# Metrics NA TC Chapter

# Meeting Summary and Minutes

SEMICON West

Wednesday, July 12, 2023

3:30–5:30 PM (Pacific Time)

## TC Chapter Announcements

*Next TC Chapter Meeting*

Thursday, November 9, 2023

1:30–5:30 PM (Pacific Time)

### Table 1 Meeting Attendees

*Italics* indicate virtual participants

**Cochairs:** David Bouldin (Fab Consulting), Mark Frankfurth (Cymer), Vladimir Kraz (BestESD)
**SEMI Staff:** Michelle Sun

| *Company* | *Last* | *First* | *Company* | *Last* | *First* |
|---|---|---|---|---|---|
| ASML Netherlands BV | Frankfurth | Mark | KLA Corporation | *Ganev* | *Todor* |
| Bird Technologies | Azim | Nik | SEMI | Sun | Michelle |
| Bird Technologies | Dummermuth | Martin | Suny Poly | *Eisenbraun* | *Eric* |
| Bird Technologies | Winter | John | Tokyo Electron Ltd. | Mashiro | Supika |
| Fab Consulting | *Bouldin* | *David* | Zama Consulting | *Sakamoto* | *Mitsune* |
| Intel Corporation | *Schneider* | *Paul* | SCREEN | Nishimura | Takayuki |

### Table 2 Leadership Changes

| *WG/TF/SC/TC Name* | *Previous Leader* | *New Leader* |
|---|---|---|
| None | | |

### Table 3 Committee Structure Changes

| *Previous WG/TF/SC Name* | *New WG/TF/SC Name or Status Change* |
|---|---|
| License Server Certification Task Force *[disbanded]* | None |

### Table 4 Ballot Results

| *Document #* | *Document Title* | *Committee Action* |
|---|---|---|
| 6838 | Reapproval of SEMI E114-0302E (Reapproved 0616), Test Method for RF Cable Assemblies Used in Semiconductor Processing Equipment RF Power Delivery Systems | **Passed** |
| 6839 | Reapproval of SEMI E115-0302E (Reapproved 0816), Test Method for Determining the Load Impedance and Efficiency of Matching Networks Used in Semiconductor Processing Equipment RF Power Delivery Systems | **Passed** |
| 7056 | Reapproval of SEMI E168-0915, Specification for Product Time Measurement | **Passed** |

### Table 4 Ballot Results

| *Document #* | *Document Title* | *Committee Action* |
|---|---|---|
| 7057 | Reapproval of SEMI E168.1-1114, Specification for Product Time Measurement in GEM 300 Production Equipment | **Passed** |
| 7058 | Reapproval of SEMI E168.2-0915, Specification for Product Time Measurement for Material Control Systems | **Passed** |
| 7059 | Reapproval of SEMI E168.3-0915, Specification for Product Time Measurement for Transport | **Passed** |

#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 Ratification Ballot Results

| *Document #* | *Document Title* | *ISC A&R Action* |
|---|---|---|
| None | | |

### Table 6 Activities Approved by the GCS between meetings of the TC Chapter

| *#* | *Type* | *SC/TF/WG* | *Details* |
|---|---|---|---|
| None | | | |

### Table 7 Authorized Activities

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

| *#* | *Type* | *SC/TF/WG* | *Details* |
|---|---|---|---|
| 7129 | SNARF | CCC TF | New Standard: Test Method for Measuring Particles and Contamination by A Liquid Particle Counter of Critical Chamber Components Used in Semiconductor Wafer Processing and Inspection |
| 7130 | SNARF | CCC TF | New Standard: Test Method for Measuring Surface Contamination by Particle Concentration Through Replacement Substrate and Optical Metrology of Critical Chamber Components Used in Semiconductor Wafer Processing and Inspection |

#1 SNARFs and TFOFs are available for review on the SEMI Web site at:
http://downloads.semi.org/web/wstdsbal.nsf/TFOFSNARF

### Table 8 Authorized Ballots

| *#* | *When* | *TF* | *Details* |
|---|---|---|---|
| 6931 | Cycle 7-2023 | CCC TF | New Standard: Test Method for Measuring Organics Contamination Through Thermal Desorption or Solvent Extraction Gas Chromatography Mass Spectrometry of Critical Chamber Components Used in Semiconductor Wafer Processing and Inspection |
| 7129 | Cycle 7-2023 | CCC TF | New Standard: Test Method for Measuring Particles and Contamination by A Liquid Particle Counter of Critical Chamber Components Used in Semiconductor Wafer Processing and Inspection |
| 7130 | Cycle 7-2023 | CCC TF | New Standard: Test Method for Measuring Surface Contamination by Particle Concentration Through Replacement Substrate and Optical Metrology of Critical Chamber Components Used in Semiconductor Wafer Processing and Inspection |
| 7131 | Cycle 7-2023 | RF Measurements | Reapproval of SEMI E135-0918, Test Method for RF Generators to Determine Transient Response for RF Power Delivery Systems Used in Semiconductor Processing Equipment |

**Table 8 Authorized Ballots**

| *#* | *When* | *TF* | *Details* |
|---|---|---|---|
| 7132 | Cycle 7-2023 | RF Measurements | Reapproval of SEMI E143-0306 (Reapproved 0518), Test Method for Measuring Power and Variation into a 50-Ω Load and Power Variation and Spectrum into a Load with a VSWR of 2.0 at any phase Angle |

**Table 9 SNARF(s) Granted a One-Year Extension**

| *#* | *TF* | *Title* | *Expiration Date* |
|---|---|---|---|
| None | | | |

**Table 10 SNARF(s) Abolished**

| *#* | *TF* | *Title* |
|---|---|---|
| None | | |

**Table 11 Standard(s) to receive Inactive Status**

| *Standard Designation* | *Title* |
|---|---|
| SEMI E163-0212 | Guide for the Handling of Reticles and Other Extremely Electrostatic Sensitive (EES) Items Within Specially Designated Areas |

**Table 12 New Action Items**

| *Item #* | *Assigned to* | *Details* |
|---|---|---|
| 1 | Michelle Sun (SEMI) | Follow up on IEC meeting result |

**Table 13 Previous Meeting Action Items**

| *Item #* | *Assigned to* | *Details* |
|---|---|---|
| 1 | Michelle Sun (SEMI) | Follow up on IEC liaison - **OPEN** |
| 2 | David Bouldin (Fab Consulting) | Reach out to Chuck about ESD/ESC leadership - **CLOSED** |
| 3 | Supika Mashiro (TEL) | Decide on 5-year review documents for RF Measurements - **CLOSED** |

## 1 Welcome, Reminders, and Introductions

David Bouldin (Fab Consulting) called the meeting to order at 3:35. The meeting reminders on antitrust issues, intellectual property issues and holding meetings with international attendance were reviewed. Attendees introduced themselves.

**Attachment**: Required Meeting Elements Nov 2022

## 2 Review of Previous Meeting Minutes

The TC Chapter reviewed the minutes of the previous meeting.

|  |  |
|---|---|
| **Motion:** | Approve the minutes as written |
| **By / 2nd:** | By: Paul Schneider / Intel Corporation<br>Second: Eric Eisenbraun / suny poly |
| **Discussion:** | None |
| **Vote:** | 8-Y 0-N. Motion passed. |

**Attachment**: Metrics-Minutes-Mar2023 v2

## 3 Liaison Reports

### 3.1 *Metrics Japan TC Chapter*

Michelle Sun (SEMI) reported for the Metrics Japan TC Chapter. Of note:

Last meeting

- December 14, 2022, at SEMICON Japan 2023
- Tokyo Big Sight, Room 703, 7F, Conference Tower, Tokyo, Japan / OVTCCM (Hybrid)

Next meeting

- July 26, 2023
- SEMI Japan office, Tokyo / OVTCCM (Hybrid)

Japan RF Measurement Liaison TF

- Will submit the ballot to be reviewed in SEMICON Japan December 2023.

**Attachment:** 20230410_MetricsJapan_Liaison_draft_v2.2

### 3.2 *SEMI Staff Report*

Michelle Sun (SEMI) gave the SEMI Staff Report. Of note:

2023 Calendar of Events

- SEMICON West
  - July 11-13
  - San Francisco, CA
- SEMICON Taiwan
  - Sept 6-8
  - Taipei, Taiwan
- SEMICON Europa
  - Nov 14-17
  - Munich, Germany
- SEMICON Japan
  - Dec 13-15
  - Tokyo, Japan

Upcoming NA Meetings

- NA Standards Fall Meetings
  - Nov 6-9, 2023
  - SEMI HQ, Milpitas, CA
- NA Standards Spring Meetings
  - April 1-4, 2024
  - SEMI HQ, Milpitas, CA
- SEMICON West
  - July 2024
  - Moscone Center, San Francisco

Critical Dates

| 2023 | Ballot Submission Deadline | Voting Opens | Voting Closes |
|---|---|---|---|
| Cycle 6 | July 26 | August 9 | September 8 |
| Cycle 7 | August 30 | September 13 | October 13 |
| Cycle 8 | October 4 | October 18 | November 17 |
| Cycle 9 | November 15 | November 29 | December 29 |

New Publications Staff

- Vivian Hoang – Sr. Specialist, Standards Publications
    - Joined SEMI May 17, 2023.
    - Will focus on processing ballots to reduce backlog and improve publishing time.

SEMI Standards Publications

- Total SEMI Standards in portfolio: 1,079
- Includes 327 Inactive Standards

| Cycle | New | Revised | Reapproved | Withdrawn |
|---|---|---|---|---|
| March 2023 | 2 | 2 | 0 | 0 |
| April 2023 | 1 | 10 | 4 | 0 |
| May 2023 | 0 | 4 | 2 | 0 |
| June 2023 | 1 | 10 | 7 | 0 |

New Standards

| Cycle | Designation | Title | Committee | Region |
|---|---|---|---|---|
| March 2023 | SEMI FH1 | Test Method of Line Impedance for Electronic Textiles | Flexible Hybrid Electronics | TW |
| March 2023 | SEMI FH2 | Test Method of Sheet Resistance for Woven Electronic Textiles | Flexible Hybrid Electronics | TW |
| April 2023 | SEMI M92 | Specification for 4H-SIC Homoepitaxial Wafer | Compound Semiconductor Materials | CH |
| June 2023 | SEMI PV100 | Test Method of Wind Uplift Resistance for Photovoltaic Modules Roof (BIPV) | Photovoltaic | CH |

SDO Liaisons

- ESDA
    - MOU with ESDA signed by both parties (Paul Trio and Lisa Pimpinella)
    - Liaison is complete.
- IEC
    - Liaison application for IEC TC 77/WG 13 submitted to IEC.
    - To be reviewed at their next meeting on Oct 19, 2023

**Attachment:** Staff Report July 2023 v3

## 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.

### 4.1 Document #6838, Reapproval of SEMI E114-0302E (Reapproved 0616), Test Method for RF Cable Assemblies Used in Semiconductor Processing Equipment RF Power Delivery Systems

| | |
|---|---|
| **Motion:** | This is not a Safety Document, when all safety-related information is removed, the Document is still technically sound and complete. (Regulations ¶ 8.7.1) |
| **By / 2nd:** | By: Mark Frankfurth / ASML Netherlands BV<br>Second: Supika Mashiro / Tokyo Electron Ltd. |
| **Discussion:** | None. |
| **Vote:** | 7-Y 0-N. Motion passed. |

| | |
|---|---|
| **Motion:** | This Document passed TC Chapter review as balloted and will be forwarded to the ISC A&R SC for procedural review |
| **By / 2nd:** | By: Mark Frankfurth / ASML Netherlands BV<br>Second: Todor Ganev / KLA Corporation |
| **Discussion:** | None. |
| **Vote:** | 4-Y 0-N. Motion passed. |

**Attachment:** AR - 6838

### 4.2 Document #6839, Reapproval of SEMI E115-0302E (Reapproved 0816), Test Method for Determining the Load Impedance and Efficiency of Matching Networks Used in Semiconductor Processing Equipment RF Power Delivery Systems

| | |
|---|---|
| **Motion:** | This is not a Safety Document, when all safety-related information is removed, the Document is still technically sound and complete. (Regulations ¶ 8.7.1) |
| **By / 2nd:** | By: Supika Mashiro / Tokyo Electron Ltd.<br>Second: Todor Ganev / KLA Corporation |
| **Discussion:** | None. |
| **Vote:** | 8-Y 0-N. Motion passed. |

| | |
|---|---|
| **Motion:** | This Document passed TC Chapter review as balloted and will be forwarded to the ISC A&R SC for procedural review. |
| **By / 2nd:** | By: Martin Dummermuth / BIRD ELECTRONIC CORP<br>Second: John Winter / Bird Technologies |
| **Discussion:** | None. |
| **Vote:** | 8-Y 0-N. Motion passed. |

**Attachment:** AR – 6839

### 4.3 Document #7056, Reapproval of SEMI E168-0915, Specification for Product Time Measurement

| | |
|---|---|
| **Motion:** | This is not a Safety Document, when all safety-related information is removed, the Document is still technically sound and complete. (Regulations ¶ 8.7.1) |

| | |
|---|---|
| **By / 2nd:** | By: Mark Frankfurth / ASML Netherlands BV<br>Second: Supika Mashiro / Tokyo Electron Ltd. |
| **Discussion:** | None. |
| **Vote:** | 6-Y 0-N. Motion passed. |

| | |
|---|---|
| **Motion:** | This Document passed TC Chapter review as balloted and will be forwarded to the ISC A&R SC for procedural review. |
| **By / 2nd:** | By: Eric Eisenbraun / suny poly<br>Second: Mark Frankfurth / ASML Netherlands BV |
| **Discussion:** | None. |
| **Vote:** | 5-Y 0-N. Motion passed. |

**Attachment:** AR - 7056

### 4.4 Document #7057, Reapproval of SEMI E168.1-1114, Specification for Product Time Measurement in GEM 300 Production Equipment

| | |
|---|---|
| **Motion:** | This is not a Safety Document, when all safety-related information is removed, the Document is still technically sound and complete. (Regulations ¶ 8.7.1) |
| **By / 2nd:** | By: Mark Frankfurth / ASML Netherlands BV<br>Second: Supika Mashiro / Tokyo Electron Ltd. |
| **Discussion:** | None. |
| **Vote:** | 5-Y 0-N. Motion passed. |

| | |
|---|---|
| **Motion:** | This Document passed TC Chapter review as balloted and will be forwarded to the ISC A&R SC for procedural review. |
| **By / 2nd:** | By: Mark Frankfurth / ASML Netherlands BV<br>Second: Eric Eisenbraun / suny poly |
| **Discussion:** | None. |
| **Vote:** | 6-Y 0-N. Motion passed. |

**Attachment:** AR - 7057

4.5 Document #7058, Reapproval of SEMI E168.2-0915, Specification for Product Time Measurement for Material Control Systems

| | |
|---|---|
| **Motion:** | This is not a Safety Document, when all safety-related information is removed, the Document is still technically sound and complete. (Regulations ¶ 8.7.1) |
| **By / 2nd:** | By: Mark Frankfurth / ASML Netherlands BV<br>Second: Supika Mashiro / Tokyo Electron Ltd. |
| **Discussion:** | None. |
| **Vote:** | 6-Y 0-N. Motion passed. |

| | |
|---|---|
| **Motion:** | This Document passed TC Chapter review as balloted and will be forwarded to the ISC A&R SC for procedural review. |
| **By / 2nd:** | By: Paul Schneider / Intel Corporation<br>Second: Mark Frankfurth / ASML Netherlands BV |
| **Discussion:** | None. |
| **Vote:** | 6-Y 0-N. Motion passed. |

**Attachment:** AR - 7058

4.6 Document #7059, Reapproval of SEMI E168.3-0915, Specification for Product Time Measurement for Transport

| | |
|---|---|
| **Motion:** | This is not a Safety Document, when all safety-related information is removed, the Document is still technically sound and complete. (Regulations ¶ 8.7.1) |
| **By / 2nd:** | By: Mark Frankfurth / ASML Netherlands BV<br>Second: Todor Ganev / KLA Corporation |
| **Discussion:** | None. |
| **Vote:** | 6-Y 0-N. Motion passed. |

| | |
|---|---|
| **Motion:** | This Document passed TC Chapter review as balloted and will be forwarded to the ISC A&R SC for procedural review. |
| **By / 2nd:** | By: Eric Eisenbraun / suny poly<br>Second: Mark Frankfurth / ASML Netherlands BV |
| **Discussion:** | None. |
| **Vote:** | 6-Y 0-N. Motion passed. |

**Attachment:** AR - 7059

## 5 Subcommittee and Task Force Reports

### 5.1 *EMC Task Force*

David Bouldin (Fab Consulting) reported for the EMC Task Force. Of note:

- EMC:
  - IEEE EMC Symposium, July 31-August 4, 2023, Grand Rapids, MI
  - EMC Europe, September 4-8, Krakow, Poland
- ESD/EOS

  - EOS/ESD Symposium and Standards, October 1-6, Riverside, CA
- Intel Proposal:
  - 9.2.1 EMC testing should be performed with the semiconductor manufacturing equipment fully installed and operational if doing so is practical and reasonable. 9.2.1 EMC (ELF emissions) testing should be performed at the manufacturer's facility with the semiconductor manufacturing equipment fully installed and operational prior to user delivery. **Vendor accountability to perform testing prior to user installation

**Attachment:** SEMI Stds EMC TF July 2023

### 5.2 *RF Measurements*

Supika Mashiro (TEL) reported for the RF Measurements Task Force. Of note:

- Reviewed SEMI E114 and E115 Reapproval Ballot results.
- TF recommended to reapprove SEMI E135.

### 5.3 *Equipment RAMP*

Paul Schneider (Intel) reported for the Equipment RAMP Task Force. Of note:

- Task force updating and now recording E10 and E79 webinars with new content from the last updates to the standards. Plan to re-record and publish the new versions within the next 2 quarters.
- Capturing potential future updates to E10 as the task force works through the webinars.

**Attachment:** SEMI NA-Metrics TC-Eqp RAMp TF Report-2023_7_12

## 6 Next Meeting and Adjournment

The next meeting is scheduled for November 9, 2023, at Milpitas, CA/USA. See http://www.semi.org/standards-events for the current list of events.

Adjournment: 5:00.

Respectfully submitted by:

Michelle Sun

Coordinator

SEMI North America

Phone: 408.943.7982

Email: msun@semi.org

Minutes tentatively approved by:

| | |
|---|---|
| David Bouldin (Fab Consulting), Co-chair | 10/2/2023 |

### Table 14 Index of Available Attachments[#1]

| *Title* | *Title* |
|---|---|
| Required Meeting Elements Nov 2022 | AR - 7056 |
| Metrics-Minutes-Mar2023 v2 | AR - 7057 |
| Staff Report July 2023 v4 | AR – 7058 |
| AR - 6838 | AR - 7059 |
| AR – 6839 | SEMI Stds EMC TF July 2023 |
| SEMI NA-Metrics TC-Eqp RAMp TF Report-2023_7_12 | |

#1 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. For additional information or to obtain individual attachments, please contact [SEMI Staff Name] at the contact information above.