

## Minutes of the Joint ECA Soldering Technology Committee (STC)

Tuesday, May 17, 2005

Chateau Sonesta Hotel

New Orleans, LA

**The scope of the Soldering Technology Committee (STC):** The STC encompasses soldering practices (soldering iron-mass reflow techniques) and associated soldering materials (solders, pastes and adhesives, and flux/cleaning agents). However, the Committee will focus on solderability test method development for printed through-hole (PTH) and surface mountable components. One of the major functions is to promote commonality and standardization of soldering test methodology within the EIA Sectors.

The meeting was called-to-order at 1:30 PM by Chairman Doug Romm.

Name	PI*		Organization	Telephone	Fax	Email
	V	T				

### Voting members

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### Absent voting members

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### Nonvoting members present

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\* PI = Participant identification: V = voting status; M = member; G = guest; S = staff; T = participant type; P = producer; U = user; G = general participant

## 1 Committee organization and procedures

### 1.1 Membership and attendance

Self-introductions were made and attendance was taken.

## 1.2 Approval of the Agenda

The Committee unanimously accepted the Agenda as presented.

## 1.3 Approval of the Minutes

The Committee unanimously accepted the Minutes of the last meeting as written.

## 2 Old business

### 2.1 Review/status of ANSI J/STD-001-C

Dave Hillman reviewed his summary of the results from the DOE used to determine Pb-free solderability parameters. This ppt file is attached to the meeting minutes. Key points were:

Page 14: For the dip-and-look test method the overall failure trends were:

- 50% of the test data will not model – not enough failures (only 41 failures of 6397 data points, 0.64%)
- Condition – No statistical significance.
- Flux – Only TIC showed statistical significance.
- Solder – 4 of 6 components show statistical significance.
- Temperature – 2 of 5 components show statistical significance.

Page 27: For the wetting balance test method the overall failure trends were:

- Both factors of solder and temperature had a major influence in testing.

Page 49: Summary inputs as a result of the DOE

- What conditioning methodology do we use?
  - The experiment used 150C for 12 hours (and it didn't have much of an effect)
  - Stay with steam conditioning, and look at alternative conditioning in the next DOE
  - Look at "ageing" in IEC standards (Graham)
  - Look at JEDEC B102 of reconditioning requirements (Hillman)
- What flux do we use?
  - Experiment showed a *very weak* effect
  - IEC allows either 0.2% or 0.5%
  - The flux can be either 0.2% or 0.5%, but default flux shall be 0.2%
- What solder do we use?
  - The test data dramatically demonstrates that Sn63 is not appropriate (wetting is too good)
  - Use SAC 305 alloy
- What temperature do we use?
  - The test data shows 255C has less scatter and showed a truer reflection of assembly performance
  - At 235C the test data showed some false negatives (failed some parts that worked on the assembly line)
  - Use 255 +/- 5
  - 255C better represents the superheating (255-217C) as SnPb (245-183C) than 245C does
  - Make graph of wetting curve from raw data, SAC 255 vs SnPb 245 (Hillman)
  - Examine effect of preheat in future experiments

Additional items needed:

- Doug Romm to provide the QFN inspection criteria for inclusion into J-STD-002C.
- Jeff Cannis to provide drawing for exposed pad packages.
- Cannis and Hillman to collaborate on a drawing for BGA packages.
- Jason Young of Kemet to provide a drawing of face-down terminations / low inductance packages.
- Dave Hillman to pass working draft to IPC by end of June for review by IPC/EIA committees.
- Resolve comments and send out for WW ballot by end of July.

### **3 New business**

The committee spend the entire meeting time focused on review of the solderability DOE and revision to J-STD-002. Publication of updated J-STD-002 is the major accomplishment that this committee and IPC/JEDEC committees are striving towards this year.

#### **3.2 Replacement for Steam Preconditioning**

The team discussed plans for a study to look at possible replacement for steam preconditioning. The team agreed that we will develop a test plan at the next meeting, after completion of major activity for update to J-STD-002.

#### **3.3 Gauge R&R for wetting balance test**

The wetting balance test method is currently listed in ANSI/J-STD-002 under the section "Tests without Established Accept/Reject Criterion". Input from Dave Hillman was that the IPC committee discussed the options of either validating or removing the wetting balance method as an accepted method. The team agreed that we will develop a test plan at the next meeting, after completion of major activity for update to J-STD-002.

### **4 Next meeting**

The next meeting is scheduled to be held in conjunction with the ECA Fall 2005 Engineering Summit. ECA Engineering Summit will be held at the Radisson Hotel Memphis in Memphis, Tennessee week of Oct 17-20, 2005.

### **5 Adjournment**

The Committee moved, seconded, and unanimously agreed to adjourn at 5:00PM.

This meeting was conducted in accordance with the EIA legal guidelines and the EIA manual of organization and procedure.

*Doug Romm*

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STC Chairperson