



**Metrics Global Technical Committee
North America (NA) Chapter
Meeting Summary and Minutes**

Fall 2016 Meeting
Wednesday November 9, 2016 14:00 – 17:00
San Jose, CA

TC Chapter Announcements

Next TC Chapter Meeting
April 5, 2017, 14:00 – 17:00
NA Spring Meetings, Milpitas, CA

Table 1 Meeting Attendees

Italics indicate virtual participants

Cochairs: David Bouldin (Fab Consulting), Mark Frankfurth (ASML/Cymer), Vladimir Kraz (Best ESD Technical Services)
SEMI Staff: Inna Skvortsova

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
BestESD Technical Services	Kraz	Vladimir	PEER Group	Fuchigami	Albert
<i>Fab Consulting</i>	<i>Bouldin</i>	<i>David</i>	Murata Machinery Ltd.,	Tadamasa	Tominaga
Intel	Meyer	Steve	SEMI	Inna	Skvortsova
Tokyo Electron	Mashiro	Supika	SEMI	Amano	James
Applied Materials	Russell	Fitzpatrick	SEMI (SCIS)	Trio	Paul

Table 2 Leadership Changes

<i>Group</i>	<i>Previous Leader</i>	<i>New Leader</i>
Equipment Training & Documentation TF	None	TF discharged

Table 3 Ballot Results

Passed ballots and line items will be submitted to the ISC Audit & Review Subcommittee for procedural review.
Failed ballots and line items were returned to the originating task forces for rework and rebaloting.

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

Table 4 Authorized Activities

#	Type	SC/TF/WG	Details
TBD	SNARF	Equipment COO	Line-Item Revision to SEMI E35, <i>Guide to Calculate Cost of Ownership (COO) Metrics for Semiconductor Manufacturing Equipment</i> New SNARF for 2-week review and GCS approval
TBD	SNARF	Equipment COO	Line-Item Revision to SEMI E140, <i>Guide to Calculate Cost of Ownership (COO) Metrics for Gas Delivery Systems</i> New SNARF for 2-week review and GCS approval
TBD	SNARF	Equipment COO	Line-Item Revision to E35, <i>Guide to Calculate Cost of Ownership (COO) Metrics for Semiconductor Manufacturing Equipment</i> and E140, <i>Guide to Calculate Cost of Ownership (COO) Metrics for Gas Delivery Systems</i> New SNARF for 2-week review and GCS approval
6115	SNARF	ESD/ESC	Reapproval for E163-0212, <i>Guide for the Handling of Reticles and Other Extremely Electrostatic Sensitive (EES) Items within Specially Designated Areas</i> New SNARF
TBD	SNARF	TBD	Reapproval/revision to E113-0512, <i>Specification for Semiconductor Processing Equipment RF Power Delivery Systems</i> New SNARF based on SCIS feedback
TBD	SNARF	TBD	Reapproval/revision to E135-0512R, <i>Test Method for RF Generators to Determine Transient Response for RF Power Delivery Systems Used in Semiconductor Processing Equipment</i> New SNARF based on SCIS feedback

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

Table 5 Authorized Ballots

#	When	SC/TF/WG	Details
5596	Cycle 1-2017	EMC	New Standard: <i>Guide to Assess and Minimize Electromagnetic Interference (EMI) in a Semiconductor Manufacturing Environment</i>
6115	Cycle 1-2017	ESD/ESC	Reapproval for E163-0212, <i>Guide for the Handling of Reticles and Other Extremely Electrostatic Sensitive (EES) Items within Specially Designated Areas</i>

Table 6 New Action Items

Item #	Assigned to	Details
2016 Fall #01	Inna Skvortsova	Add E-RAMP TF 2-hour meeting for the Spring 2017 Standards agenda.
2016 Fall #02	James Amano	Add to NARSC agenda David Bouldin report on educational webinars development and proliferation of webinars to other Global Technical Committees
2016 Fall #03	James Amano	Follow up on Metrics webinars impact on Standards sales/downloads.
2016 Fall #4	Paul Trio (SEMI)	Communicate to SCIS due date for revision to SEMI E113 and SEMI E135 to maintain “Current” status of the documents.
2016 Fall #5	Paul Trio (SEMI)	Create TFOF and SNARF for revision to SEMI E113 and SEMI E135 accommodating the SCIS feedback. Distribute proposed draft documents to Metrics TC cochairs before Spring 2017 TC meetings.

Table 7 Previous Meeting Action Items

Item #	Assigned to	Details
All Closed.		



1 Welcome, Reminders, and Introductions

Cochair David Bouldin called the meeting to order at 14:05.

After welcoming all attendees, a round of introductions followed. The SEMI meeting reminders on membership requirements, antitrust, patentable technology, and meeting guidelines were then presented and explained.

Attachment 01: SEMI Standards Required Elements.ppt

2 Review of Previous Meeting Minutes

2.1 The TC Chapter reviewed and approved the minutes of the previous SEMICON West 2016 Standards meeting.

Motion: To approve minutes as written

By / 2nd: Vladimir Kraz (Best ESD)/Steve Meyer (Intel)

Discussion: None

Vote: 3-0 in favor. Motion passed.

Attachment 02: NA Metrics TC Meeting Minutes (July 2016).pdf

3 SEMI Standards Staff Report

3.1 Inna Skvortsova (SEMI) gave the SEMI Standards Staff Report. Of note:

SEMI Global 2016/2017 Calendar of Events

- SEMICON Japan (December 14-16, 2016, Tokyo)
- SEMICON Korea (February 8-10, 2017, Seoul)
- SEMICON China (March 14-16, 2017, Shanghai)
- LED Taiwan (April 12-15, 2017, Taipei)
- SEMICON SEA (April 25-27, 2017, Penang, Malaysia)
- Inter SOLAR (May 31-June 2, 2017, Munich, Germany)
- SEMICON West (July 12-14, 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, Big Sight Tokyo, Japan)

Upcoming North America Meetings 2017

- NA Standards Spring 2017 Meetings (April 3-6, SEMI HQ, California)
- SEMICON West 2017 Meetings (July 10-13, San Francisco, California)
- NA Standards Fall 2017 Meetings (November 6-9, 2017 (tentative), SEMI HQ, California)

Letter Ballot Critical Dates for NA Standards Spring 2017 meetings

- Cycle 8-16: due Oct 17 / Voting Period: Oct 24 – Nov 23
- Cycle 9-16: due Nov 16 / Voting Period: Nov 30 – Dec 30
- Cycle 1-17: due Jan 3 / Voting Period: Jan 17 – Feb 16
- Cycle 2-17: due Feb 3 / Voting Period: Feb 17 – March 20
- Cycle 3-17: due Mar 7 / Voting Period: March 21 – April 20



<http://www.semi.org/en/Standards/Ballots>

- *SEMI Standards Publications*

Cycle	New	Revised	Reapproved	Withdrawn
July 2016	0	2	0	0
August 2016	0	7	3	0
September 2016	0	1	0	0
October 2016	1	12	1	0

Total SEMI Standards in portfolio: 965

- Includes 158 Inactive Standards

Attachment 03: SEMI Standards Staff Report Fall 2016.ppt

4 Liaison Reports

4.1 Metrics Europe TC Chapter

James Amano reported for the Metrics Europe (EU) TC Chapter. Of note:

- Leadership
 - TC Chapter Cochairs: Alfred Honold (InReCon); Lothar Pfitzner
 - Leadership Changes: None
 - The Europe RSC is considering disbanding the TC Chapter in Europe.
- Last Meeting:
 - Oct 26, 2016 – SEMICON Europa, Grenoble, France
- Next Meeting (tentative):
 - November, 2017 - SEMICON Europa Munich, Germany
- The TC Chapter voted to allow the below Standards to **go Inactive**:
 - SEMI E104-0303 (Reapproved 0211) - *Specification for Integration and Guideline for Calibration of Low-pressure Particle Monitor*
 - SEMI E141-0705 (Reapproved 0211) - *Guide for Specification of Ellipsometer Equipment for Use in Integrated Metrology*
- Staff Contact: Inna Skvortsova, iskvortsova@semi.org

Attachment 04: Europe Metrics TC Chapter Report (Nov 2016).pdf

4.2 Metrics Japan TC Chapter

No report from Japan TC during the meeting. James Amano reported Japan RSC plans disbanding the TC Chapter in Japan due to no activity in the region since 2012.



Attachment: None

4.3 *Technical Editors Board (TEB) Report*

David Bouldin (Fab Consulting) reported that the Regulations Subcommittee is working on a new version of the *SEMI Standards Regulations and Procedure Manual* with corresponding changes to the *Style Manual* as workload permits.

Attachment: None

4.4 *Technical Architects Board Report*

No report presented during the meeting. David Bouldin noted that this board is dormant.

Attachment: None

4.5 *ESDA Liaison Report*

Vladimir Kraz presented on ESDA-related activities. Of note:

- Factory ESD Symposium took place in Finland in October 2016.
- 39th Electrical Overstress/Electrostatic Discharge Symposium Sept 10-14, 2017 in Tucson, AZ
 - Call for papers deadline: February 27, 2017
 - Track: 1. EOS/ESD in Manufacturing - Control Materials, Technologies, and Techniques
 - Track: 2. On-Chip ESD Design, including - System Level ESD, Testing, ESD Case Studies

Please contact Vladimir Kraz for further details: ykraz@bestesd.com

Attachment: None

5 Ballot Review

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

Failed ballots and line items were returned to the originating task forces for rework and reballoting.

NOTE 2: 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.

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

6 Subcommittee and Task Force Reports

6.1 *Equipment Training and Documentation Task Force*

David Bouldin reported that after TF leader(s) stepped down and that there is no active interest from members to take leadership and reactivate the Equipment Training and Documentation Task Force activities. David B. took initiative to contact members, but just one member of the TF responded. Therefore, the TC Chapter suggests discharging the TF.

Motion: To disband the Equipment Training and Documentation Task Force.

By / 2nd: Vladimir Kraz (Best ESD Technical Services)/ Steve Meyer (Intel)

Discussion: None



Vote: 3-0 in favor. Motion Passed.

6.2 EMC TF Report

Vladimir Kraz presented the EMC TF report. The key items were as follows:

- Industry Update
 - EMC:
 - Call for papers for 2017 EMC Symposium in Washington, DC is out
 - ESD:
 - ESD Symposium on Factory Issues – Finland, October 2016
 - ESD Symposium on Factory Issues – , Xi’an, China, November 2016
 - CNIS (China National Institute of Standardization) meeting in conjunction with ESD Symposium, Xi’an, China, November 2016
 - Technical Information
 - If anyone is interested, Interference Technology Magazine, the key magazine on all subjects EMC and EMI, published my article “*Mitigating EMI Issues in Servo Motors and Variable Frequency Drives*” in its November Design issue.
- EMC TF Meeting Summary
 - Participants – 3 in person, 3 on the phone
 - Last review of 5596 document
 - Approved unanimously submission to cycle 9 of Letter Ballot
 - Need Metrics TC Chapter’s approval

Motion: To approve issue ballot for Document #5596 for Cycle 1-17 submission.

By / 2nd: Vladimir Kraz (Best ESD Technical Services)/ Russell Fitzpatrick (AMAT)

Discussion: None

Vote: 4-0 in favor. Motion passed.

Attachment 05: EMC Task Force Report (Nov 2016).pdf

6.3 ESD/ESC TF Report

NONE: TF had problems using GoToMeeting during their scheduled meeting time this week so will reschedule another TF meeting for later.

6.4 Equipment RAMP (Reliability, Availability, Maintainability, and Productivity) Metrics TF

Steve Meyer (Intel) presented report on Equipment RAMP TF activities. Of note:

- Meeting Attendance:
 - TF Meeting held on 11/9/2016 10:00 – 11:00am.
 - Attendees: David Bouldin (Fab Consulting), Steve Meyer (Coleader, Intel), Russ Fitzpatrick (Applied Materials)
- No Leadership Changes
- No new or updated SNARFs or ballot plans
- Old Task Force Business
 - Webinars posted to SEMI website for free consumption



- Overview of SEMI equipment metrics standards (Audio: David Bouldin)
- SEMI E10 overview (Audio: David Bouldin)
- SEMI E10 example part 1 (Audio: David Busing & Steve Meyer) – *Originally planned for revenue generation*
- SEMI E79 overview (Audio: David Bouldin)
- Webinars in production:
 - Sample Calculations in E10, Part II: Fundamental Quantities and Metrics— Q1’17
 - Status: PPT 100%, script 20%
 - Sample Calculations in E79 — Q2’17
 - Status: PPT 100%, script 0%
- Task Force leaders would like to review Standards sales trends to determine if E10 and E79 webinars are positively or negatively affecting the subscribership.

Action Items: (James Amano) Add to NARAC agenda David Bouldin report regarding webinar development and proliferation of webinars strategy to other Global Technical Committees.

Attachment 06: E-RAMP Task Force Report (Nov 2016).pdf

6.5 *Equipment Cost of Ownership (COO) TF*

David Bouldin reported on proposed structure and scope of SNARF for revision to SEMI E35 and SEMI E140 documents.

- The proposed SNARF to revise both E35 and E140 simultaneously was not approved by the TC Chapter.
 - The preferred method according to the *Regulations and Procedure Manual*, per Supika Mashiro (ISC Regulations A&R SC chair), is to do separate line-item revision ballots simultaneously
- Following recommendation from Supika Mashiro, TF will work on revised SNARFs.
- Updated SNARFs are to be distributed to Global TC Members for review followed by GCS review and approval.
- Plan to submit and ballot all three SNARFs simultaneously targeting SEMICON West 2017 adjudication.
- Next TF meeting: Planned for mid-Dec. after SNARF officially approved by GCS

Attachment 07: E-COO Task Force Report (Nov 2016).pdf

7 Old Business

7.1 *Standards due for Five-Year Review.*

Inna Skvortsova addressed the TC Chapter on this topic. Of note:

SEMI E161-0611	6/1/2016	<i>Guide for Identification and Classification of Training Tiers</i>	Plan to allow to go Inactive.
SEMI E163-0212	2/1/2017	<i>Guide for the Handling of Reticles and Other Extremely Electrostatic Sensitive (EES) Items Within Specially Designated Areas</i>	Issue Reapproval Ballot.
SEMI E113-0306 (Reapproved 0512)	5/1/2017	<i>Specification for Semiconductor Processing Equipment RF Power Delivery Systems</i>	Must be submitted for reapproval in Spring 2017. Paul T. to communicate to the SCIS timeline



			for SNRF submission to maintain "Current" status of the document.
SEMI E35-0312	3/1/2017	<i>Guide to Calculate Cost of Ownership (COO) Metrics for Semiconductor Manufacturing Equipment</i>	New SNARF
SEMI E140-0312	3/1/2017	<i>Guide to Calculate Cost of Ownership (COO) Metrics for Gas Delivery Systems</i>	New SNARF
SEMI E136-1104 (Reapproved 0512)	5/1/2017	<i>Test Method for Determining the Output Power of RF Generators Used in Semiconductor Processing Equipment RF Power Delivery Systems</i>	David B. will contact the author of the document for review/reapproval cycle
SEMI E143-0306 (Reapproved 0512)	5/1/2017	<i>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</i>	David B. will contact the author of the document for review/reapproval cycle
SEMI E135-0704 (Reapproved 0512)	5/1/2017	<i>Test Method for RF Generators to Determine Transient Response for RF Power Delivery Systems Used in Semiconductor Processing Equipment</i>	Must be submitted for reapproval in Spring 2017. Paul T. to communicate to the SCIS timeline for SNARF submission to maintain "Current" status of the document.
SEMI E78-0912	9/1/2017	<i>Guide to Assess and Control Electrostatic Discharge (ESD) and Electrostatic Attraction (ESA) for Equipment</i>	TBD at Spring 2017 TC Ballot #5169 - last review 7/11/2012 by ESC/ESC TF; Author Arnold Steinman.
SEMI E129-0912	9/1/2017	<i>Guide to Assess and Control Electrostatic Charge in a Semiconductor Manufacturing Facility</i>	TBD at Spring 2017 TC Ballot #5238 - last review 7/11/2012 by ESC/ESC TF; Author Arnold Steinman.

Motion: To approve issuance of Reapproval Ballot for SEMI E163 for Cycle 1-17 submission.

By / 2nd: David Bouldin (Fab Consulting)/ Supika Mashiro (Tokyo Electron)

Discussion: None

Vote: 3-0 in favor. Motion Passed.

Action Items: (Paul Trio, SEMI) Communicate to SCIS due date for revision to SEMI E113 and SEMI E135 to maintain "Current" status of documents. Create TFOF and SNARF to accommodate SCIS feedback and share proposed draft documents with Metrics TC cochairst by Spring 2017 TC meeting.

8 New Business

8.1 New TFOFs and SNARFs

- No new TFOFs.
- New SNARFS for Reapproval for SEMI E163.
- Work on updated SNARFs for revision to SEMI E35 and SEMI 140 – resubmit for 2-week TC membership review and GCS approval.

8.2 New Ballots:

- Ballot # 5596 approved for Cycle 1-17 submission.



- Reapproval Ballot for SEMI E163 for Cycle 1-17 submission.

8.3 NA SCIS RF Report

Paul Trio presented the report. SEMI is calling for collaboration with SCIS RF group activities. Next SCIS RF Group meeting is planned for December 2016 at Intel, Santa Clara CA.

Attachment 08: SCIS RF Group Report 2016

9 Action Item Review

9.1 Previous Meeting(s) Action Items

Inna Skvortsova (SEMI) reviewed open action items. These can be found in the Previous Meeting(s) Action Items table at the beginning of these minutes.

9.2 New Action Items

Inna Skvortsova (SEMI) reviewed the new action items. These can be found in the New Action Items table at the beginning of these minutes.

10 Next Meeting and Adjournment

The next meeting of the NA TC Chapter of the Metrics Global Technical Committee is scheduled for April 5, 2017 during the NA Spring 2017 meetings. See <http://www.semi.org/en/events> for the current list of meeting schedules.

Having no further business, a motion was made to adjourn. Adjournment was at 16:38.

Respectfully submitted by:

Inna Skvortsova

Sr. Standards Coordinator

SEMI North America

Phone: 408-9436996

Email: iskvortsova@semi.org

Minutes approved by:

David Bouldin (Fab Consulting), Cochair	Approved
Vladimir Kraz (BestESD), Cochair	Approved

Table 8 Index of Available Attachments^{#1}

#	Title	#	Title
1	SEMI Standards Required Meeting Elements.ppt	5	EMC Task Force Report (Nov 2016).ppt
2	NA Metrics TC Meeting Minutes (July 2016).pdf	6	E-RAMP Task Force Report (Nov 2016).ppt
3	SEMI Standards Staff Report (Nov 2016).ppt	7	E-COO Task Force Report (Nov 2016).pdf
4	Europe Metrics TC Report (Nov 2016).ppt	8	SCIS RF Group Report 2016.ppt

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 Inna Skvortsova at the contact information above.