Standards Meetings

Wednesday, July 12, 10:30 – 12:00

Marriott Marquis Hotel, San Francisco, California

### TC Chapter Announcements

*Next TC Chapter Meeting*

NA Standards Fall 2017 Meetings

Wednesday, November 8, 10:00 – 12:00 Noon

SEMI Headquarters, Milpitas, California

### Table 1 Meeting Attendees

*Italics indicate virtual participants*

**Co-Chairs:** Matthew Fuller (Entegris), Melvin Jung (Intel)

**SEMI Staff:** Laura Nguyen

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
Daewon SPIC	Lie	Jonathan	Self	Yamamoto	Makoto
Daewon SPIC	Whitlock	Matthew	Shin-Etsu Polymer	Shida	Hiroyuki
Daifuku	Yamagata	Kenji	SUMCO	Nakai	Tetsuya
Entegris	Fuller	Matthew	TDK	Kanashiro	Kiyoshi
Hitachi High-Technologies	Ikota	Masami	Thermo Fisher Scientific	Kirby	Paul
<i>Intel</i>	<i>Deeb</i>	<i>Chris</i>	Thermo Fisher Scientific	Morrison	Troy
Intel	Jung	Melvin	UA Associates	Hartsough	Larry
<i>Intel</i>	<i>Tripp</i>	<i>Marie</i>			
Intel	Quinn	Tom			
JEOL	McIlwrath	Kevin	SEMI	Amano	James
Murata Machinery	Tominaga	Tadamasa	SEMI	Nguyen	Laura
<i>Self</i>	<i>Wagner</i>	<i>Peter</i>	SEMI Japan	Yanagisawa	Chie

### Table 2 Leadership Changes

<i>WG/TF/SC/TC Name</i>	<i>Previous Leader</i>	<i>New Leader</i>
Electron Microscopy Workflow Task Force	New Task Force	Troy Morrison - Thermo Fisher Scientific

### Table 3 Committee Structure Changes

<i>Previous WG/TF/SC Name</i>	<i>New WG/TF/SC Name or Status Change</i>
None	Electron Microscopy Workflow Task Force (new)
None	NA 450 ATDP Task Force ( <b>Disbanded, NA TC Chapter recommend Japan ATDP TF do the same</b> )



**Table 4 Ballot Results**

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
SEMI E154 SEMI E158 SEMI E159	SEMI E154-0814, Mechanical Interface Specification for 450 mm Load Port SEMI E158-0314, Mechanical Specification for Fab Wafer Carrier Used to Transport and Store 450 mm Wafers (450 FOUP) and Kinematic Coupling SEMI E159-0314, Mechanical Specification for Multi Application Carrier (MAC) Used to Transport and Ship 450 mm Wafers  (Add "SEMI AUX033 – 450mm PIC Interoperability Report" to Related Information Section R2-1)	<b>Passed</b> , to be submitted to GCS for approval

#1 **Passed** ballots and line items will be submitted to the ISC Audit & Review Subcommittee for procedural review.

#2 **Failed** ballots and line items were returned to the originating task forces for re-work and re-balloting or abandoning.

**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.

<i>#</i>	<i>Type</i>	<i>SC/TF/WG</i>	<i>Details</i>
-	TFOF	TF	Electron Microscopy Workflow TF ( <b>new</b> )

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

<http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARE>

**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**

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
2017July#01	Laura Nguyen	Send list of Five-Year review to Larry Hartsough and Shoji Komatsu.
2017July#02	Laura Nguyen	Send Chie Thermo Fisher presentation slides.

**Table 12 Previous Meeting Action Items**

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
2017April#01	Melvin Jung	To contact Shoji Komatsu to present a proposal for the editorial changes to add AUX number to Docs E154, E158, and E1509. <b>Completed. CLOSED.</b>
2017April#02	Laura Nguyen	To submit Shoji Komatsu access to docs for E154, E158, E159 to propose editorial changes for AUX 450mm. <b>Completed. CLOSED.</b>
2017April#03	Kenji Yamagata	To communicate with Japan ATDP Task Force for opinion on NA ATDP TF to sun-set and whether they want to sun-set/disband or keep as inactive. <b>Completed. CLOSED.</b>
2017April#04	Laura Nguyen	To identify which documents under the global task forces belong to which committees. <b>Ongoing.</b>
2017April#05	Laura Nguyen	To include Supika on the drafting of the TEM Grid survey before distribution. <b>Completed. CLOSED.</b>

## 1 Welcome, Reminders, and Introductions

Matt Fuller (Entegris) called the meeting to order at 10:30. 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

## 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 / 2<sup>nd</sup>:** Larry Hartsough (UA Associates) / Kenji Yamagata (Daifuku)

**Discussion:** None.

**Vote:** 14-0 in favor. Motion passed.

**Attachment:** [2017Spring] PIC Minutes FINAL

## 3 Liaison Reports

### 3.1 Physical Interfaces and Carriers Japan TC Chapter

Kenji Yamagata (Daifuku) reported for the PIC Japan TC Chapter. Of note:

- Leadership
  - Committee Co-chairs
    - Tsuyoshi Nagashima (Miraial)
    - Kenji Yamagata (DAIFUKU)
    - Noriyoshi Toyoda (Hirata Corporation)
  - Technical Architect – Shoji Komatsu (Acteon NEXT)
- Current Structure of Japan TC Chapter *{See attachment for Org Chart}*
- Meeting Information
  - Last meeting: Japan Spring 2017 Meetings, Wednesday, April 19, 2017 13:30-17:00, @SEMI Japan office, Tokyo
  - Next meeting: Japan Summer 2017 Meetings, Wednesday, July 26, 2017, 14:00-17:00, @SEMI Japan office, Tokyo



• Document Review Summary at Japan Spring 2017 Meetings

Cycle 1 -2017		
Doc#	Description	Japan Chapter Action
6130	Reapproval of SEMI E84-1109, "SPECIFICATION FOR ENHANCED CARRIER HANDOFF PARALLEL I/O INTERFACE" Passed A&R in May 2017 and waiting for the proof.	Passed as balloted

- 5974: New Auxiliary Information: "450mm PIC INTEROPERABILITY"
  - The Japan TC Chapter authorized the publication of this document at the TC Chapter meeting held on December 14, 2016 in conjunction with SEMICON Japan 2016 and the publication of this document was subsequently approved by the GCS on January 17, 2017. However, it was found that the safety check and the IP check for the document were not completed along with the authorization for publication at that TC Chapter meeting. Therefore, these checks were completed at the next TC Chapter meeting held on April 19, 2017
  - Passed A&R in May 2017
  - Published as AUX033-0617 in June 2017
- Task Force Updates
  - Fiducial Mark Interoperability TF
    - Last TF meeting was held on November 18, 2015
  - Disbandment of this TF
    - TF leaders decided to propose disbanding this TF to each technical committee
    - If this proposal is agreed by all Japan TC Chapters of Assembly & Packaging, I&C, PIC, Silicon Wafers and Traceability, then the TF will be discharged.
      - The Silicon Wafers agreed on March 9, Assembly & Packaging agreed on March 13, PI&C agreed on April 19 and the I&C agreed on April 21.
      - To be proposed at the next Japan TC Chapter meeting of Traceability.
  - Backend alignment issues with introducing fiducial mark wafer is left.
    - Would be discussed in Assembly & Packaging Japan TC Chapter after its disbandment.
- Global PIC Standards Maintenance Task Force (JA Side)
  - #6130, Reapproval of SEMI E84-1109, "SPECIFICATION FOR ENHANCED CARRIER HANDOFF PARALLEL I/O INTERFACE"
    - SNARF was approved at the PIC Japan TC Chapter meeting on December 14, 2016
    - Ballot was submitted for Cycle 1-2017
      - Rejects and comments to be reviewed at the TF meeting during NA Standards Spring 2017 Meetings
      - Ballot results were reviewed and passed as balloted at the PIC Japan TC Chapter meeting on April 19, 2017.
      - Passed A&R in May 2017 and waiting for the proof.
  - The information of AUX033-0617 (#5974) should be added to "Referenced Standards and Documents" section of SEMI E154, SEMI E158 and SEMI E159 respectively. Since International 450 mm Physical Interfaces & Carriers TF is discharged, this proposal will be made by the Global PIC Standards Maintenance Task Force.



- International 450 mm Physical Interfaces & Carriers Task Force (JA Side)
  - #5974: New Auxiliary Information: “450mm PIC INTEROPERABILITY”
    - The Japan TC Chapter authorized the publication of this document at the TC Chapter meeting held on December 14, 2016 in conjunction with SEMICON Japan 2016 and the publication of this document was subsequently approved by the GCS on January 17, 2017. The safety check and the IP check for the document were completed at the next TC Chapter meeting held on April 19, 2017
    - Published as AUX033-0617 in June 2017
  - Approved the discharge of International 450 mm PIC TF under PI&C Japan TC Chapter at the TC Chapter meeting held on April 19, 2017.
- Other Topic
  - Proposal of New Standards, Specification for Lamella Carriers Used in Transmission Electron Microscopes
    - According to the decision at the EU TC Chapter meeting in October during SEMICON Europa 2016, the meeting to introduce proposal was held on December 13 at SEMI Japan Office in conjunction with SEMICON Japan 2016
      - Back ground of this standardization
      - Presentation on “Enabling HVM TEM metrology support - standards for TEM lamella carriers”
      - Proposed drafts of SNARF and TFOF
    - The Japan TC Chapter agreed to support for conducting a survey regarding standardization of TEM and potential further standardization of TEM grid carrier.
      - SEMI HQ conducted this survey in June 2017.
      - The results to be reviewed and discussed at the NA TC Chapter meeting at SEMICON West 2017.
- Staff Contact: Chie Yanagisawa at SEMI Japan (cyanagisawa@semi.org)

**Attachment:** 170703\_JA-PIC\_for-SEMICONWest

### 3.2 SEMI Staff Report

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

- SEMI Global 2017 Calendar of Events
  - SEMICON West (July 11-13, 2017, San Francisco, California)
  - SEMICON Taiwan (September 13-15, 2017; Taipei, Taiwan)
  - PV Taiwan (October 12-14, 2017; Taipei, Taiwan)
  - SEMICON Europa (November 14-17, 2017; Munich, Germany)
  - SEMICON Japan (December 13-15, 2017; Tokyo, Japan)
- Upcoming North America Standards Meetings
  - NA Standards Fall 2017 Meetings (November 6-9 [tentative], SEMI HQ in Milpitas, California)
  - NA Standards Spring 2018 Meetings (April 2-5, 2018 [tentative], SEMI HQ in Milpitas, California)
  - SEMICON West 2018 (July 9-12, 2017, San Francisco, California)



• Letter Ballot Critical Dates for 2017

○ Fall 2017 adjudication

- Cycle 6: ballot submission due: Jul 21/Voting Period: Aug 1 – Aug 31
- Cycle 7: ballot submission due: Aug 18/Voting Period: Sep 1 – Oct 2

Critical Dates 2017; <http://www.semi.org/en/Standards/Ballots>

• Standards Publications Report

<i>Cycle</i>	<i>New</i>	<i>Revised</i>	<i>Reapproved</i>	<i>Withdrawn</i>
March 2017	0	16	11	0
April 2017	0	6	0	0
May 2017	0	4	6	0
June 2017	2	4	0	0

Total in portfolio – 974 (includes 191 Inactive Standards)

• GTC Charter & Scope Review

○ Problem Statement

- Majority of GTCs have defined charter but many don't have distinct Scope
- It is stipulated in the Regulations that each GTC ought to have a distinct charter and scope. (See Regulations ¶5.7.3.2, §6.2)
  - As charter is often very generic (e.g., The XXXGTC discusses and creates consensus-based specifications and guides that promote mutual understanding and improved communication between users and suppliers of XXXX), it may not be useful to decide if the TF is within the scope of GTC or judge if a technical area proposal for installation of new GTC is really new.

○ Status as of today... {See attachment for chart}

- SEMI Website publishes charter of GTC
  - <http://downloads.semi.org/web/wstdsbal.nsf/StdCharters>
- Only a couple of GTCs clearly define scope while most of them define its Standards' scopes or at least include scope description in its charter.

• PIC GTC

• Current Charter

- To explore, evaluate, and formulate consensus-based standards and supporting documents that through voluntary compliance will enhance the manufacturing capability of the semiconductor industry.
- Its **scope** is limited to interfaces between and functions of mechanical and electrical equipment sub-systems; and to material movement integration, including substrate support and containment structures.

NOTE: The Physical Interfaces & Carriers Committee was previously known as the Physical Interfaces Committee.

• Current Scope

- Defined as part of Charter

• Requirements/Process Reminders for TC Chapter Meetings

- Standards Document Development Project Period



- Project period shall not exceed 3 years (Regs 8.3.2)
  - SNARF approval to TC Chapter approval
- If document development activity is found to be continuing, but cannot be completed within the project period, TC Chapter may grant one-year extension at a time, as many times as necessary.
- The TC Chapter should review the expiration dates for all applicable SNARFs at each TC Chapter meeting. (PM Note 10)
- SNARF Review Period
  - A submitted SNARF for a new, or for a major revision to an existing, Standard or Safety Guideline is made available to all members of a TC Chapter's parent global technical committee for two weeks for their review and comment. (Regs 8.2.1)
    - If the SNARF is submitted at a TC Chapter meeting, the committee can review and approve, but the SNARF will need to be distributed for two weeks and then approved via GCS.
- SNARF & TFOF Form: *{See attachment for forms}*
- Procedures for Correcting Nonconforming Titles of Published Standards Document (PM Appendix 4)
  - Some Standards qualify for a special procedure where a line item change can be used to correct the titles. Otherwise, the corrective action will likely require a major revision.
  - Use of PIP form is allowed to correct title if all of the following conditions are met:
    - Standards having only one Subtype
    - Changes either Specifications to Specification or Test Methods to Test Method
    - No concomitant text change is required
    - Approved by at least one co-chair of the TC Chapter
    - Example:
    - SEMI F69-1213, Test Methods for Transport and Shock Testing of Gas Delivery Systems
- Nonconforming Titles
  - SEMI E152-0214, Mechanical Specification of EUV Pod for 150 mm EUVL Reticles
  - SEMI E154-0814, Mechanical Interface Specification for 450 mm Load Port
    - Originated in NA, last reviewed in Japan
  - SEMI E158-0314, Mechanical Specification for Fab Wafer Carrier Used to Transport and Store 450 mm Wafers (450 FOUF) and Kinematic Coupling
  - SEMI E159-0314, Mechanical Specification for Multi Application Carrier (MAC) Used to Transport and Ship 450 mm Wafers
- Five-Year Review
  - SEMI E73-0301 (Reapproved 0413), Specification for Vacuum Pump Interfaces - Dry Pumps
  - SEMI E74-0301 (Reapproved 0413), Specification for Vacuum Pump Interfaces - Turbomolecular Pumps
  - SEMI E85-1108 (Reapproved 0513), Specification for Physical AMHS Stocker to Interbay Transport System Interoperability
- SNARF 3 Year Status, TC Chapter may grant a one-year extension *{None}*

**Attachment:** [2017West] Staff Report PIC

#### 4 Ballot Review

NOTE 1: TC Chapter adjudication on ballots reviewed is detailed in the Audits & Review (A&R) Subcommittee Forms for procedural review. The A&R forms are available as attachments to these minutes. The attachment number for each balloted document is provided under each ballot review section below.

None

#### 5 Subcommittee and Task Force Reports

5.1 *Global PIC Maintenance Task Force – Did not meet*

5.2 *NA 450 mm Shipping Box Task Force – Meets Internationally*

5.3 *International Reticle SMIF Pod and Load Port Interoperability Task Force*

Committee Structure Changes from Spring 2017 Meetings

- Disbandment of global TF endorsed by NA TC Chapter. Additional endorsement from EU still required.

5.4 *International 450 mm Physical Interfaces & Carriers (IPIC) Task Force*

Committee Structure Changes from Spring 2017 Meetings

- Disbandment of global TF endorsed by NA TC Chapter. Additional endorsement from EU and JP still required.
- Japan approved the discharge of International 450 mm PIC TF under PI&C Japan TC Chapter at the TC Chapter meeting held on April 19, 2017.

5.5 *450 mm Automated Test Die Prep Task Force (NA 450 ATDP TF)*

This task force is currently inactive. Action Item from Spring Meetings, 2017April#03, Kenji Yamagata was to communicate with Japan ATDP Task Force for opinion on whether they want to sun-set/disband or keep as inactive. Kenji responded to Laura Nguyen by email with the below stating they agree with NA's proposal to sunset/disband this task force. A motion was made.

*Here is the comment by JA TF:*

*JA 450ATDP\_TF members have just started thinking about sunset of JA TF*

*since they had done all documentation for the approved SNARF.*

*They currently have no plan to develop new documents related with 450 mm*

*back-end process, then **they agree on the proposal for NA TF sunset.***

**Motion:** To sunset NA 450 ATDP Task Force.  
**By / 2<sup>nd</sup>:** Kenji Yamagata (Daifuku) / Makoto Yamamoto (Self)  
**Discussion:** None.  
**Vote:** 11-0 in favor. Motion passed.



## 6 Old Business

### 6.1 Motion for Editorial Change

Laura Nguyen (SEMI) addressed the committee on this topic. Shoji Komatsu presented a proposal for the editorial changes to add AUX number to SEMI E154, E158, and E159 during Spring 2017 meetings. In order to do this, the 450mm PIC Interoperability Report AUX document was to be published before this change could be done. This document was published in the Cycle 6 publishing cycle as AUX033. Please see attachment for procedural review.

**Attachment:** Editorial Changes to E154, E158, E158\_Procedural Review

## 7 New Business

### 7.1 TEM Grid Survey Presentation

Troy Morrison (Thermo Fisher Scientific) addressed the committee on this topic. Of note:

- Rationale: TEM metrology and analysis, from LAB to FAB
  - Semiconductor Industry metrology needs: TEM demand explodes to meet 3D transistor and multiple patterning challenges
  - Faster TEM data and more TEM data: TEM transition from Lab to Fab
  - → TEM microscopy needs to be fast, automated and easy to use
  - TEM microscopy requires a workflow with different tools to:
    - Prepare thin TEM lamellas from full wafers
    - Extract TEM lamellas from wafer, return wafers in manufacturing line
    - Measure TEM lamellas in TEM microscope
  - TEM lamellas are mounted on TEM “grids” and transported on these grids between the different tools: 300 mm FIB/SEM tool, TEM microscope and if needed, plasma cleaner, storage units,...
- Today’s state-of-the-art in TEM metrology
  - Lamella preparation and extraction from full wafers is automated
  - Data acquisition (TEM imaging) and TEM metrology is automated
  - But TEM grid transport between tools is manual, using tweezers
    - Requires operator interventions, and has a non-zero failure rate...
    - Is slow and not really compatible with FAB operation...
  - A fully automated workflow requires automatic TEM grid handling
    - Like wafer handling, but unlike wafers, grids have different form-factors
- Why is standardization of TEM grids important?
  - Today the industry uses “3 mm grids” that have different form factors and do not respect a ‘standard’ for critical dimensions.
  - There are several TEM grid suppliers (Ted Pella, Omniprobe, Agar, ...)
  - There are several TEM microscope suppliers (JEOL, Hitachi, FEI, ...)
  - Our customers need to be able to buy FIB/SEM and TEM systems from different suppliers (mix and match, best-in-class)
  - → compatibility between tools needs to be guaranteed
  - → a TEM grid should be compatible with all FIB/SEM/TEM systems



- How to standardize TEM grids?
  - A standard for diameter and thickness: to allow robotics for grid handling
    - Edge grippers (end effectors) of handling robots
    - Receptors of grids in TEM systems
  - A standard for the grid form factor: to ensure that all kind of receptors are compatible
    - A “cassette” for grid transport and grid storage
    - Mechanical positioning and alignment of grids in cassettes, or in TEM systems, plasma cleaners,...
  - A standard for grid material options: to control mechanical strength (deformation) and TEM performance (e.g. EDX spurious peaks)
  - A SEMI Standards task force in which IC manufacturers, TEM equipment and TEM grid suppliers define new standards together, enabling future developments of more automated TEM workflow solutions that are open rather than proprietary and industry-wide compatible/acceptable!
- Scope of TEM grid survey
- TEM grid survey: the SEMI Standards Questionnaire
  - To find answers about how relevant TEM grid standardization is for the Semiconductor industry, direct stakeholders were invited to complete a simple questionnaire.
  - The Survey was prepared by Thermo Fisher Scientific and launched through the SEMI Standards organization.
  - The Survey and questionnaire was launched on June 1, 2017 and feedback was collected for one month
  - The questionnaire was sent to various stakeholders:
    - IC manufacturers
    - SEMI Standard Program Members: PIC, Silicon Wafer, 3DS-IC
- Customer feedback survey results
- Executive Summary
  - A good response was obtained with all major IC manufacturers responding to the survey (n = 64)
  - 90% of current TEM sample handling is done manually and 75% of respondents would like to have it automated.
  - > 80% of respondents are in favor of having standard grids for:
    - Further automation (80%), TEM workflow efficiency (75%)
    - Compatibility between tools used in workflow (70%)
  - < 20% of respondents see drawbacks related to costs/compatibility
  - *> 80% of respondents are in favor of a SEMI standardization effort and 60% of respondents are willing to actively contribute to this effort*

Please see attachment for survey data.

- Profile of respondents (64)
  - IC manufacturers, R&D centers, Equipment suppliers, adjacent industry (hard disks, solar, bio)
    - All major IC manufacturers responded to the survey!
  - Mix of (senior) managers in various fields and experts in the field of (TEM) Analytics

- *Fair mix of relevant Disciplines and Industry players*
- How do respondents handle their TEM samples?
  - Current sample transport between tools
  - The preference for sample transport automation
  - >90% of current sample handling is done manually
  - 75% of respondents would like to have it automated
- How do respondents prepare their TEM samples?
  - The kind of TEM Grids currently used
  - The preference for a standardized TEM grid
  - Predominant use of 3mm mesh and 3mm half-moon grids
  - Most respondents (>80%) welcome a standardized grid
- The interest of respondents in TEM carrier standardization
  - Respondents see following standardization benefits and concerns
  - Multiple benefits (>70%) outweigh the limited concern (30%) of potential extra consumable costs
- The interest of respondents in a SEMI standard
  - Respondents support of the idea of a SEMI standardized TEM grid
  - Respondents willingness to actively contribute to establishing standard
  - More than 80% support TEM grid standardization effort
  - More than 60% willing to actively help
- Conclusion
  - A fair response was obtained with all major IC manufacturers responding to the survey (n = 64)
  - 90% of current sample handling is done manually and 75% of respondents would like to have it automated.
  - > 80% of respondents are in favor of having standard grids for:
    - Further automation (80%), TEM workflow efficiency (75%)
    - Compatibility between tools used in workflow (70%)
    - < 30% of respondents see drawbacks related to costs/compatibility
    - Weigh cost benefit of additional standards
    - i.e. Keep standardized grid costs < 1% value of a grid with lamella
    - *> 80% of respondents are in favor of a SEMI standardization effort and 60% of respondents are willing to actively contribute to this effort*
- Proposed Next Steps and Timeline
  - Recommend initiation of a new task force for lab standards with initial focus on a 3mm TEM grid
    - TFOF has already been prepared and is ready for review
      - PIC July 12
    - SNARF has already been prepared for submission to selected TC
  - Tentative Time schedule:



- TFOF approval July 2017
- SNARF submission July 2017, Approval August 2017
- 1<sup>st</sup> 3mm Grid Std TF mtg September 2017
- Face to face TF mtg at SEMI NA November 2017
- Creation of a first TEM Grid standard document (draft v.1): Dec 2017
- Ballot authorization via GCS Jan 2018
- Ballot cycle 2 for adjudication at NA spring mtg April 2018

TFOF = Task Force Organization Form, SNARF = Standards New Activity Report Form

TF = Task Force, TC = Technical Committee

- Discussion

Concern for SNARF submission – too soon.

(Matt F.) The SNARF identifies the need for a document; I do not think it necessary defines the details of the document. This is an aggressive timeline as you noted, but the goal here today is to approve the TFOF and then we could conditionally approve the SNARF based on the fact that it still needs to be sent out for two-week member review and GCS.

(Larry H.) It seems to me, that it may be wise to have a task force meeting to discuss the scope before submitting a SNARF.

(Matt F.) Another comment, like Larry said, most of the people in this room may not know much about TEM and SEM and grids, and Troy did note in his scope that there are many players in this ecosystem and around this space...

(Troy M.) Matt raises a good point. The original scope of this started at the grids. So in the survey, we asked, "Would you like standards elsewhere?" That way we will be able to identify the adjacencies in the space that would be logical next steps for the task force to work on.

(Matt F.) It is great that end users have interest in this because they are the ones that help to drive consensus.

(Yamamoto-san) Who in Japan responded to the survey so that we may contact and follow-up?

(Chris D.) Are the auxiliary equipment suppliers part of the organizational task force participant list?

(Troy M.) On the TFOF we have a draft list of who we are targeting to be on the task force. We will get to that document next. We want to include all the key players in this space.

**Attachment:** TEM grid survey results\_11JulyReview rev1

**Motion:** To approve TFOF as shown in today's meeting. (See attachment.)

**By / 2<sup>nd</sup>:** Troy Morrison (Thermo Fisher Scientific) / Tom Quinn (Intel)

**Discussion:** (Troy M.) Any questions before moving on?

(Matt F.) Are the EM companies? Are they involved in other standards other than semiconductor?

(Troy M.) Our intent is not get into that space, just interoperability between pieces of equipment.

(Troy M.) Any questions or concerns about the scope before moving on?

(Kevin) What happens if you get these vendors together and they possibly don't agree? Who makes these decisions?

(Troy M.) From my perspective, the end users/customer will get the final vote.

**Vote:** 7-0 in favor. Motion passed.

**Attachment:** TEM grid survey results\_11JulyReview rev1



## 8 Next Meeting and Adjournment

The next meeting is scheduled for Wednesday, November 8, at the SEMI Standards North America Fall 2017 Meetings located at SEMI Headquarters in Milpitas, California.

See <http://www.semi.org/standards-events> for the current list of events.

Tentative Schedule:

Tuesday, November 7  
TBD Electron Microscopy Workflow TF

Wednesday, November 8  
09:30–10:00 Global PIC Maintenance TF  
10:00-12:00 PIC (C)

Adjournment: 12:05.

Respectfully submitted by:

Laura Nguyen  
International Standards Coordinator  
SEMI Headquarters  
Phone: 1.408.943.7019  
Email: [lnguyen@semi.org](mailto:lnguyen@semi.org)

Minutes tentatively approved by:

Matthew Fuller (Entegris), Co-chair	October 17, 2017
Melvin Jung (Intel), Co-chair	<Date approved>

**Table 13 Index of Available Attachments<sup>#1</sup>**

<i>Title</i>	<i>Title</i>
SEMI Standards Required Meeting Elements	Editorial Changes to E154, E158, E158_Procedural Review
[2017Spring] PIC Minutes FINAL	TEM grid survey results_11JulyReview rev1
170703_JA-PIC_for-SEMICONWest	TFOF EMTF v6
[2017West] Staff Report PIC	

<sup>#1</sup> Due to file size and delivery issues, attachments must be downloaded separately. A .zip file containing all attachments for these minutes is available at [www.semi.org](http://www.semi.org). For additional information or to obtain individual attachments, please contact Laura Nguyen at the contact information above.