

**China PV Standards Committee
Meeting Summary and Minutes**

China Winter Standards Meeting 2014
December 12th, 2014, Friday, 09:30 -16:50

Rongyuan Hotel, #225 Chezhan North Road, Changsha, Hunan

Next Committee Meeting

Tuesday, March 17th, 2015

Table 1 Meeting Attendees

Co-Chairs: Guangchun Zhang (CSI), Jun Liu (CESI)

SEMI Staff: Allen Lu – SEMI China, Kris Shen – SEMI China, Mina Chen – SEMI China

<i>Company</i>	<i>Last</i>	<i>First</i>	<i>Company</i>	<i>Last</i>	<i>First</i>
Astronergy	Niu	Xinwei	Hanergy	Guo	Feng
ARCHERS	Lu	Junxiong	Hebei University	Mai	Yaohua
Almaden	Lu	Yujuan	Honbest	Rao	Hui
Aoptek	Yuan	Jing	Honbest	Huang	Junran
CSI	Tang	Yingtang	JA solar	Huang	Xinming
CSI	Zhou	Chengbai	JA solar	Liu	Yong
CSI	Zhang	Chunguang	JA solar	Wang	Xiaoyong
Changzhou University	Liu	Chunlin	Jinergy	Li	Gaofei
CESI	Liu	Yun	Jinko	Wu	Zhenyu
CNSMQ	He	Dongjiang	Jinko	Jin	Hao
CPVT	He	Li	Jinko	Li	Ning
CC	Wu	Baoan	JYT	Zhao	Tongrong
CRPTC	Lu	Binglin	Linton	Li	Henan
48 th Institute	Cai	Xianwu	Linton	Li	Zhixin
48 th Institute	Luo	Liang	LDK	Liu	Hai
48 th Institute	Jia	Jingying	Longi	Deng	Liangping
48 th Institute	Xiao	Youwen	Longi	Wang	Xiaozhe
48 th Institute	Liu	Liangyu	REVAX	Wen	Lei
48 th Institute	Sui	Honglin	Semilab	Huang	Li
48 th Institute	Lv	Wenli	Sevenstar	Li	Dongqi
48 th Institute	Long	Hui	Sevenstar	Li	Buzhong
48 th Institute	Fan	Yingxin	Sibco	Liu	Erming
48 th Institute	Zhang	Fujia	SINOSICO	Yan	Dazhou
48 th Institute	Yang	Zhiquan	SINOSICO	Chu	Dongxu
DSM	Liu	Yong	SINOSICO	Cao	Junying
DSM	Wang	Jibin	Sunport	Lu	Zhonglin
Dupont	Du	Peng	Suntech	Liang	Zhe
Edwards	Shao	Wei	Suntech	Zhu	Jingbing
ENFI	Chen	Guie	TEBA	Yin	Bo
First PVM	Hou	Hongbing	Tianwei	Lin	Hongfeng
FJL	Yang	Aijun	Trinasolar	Zhou	Wei
FJL	Lin	Jianchun	Trinasolar	Xiao	Taoyun
FJL	Li	Jiansheng	TUV SUD	Wu	Yaozhong
FJL	Guo	Caimeng	Wacker	Qin	Wenfang
GCL	Lu	Wenfeng	Xinyang NU	Geng	Xiaoju
GCL	Lv	Jinbiao	Xinyang NU	Huang	Qiang
Giansolar	Zhu	Xiaodong	Yingli	Song	Dengyuan
GDsolar	Wu	Xiexiang	Yingli	Yu	Bo
GDsolar	Tang	Baisheng	Yingli	Zhang	Lei
Gzkunde	Wang	Xin	Yingli	Ren	Xiuqiang

Goldstone	Hou	Zenhua	Yingli	Zhang	Duchao
GNE TEK	Yao	Huawen	Yingli	Wang	Tao
Halm	Zhou	Wei	Yingli	Wang	Jing
Hanergy	Lv	Baotang	Youser	He	Yani
Hanergy	Chen	Daying	Youser	Xiang	Ying
Hanergy	Li	Xuan			

Table 2 Leadership Changes

<i>Group</i>	<i>Previous Leader</i>	<i>New Leader</i>
None		

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 re-work and re-balloting.

<i>Document #</i>	<i>Document Title</i>	<i>Committee Action</i>
5724	New Standard: Guide for Specifying Quasi Monocrystalline Silicon Wafers used in Photovoltaic Solar Cells	Failed and return to TF for re-work
5477C	New Standard: Test Method for Determining B, P, Fe, Al, Ca Contents in Silicon Powder for PV Applications by Inductively-Coupled-Plasma Optical Emission Spectrometry	Failed and return to TF for re-work

Table 4 Authorized Ballots

<i>#</i>	<i>When</i>	<i>SC/TF/WG</i>	<i>Details</i>
5648	Cycle 1-2015	PV Power Station Equipment Integrated Performance Task Force	New Standard: Test Method for the Integrated Efficiency of Installed PV Components
5659	Cycle 1-2015	Crystalline Silicon Solar Cell Task Force	New Standard: Test Method Based on RGB for C-SI Solar Cell Color
5726	Cycle 1-2015	Crystalline Silicon Solar Cell Task Force	New Standard: Test Method for Determining the Aspect Ratio of Solar Cell Metal Fingers by Confocal Laser Scanning Microscope
5727	Cycle 1-2015	Crystalline Silicon Solar Cell Task Force	New Standard: Test Method for The Etch Rate of A Crystalline Silicon Wafer by Determining The Weight Loss
5728	Cycle 1-2015	Multi-wire Saws Task Force	New Standard: Test Method for the Wire Tension of Multi-wire Saws
5477D	Cycle 1-2015	PV Silicon Raw Materials Task Force	New Standard: Test Method for Determining B, P, Fe, Al, Ca Contents in Silicon Powder for PV Applications by Inductively-Coupled-Plasma Optical Emission Spectrometry

Table 5 Authorized Activities

<i>#</i>	<i>Type</i>	<i>SC/TF/WG</i>	<i>Details</i>
5830	SNARF	PV Module Task Force	New Standard: Classification for Electroluminescence Inspection of Crystalline Silicon Photovoltaic Modules

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

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

Table 6 New Action Items

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>
None		

Table 7 Previous Meeting Action Items

<i>Item #</i>	<i>Assigned to</i>	<i>Details</i>	<i>Status</i>
ChinaPV-091 4-01	Kris, China PV core member companies	Clear up the inactive and invalid members from China PV core member companies	Done

1 Welcome, Reminders, and Introductions

Committee co-chair Guangchun Zhang chaired the meeting and welcomed all attendees, all the attendees introduced themselves. Kris Shen called the meeting to order at 9:40 AM. The meeting reminders on antitrust issues, intellectual property issues and effective meeting guidelines were reviewed. Agenda was reviewed.

2 Review of Previous Meeting Minutes

Minutes were reviewed. No change was made.

Motion: To accept the minutes of the previous meeting as submitted

By / 2nd: Zhixin Li (Linton)/Dazhou Yan(SINOSICO)

Discussion: None

Vote: 42-0. Motion passed

[Attachment-1, China PV TC Minutes 20140912.pdf](#)

3 Staff Report

Kris Shen (SEMI China) gave the staff report. Highlights

- Overview the SEMI Global 2015 Calendar of Events
- SEMI standards publication update
- China Photovoltaic TC Achievement
- Overview 2014 Critical Dates for SEMI Standards Ballots, the upcoming SEMI standards ballots submission deadline, and remind to vote for Cycle 8

[Attachment-2, SEMI Staff Report 20141212.pdf](#)

4 Liaison Reports

4.1 North America PV Materials Committee

Kris Shen (SEMI China) reported. Highlights:

- Next meeting - North America Spring Standards Meetings, SEMI HQ, San Jose, CA, Wednesday, April 1, 2015
- New SNARFs
 - Doc. 5801, New Standard: Guide for the Planning, Implementing and Analyzing data from a Round Robin used to verify a Test Method
 - Doc. 5802, New Standard: Test Method for In-line, Noncontact Measurement of Saw Marks on Silicon Wafers for PV Applications Using Laser Position Sensor
 - Doc. 5803, New Standard: Test Method for In-line, Noncontact Measurement of Thickness and Thickness Variation of Silicon Wafers for PV Applications Using Laser Position Sensor

[Attachment-3, NA Liaison Report PV Materials 20141118.pdf](#)

4.2 Europe PV Materials Committee

Kris Shen (SEMI China) reported. Highlights:

- Ballot Results Summary from October 2013 meeting
 - Doc 5565, Line Item Revision to PV42, Test Method for In-Line Measurement of Waviness on PV Silicon Wafers by a Light Sectioning Technique Using Multiple Line Segments – PASSED
 - Doc 5433, New Standard, Test Method for In-line Characterization of PV Silicon Wafers regarding Grain Size – PASSED

- Doc 5432, New Standard, Test Method for In-line Characterization of PV Silicon Wafers by Using Photoluminescence – PASSED

[Attachment-4, 141022 Europe PVMat LiaisonReport.pdf](#)

4.3 Japan PV and PV Materials Committee

Kris Shen (SEMI China) reported. Highlights:

- Japan TC Chapters of PV Global TC and PV Materials Global TC have been jointly discussing the reorganization.
- New Standard: “Test Method for Measurement of Cracks in PV Silicon Wafers in PV Modules by Laser Scanning”

[Attachment-5, 141210 JA PV&PVM China-Winter-2014 R0.1.pdf](#)

4.4 Taiwan PV Committee

Kris Shen (SEMI China) reported. Highlights:

- Doc # 5431 ballot passed A&R and in publication proof stage
- Doc # 5597 ballot passed A&R and in publication proof stage

[Attachment-6, Taiwan PV Liaison Report Dec 8 2014.pdf](#)

5 Ballot Review

5.1 Cycle 7-2014: Doc. 5724, New Standard: Guide for Specifying Quasi Monocrystalline Silicon Wafers used in Photovoltaic Solar Cells

5.1.1 Document **Failed** and return to TF for re-work.

[Attachment-7, 5724 Failed.pdf](#)

5.2 Cycle 7-2014: Doc. 5477C, New Standard: Test Method for Determining B, P, Fe, Al, Ca Contents in Silicon Powder for PV Applications by Inductively-Coupled-Plasma Optical Emission Spectrometry

5.2.1 Document **Failed** and return to TF for re-work.

[Attachment-8, 5477C Failed.pdf](#)

6 Task Force Reports

6.1 PV Silicon Raw Materials Task Force

- Working on Doc. 5564C, New Standard: Test Method for the Measurement of Chlorine in Silicon by Ion Chromatography.

[Attachment-9, PV Silicon Raw Material TF Report20141212.pdf](#)

6.2 PV Silicon Wafer Task Force

- Working on
 - Doc. 5724, New Standard: Guide for specifying Quasi-monocrystalline Silicon Wafers Used in Photovoltaic Solar.
 - Doc. 5767, New Standard : Guide for Material Requirements of Internal Feeders Used in Mono-crystal Silicon Growers

[Attachment-10, PV Silicon Wafer TF Report20141212.pdf](#)

6.3 *Crystalline Silicon Solar Cell Task Force*

- Working on
 - Doc. 5426, New Standard: Specification For Aluminum Paste, Used In Back Surface Field Of Crystalline Silicon Solar Cells (Passed A&R procedure, will be published soon)
 - Doc. 5659, New Standard: Test Method Based on RGB for C-Si Solar Cell Color
 - Doc. 5726, New Standard: Test Method for Determining the Aspect Ratio of Solar Cell Metal Fingers by Confocal Laser Scanning Microscope
 - Doc. 5727, New Standard: Test Method for The Etch Rate of A Crystalline Silicon Wafer by Determining The Weight Loss

[Attachment-11, Crystalline Silicon Solar Cell TF Report20141212.pdf](#)

6.4 *PV Module Task Force*

- Working on
 - Doc. 5660, New Standard: Specification for Ultra-thin Glasses Used for Photovoltaic Modules (Passed A&R procedure, will be published soon)
 - Doc. 5661, New Standard: Test Method for Electrical Parameters of Bifacial Solar Module
 - Doc. 5563, New Standard: Specification for Framing Tape for PV Modules (Passed A&R procedure, will be published soon)
 - Doc. 5644, New Standard: Terminology for Back Contact PV Cell and Module (Passed A&R procedure, will be published soon)
 - Doc. 5725, New Standard: Practice for Metal Wrap Through (MWT) Back Contact PV Module Assembly
 - Doc. 5768, New Standard: Specification for Testing Requirements of Electroluminescence Defect Detection System for Crystalline Silicon PV Modules
 - Doc. 5773, New Standard: Test Method for Cell Defects in Crystalline Silicon PV Modules by Using Electroluminescence

[Attachment-12, PV Module TF Report 20141212.pdf](#)

6.5 *Silicon Thin Film PV Module Task Force*

- Working on Doc. 5478, New Standard: Test method for thin-film silicon PV modules light soaking

[Attachment-13, Silicon Thin Film PV Module TF Report20141212.pdf](#)

6.6 *PV Power Station Equipment Integrated Performance Task Force*

- Working on
 - Doc. 5648, New Standard: Test method for the integrated efficiency of installed PV systems
 - Doc. 5729, New Standard: Specification for on Site Hotspot Failure

[Attachment-14, PV Power Station Equipment Integrated Performance TF Report 20141212.pdf](#)

6.7 *PV Diffusion Furnace Test Methods Task Force*

- Published SEMI PV53-0514, the TF inactive now.

[Attachment-15, PV Diffusion Furnace Test Methods TF Report 20141212.pdf](#)

6.8 PV Std. Multi-wire Saws Task Force

- Working on Doc. 5728, New Standard: Test Method for the Wire Tension of Multi-wire Saws
[Attachment-16, Multi-wire Saws TF Report 20141212.pdf](#)

7 Old Business

None

8 New Business

8.1 Request for Ballots in cycle 1-2015

- Doc. 5648, New Standard: Test Method for the Integrated Efficiency of Installed PV Components

Motion: To approve Doc. 5648 for Balloting in cycle 1-2015

By/2 nd: Baisheng Tang (GDSolar)/ Jingbing Zhu(Suntech)

Discussion: 1.The Review and Adjudication Information should be supplement completed.
2. Task force further check for grammar error and written mistake.

Vote: 26-3, Motion Passed

- Doc. 5659A, New Standard: Test Method Based on RGB for C-SI Solar Cell Color

Motion: To approve Doc. 5659A for Balloting in cycle 1-2015

By/2 nd: Duchao Zhang (Yingli) / Zhixin Li (Linton)

Discussion: 1. Why set the pixels size of the 80um, whether it has limitations? The draft on the pixel size of our provisions should be less than 80um
2. The power output is not necessary for the 12V or 24V.
3. The human eye is determined as the cell of different colors, the instrument to test whether you will get the same value. The device detected is the true value of the cell, whether the eye of judgment error.
4. The conversion formula is given in Annex reference formula.
5. Light source calibration reference ISO105/A02.

Vote: 29-1, Motion Passed

- Doc. 5726, New Standard: Test Method for Determining the Aspect Ratio of Solar Cell Metal Fingers by Confocal Laser Scanning Microscope

Motion: To approve Doc. 5726 for Balloting in cycle 1-2015

By/2 nd: Jing Wang (Yingli) / Zhixin Li (Linton)

Discussion: None

Vote: 24-1, Motion Passed

- Doc. 5727, New Standard: Test Method for The Etch Rate of A Crystalline Silicon Wafer by Determining The Weight Loss

Motion: To approve Doc. 5727 for Balloting in cycle 1-2015

By/2 nd: Tao Wang (Yingli) / Yong Liu (JASolar)

Discussion: 1. The Etch time is not stated in the Scope
2. Add W_2 value test conditions: whether to dry
3. Definition of S is double or single corrosion
4. Sample test sequence is not clearly stated

Vote: 26-2, Motion Passed

- Doc. 5728, New Standard: Test Method for the Wire Tension of Multi-wire Saws

Motion: To approve Doc. 5728 for Balloting in cycle 1-2015

By/2 nd: Honglin Sui (48th Institute) / Dengyuan Song (Yingli)

Discussion: 1. Who are the users of the document?

A: Manufacturers and customers.

2. Does the diameter size of wire affect the test results?

A: The diameter size of wire has no effect on the tension control of the equipment, but it affects test results of the tension meter, so the tension meter needs to equip the wire diameter compensator.

3. What is the difference between the document and tension test method that the enterprises use at present?

A: Currently most of the manufacturers use the static test method, while the document uses dynamic test method which can more really reflect the actual running state of equipment.

Vote: 30-1, Motion Passed

- Doc. 5477D, New Standard: Test Method for Determining B, P, Fe, Al, Ca Contents in Silicon Powder for PV Applications by Inductively-Coupled-Plasma Optical Emission Spectrometry

Motion: To approve Doc. 5477D for Balloting in cycle 1-2015

By/2 nd: Guie Chen (ENFI) / Dengyuan Song (Yingli)

Discussion: None

Vote: 28-0, Motion Passed

8.2 New SNARFs & TFOFs

- SNARF- New Standard: Test Method for PV Module UV Test Chambers Calibration

Motion: To approve the SNARF to send global TC for review

By/2nd: Jiansheng Li(FJLL)/ Dengyuan Song (Yingli)

Discussion: 1. TUV Sud: appreciated this proposal as they had realized this issue.

2. Ying Li: More research on how other leading PV institutes, like NREL, Fraunhofer ISE or AIST, measure UV irradiance at high temperature.

3. Revise the title of standard to: "Test Method for Calibration of PV Module UV Test Chamber".

Vote: 22-8, Motion Passed

[Attachment-17, Test Method for Calibration of PV Module UV Test Chamber Introduction.pdf](#)

- SNARF- New Standard: Specification for Electroluminescence Inspection in Crystalline Silicon Photovoltaic Modules—Defects Classification and Acceptance Criteria

Motion: To approve the SNARF

By/2nd: Yingtang Tang(CSI)/ Jingbing Zhu (Suntech)

Discussion: 1. Practice about EL inspection were collected by Canadian Solar from the industry including module makers, testing agencies and end users.

2. 18 EL image types and related practices were presented in the meeting.

3. The committee recognized that a standard about EL image classification of solar modules would be helpful for the industry. Technical recommendations on each classification of EL images can be offered for reference.

4. The resolution of EL images is critical to its classification. Semi standards on EL test equipment and test method (being referred in this SNARF) are important, which were proposed and approved in 2014Q3 SEMI PV China meeting.

5. The SNARF title changed to “New Standard: Classification for Electroluminescence Inspection of Crystalline Silicon Photovoltaic Modules” according to the committee members suggestion.

Vote: 32-0, Motion Passed

[Attachment-18, Electroluminescence Inspection in Crystalline Silicon Photovoltaic Modules Introduction.pdf](#)

- SNARF- New Standard: Guide for Replacing the Quartz Bottle of POCl₃ in Diffusion Furnace

Motion: To approve the SNARF

By/2nd: Liangyu Liu (48th Institute)/ Dengyuan Song (Yingli)

Discussion: 1. At present, some enterprises have adopted centralized supply of POCl₃ source instead of a single quartz bottle POCl₃, so this standard in the near future may not adapt. (Committee co-chair Guangchun Zhang);

2. Currently each manufacturer has its own guide for replacing quartz bottle of POCl₃(Yingli Dengyuan Song, Linton Zhixin Li & Sevenstar Buzhong Li).

Vote: 1-15, Motion Failed

Attachment-19, Guide for Replacing Quartz Battel of POCl3 in Diffusion Furnace Introduction.pdf

9 Action Item Review

9.1 Open Action Items

None

9.2 New Action Items

See Table 6.

10 Next Meeting and Adjournment

The next meeting of the China PV Standards committee will be on March 17th, 2015, Tuesday, in Pudong Kerry Hotel, Shanghai, Combined with SEMCON China 2015.

Respectfully submitted by:

Kris Shen

SEMI China

Minutes approved by:

Guangchun Zhang (CanadianSolar), Co-chair	2015/1/10
Jun Liu (CESI) , Co-chair	2015/1/10

Table 8 Index of Available Attachments #1

#	Title	#	Title
1	China PV TC Minutes 20140912.pdf	11	Crystalline Silicon Solar Cell TF Report20141212.pdf
2	SEMI Staff Report 20140912.pdf	12	PV Module TF Report20141212.pdf
3	NA Liaison Report PV Materials 20141118.pdf	13	Silicon Thin Film PV Module TF Report20141212.pdf
4	141022_Europe_PVMat_LiaisonReport.pdf	14	PV Power Station Equipment Integrated Performance TF Report 20141212.pdf
5	141210_JA_PV&PVM_China-Winter-2014_R0.1.pdf	15	PV Diffusion Furnace Test Methods TF Report 20141212.pdf
6	Taiwan PV Standard Committee Liaison Report201409.pdf	16	Multi-wire Saws TF Report 20141212.pdf
7	5724 Failed.pdf	17	Test Method for Calibration of PV Module UV Test Chamber Introduction.pdf
8	5477C Failed.pdf	18	Electroluminescence Inspection in Crystalline Silicon Photovoltaic Modules Introduction.pdf
9	PV Silicon Raw Material TF Report20141212.pdf	19	Guide for Replacing Quartz Battel of POCl3 in Diffusion Furnace Introduction.pdf
10	PV Silicon Wafer TF Report20141212.pdf		

#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.