



## Metrics NA TC Chapter Meeting Summary and Minutes

Wednesday, March 29, 2023  
Via Web Conference  
2:00–5:00 PM (Pacific Time)

### TC Chapter Announcements

*Next TC Chapter Meeting*

Wednesday, July 12, 2023

3:30-5:30 PM Pacific

SEMICON West, San Francisco, California/USA

### Table 1 Meeting Attendees

*Italics indicate virtual participants*

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

**SEMI Staff:** Michelle Sun

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
BestESD Technical Services	<i>Kraz</i>	<i>Vladimir</i>	PEER Group Inc.	<i>Fuchigami</i>	<i>Albert</i>
Fab Consulting	<i>Bouldin</i>	<i>David</i>	SCREEN Semiconductor Solution Co., Ltd.	<i>Nishimura</i>	<i>Takayuki</i>
Intel Corporation	<i>Schneider</i>	<i>Paul</i>	SEMI	<i>Sun</i>	<i>Michelle</i>
KLA Corporation	<i>Ganev</i>	<i>Todor</i>	Tokyo Electron Ltd.	<i>Mashiro</i>	<i>Supika</i>
Pall Corporation	<i>Payne</i>	<i>Makonnen</i>			

### Table 2 Leadership Changes

<i>WG/TF/SC/TC Name</i>	<i>Previous Leader</i>	<i>New Leader</i>
ESD/ESC TF	<i>Viraj Pandit (Intel) [stepped down]</i>	None

### Table 3 Committee Structure Changes

<i>Previous WG/TF/SC Name</i>	<i>New WG/TF/SC Name or Status Change</i>
None	

### Table 4 Ballot Results

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
None		

#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**

#	Type	SC/TF/WG	Details
None			

**Table 6 Authorized Activities**

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

#	Type	SC/TF/WG	Details
7056	Cycle 5-2023	Metrics Committee	Reapproval of SEMI E168-0915, Specification for Product Time Measurement
7057	Cycle 5-2023	Metrics Committee	Reapproval of SEMI E168.1-1114, Specification for Product Time Measurement in GEM 300 Production Equipment
7058	Cycle 5-2023	Metrics Committee	Reapproval of SEMI E168.2-0915, Specification for Product Time Measurement for Material Control Systems
7059	Cycle 5-2023	Metrics Committee	Reapproval of SEMI E168.3-0915, Specification for Product Time Measurement for Transport

#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**

#	When	TF	Details
6838	Cycle 5-2023	RF Measurements	Reapproval of SEMI E114-0302E (Reapproved 0616), Test Method for RF Cable Assemblies Used in Semiconductor Processing Equipment RF Power Delivery Systems
6839	Cycle 5-2023	RF Measurements	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
7056	Cycle 5-2023	Metrics Committee	Reapproval of SEMI E168-0915, Specification for Product Time Measurement
7057	Cycle 5-2023	Metrics Committee	Reapproval of SEMI E168.1-1114, Specification for Product Time Measurement in GEM 300 Production Equipment
7058	Cycle 5-2023	Metrics Committee	Reapproval of SEMI E168.2-0915, Specification for Product Time Measurement for Material Control Systems
7059	Cycle 5-2023	Metrics Committee	Reapproval of SEMI E168.3-0915, Specification for Product Time Measurement for Transport

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

#	TF	Title	Expiration Date
None			

**Table 9 SNARF(s) Abolished**

#	TF	Title
None		

**Table 10 Standard(s) to receive Inactive Status**

Standard Designation	Title
None	

**Table 11 New Action Items**

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

**Table 12 Previous Meeting Action Items**

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
1	David Bouldin (Fab Consulting)	Review SEMI E168 for reapproval
2	Michelle Sun (SEMI), Paul Cohen (SEMI)	Follow up on new committee formation for License Server Task Force
3	Michelle Sun (SEMI)	Follow up with IEC/ESDA liaisons

## 1 Welcome, Reminders, and Introductions

David Bouldin (Fab Consulting) called the meeting to order at 2:10. 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 / 2<sup>nd</sup>:** By: Paul Schneider / Intel Corporation  
 Second: Todor Ganev / KLA Corporation  
**Discussion:** None  
**Vote:** 6-Y 0-N

**Attachment:** Metrics-Minutes-Oct-2022

## 3 Liaison Reports

### 3.1 SEMI Staff Report

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

SEMI Global 2023 Calendar of Events

- SEMICON Southeast Asia
  - o May 23-25
  - o Penang, Malaysia
- SEMICON China
  - o June 29 – July 1
  - o Shanghai, China
- SEMICON West



- July 11-13
- San Francisco, CA
- SEMICON Taiwan
  - Sep 6-8, 2023
  - Taipei, Taiwan

Upcoming NA Meetings

- SEMICON West
  - July 10-13, 2023
  - Moscone Center, San Francisco
  - California/USA
- NA Standards Fall Meetings
  - Nov 6-9, 2023 [Tentative]
  - SEMI HQ, Milpitas, California/USA

Critical Dates for SEMI Standards Ballots

2023	Ballot Submission Deadline	Voting Opens	Voting Closes
<b>Cycle 3</b>	March 8	March 22	April 21
<b>Cycle 4</b>	April 19	May 3	June 2
<b>Cycle 5</b>	May 17	May 31	June 30
<b>Cycle 6</b>	July 26	August 9	September 8
<b>Cycle 7</b>	August 30	September 13	October 13
<b>Cycle 8</b>	October 4	October 18	November 17
<b>Cycle 9</b>	November 15	November 29	December 29

Regulations and Procedure Manual Updates

- Regulations (Feb 28, 2023)
  - Provide publication conditions for both Letter Ballot Review to pass procedural review and its Ratification Ballot is accepted.
    - If the Letter Ballot Review fails procedural review, the acceptance for the Ratification Ballot shall be nullified.
  - <https://www.semi.org/sites/semi.org/files/2023-02/Standards%20Regulations%20February%2028%2C%202023.pdf>
- Procedure Manual (Feb 28, 2023)
  - Clarification on Line-Item Ballots are only permitted on revisions to already published identified portions of Standards or Safety Guidelines.
  - Revision of any Subordinate Standard causes the Publication Date Code of the Primary Standard to be considered as reapproved and it shall be given the (Reapproved mmyy) designation.
  - Contents of Background Statement Required for Revision of Subordinate/Primary Standard Letter Ballots.
  - <https://www.semi.org/sites/semi.org/files/2023-02/Procedure%20Manual%20February%2028%2C%202023.pdf>



### SEMI University

- Launched in early February 2023
- More than 360 on-demand courses created specifically for the semiconductor industry.
- Courses covering front-end and back-end manufacturing operations, principles of chip design, workplace safety, technology trends and more.
- Most of the coursework is in English, with only a few classes offered in Chinese and Japanese. Adding more content in multiple languages is a priority post-launch.
- More info at [www.semi.org/en/semi-university](http://www.semi.org/en/semi-university)

### SEMI Standards Publications

- Total SEMI Standards in portfolio: 1,069
- Includes 320 Inactive Standards

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

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
- 6/30/2022 A&R cycle: 11
- 8/18/2022 A&R cycle: 9
- 10/12/2022 A&R cycle: 9
- New Standards: 11
- Revisions: 43
- Reapprovals: 36
- 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).

## Five-Year Review

Display Name	Description	Date Available	Disposition
SEMI E33-0217E	Guide for Semiconductor Manufacturing Equipment Electromagnetic Compatibility (EMC)	10/19/2018	Revising
SEMI E176-1017	Guide to Assess and Minimize Electromagnetic Interference (EMI) in a Semiconductor Manufacturing Environment	10/13/2017	Revising
SEMI E163-0212 (Reapproved 1217)	Guide for the Handling of Reticles and Other Extremely Electrostatic Sensitive (EES) Items Within Specially Designated Areas	12/29/2017	Revising
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	5/25/2018	RF Measurements to decide
SEMI E135-0918	Test Method for RF Generators to Determine Transient Response for RF Power Delivery Systems Used in Semiconductor Processing Equipment	9/28/2018	RF Measurements to decide
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	8/26/2016	Needs Reapproval (6839)
SEMI E114-0302E (Reapproved 0616)	Test Method for RF Cable Assemblies Used in Semiconductor Processing Equipment RF Power Delivery Systems	6/30/2016	Needs Reapproval (6838)
SEMI E168-0915	Specification for Product Time Measurement		To be reapproved
SEMI E113-0306 (Reapproved 0518)	Revision to SEMI E113-0306 (Reapproved 0518), "Specification for Semiconductor Processing Equipment RF Power Delivery Systems" with title change to "Specification for RF Power Delivery Systems Used in Semiconductor Processing Equipment"		Being revised by Japan Metrics (6550)

**Attachment:** Staff Report March 2023 v1

## 4 Subcommittee and Task Force Reports

### 4.1 Equipment RAMP TF Update

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

- Task force is updating SEMI 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 SEMI E10 as the task force works through the webinars
- Engagement with PCS and GEM300 TF with future standard updates

**Attachment:** SEMI NA-Metrics TC-Eqp RAMP TF Report-2023\_3\_29

### 4.2 EMC Task Force

- Greg Larson (Intel) and team presented proposals to SEMI E33. Following the presentation, the presenters prepared follow-up questions for the task force members.
- SEMI E33 – EMC TF Update – external & ELF\_VLF-EMI Measurement Methodology Procedure presented by Zachary Joseph
  - Follow-up Questions:
    - What is the rest of the industry doing to mitigate ELF/VLF EMI amongst semiconductor manufacturing spaces?
    - If used, what type of mitigation techniques are leveraged?
    - How is the rest of the industry handling collocation of EMI-Sensitive equipment amongst semiconductor manufacturing spaces?
    - What would the industry like to see from equipment vendors moving forward?



- Immunity and Intentional Radiators Considerations - SEMI external presentation by Gregory Larson
  - Follow-up Questions
    - How is the introduction of wireless transmitters considered for other SEMI manufacturers?
    - Are the next generation tools testing ahead of the standards update?
    - CE marking, obtained through EMC declaration qualification can be obtained via paper analysis, how often is that done as compared to chamber testing?
      - The larger the equipment the harder to fit into a chamber for testing and evaluation
      - Our actual end use equipment is massive and cannot operate (chems/etc) as intended to look for actual disruption
    - How do SEMI vendors certify when there are large enclosures (process equipment) to understand the risk
- RF Susceptibility of Components and Sub-Systems – external presentation by Nicholas Garinger
  - ANSI C63.9 Status shared for visibility of Intel’s efforts to develop methodology for SoC RF Immunity

**Attachment:** SEMI EMC TF Meeting Materials

**5 Next Meeting and Adjournment**

The next meeting is scheduled for Wednesday, July 12, 3:30-5:30 PM (Pacific Time) in conjunction with SEMICON West. See <http://www.semi.org/standards-events> for the current list of events.

Adjournment: 3:37 PM Pacific.

Respectfully submitted by:

Michelle Sun  
 Coordinator  
 SEMI North America  
 Phone: 408.943.7982  
 Email: [msun@semi.org](mailto:msun@semi.org)

Minutes tentatively approved by:

David Bouldin (Fab Consulting), Cochair	6/11/2023
<Name> (<Company>), Cochair	<Date approved>

**Table 13 Index of Available Attachments#1**

<i>Title</i>	<i>Title</i>
Required Meeting Elements Nov 2022	SEMI EMC TF Meeting Materials
Metrics-Minutes-Oct-2022	
Staff Report March 2023 v1	
SEMI NA-Metrics TC-Eqp RAMP TF Report-2023_3_29	



#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](http://www.semi.org). For additional information or to obtain individual attachments, please contact [SEMI Staff Name] at the contact information above.