



Minutes of the Joint ECA Soldering Technology Committee (STC)

Tuesday, September 26, 2006

Silver Legacy Hotel

Reno, Nevada

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 STC Committee Chairman, Doug Romm.

Attendees:

<u>NAME</u>		<u>COMPANY</u>
Chris	Reynolds	AVX
Laird	Macomber	Cornell Dubilier
Chris	Cleet	EIA
Ed	Mikoski	EIA/ECA
Mary Carter	Berrios	KEMET
Jason	Young	KEMET
Stephen	Olster	Mini-Systems Inc
Jerry	Kolbe	Murata Electronics
Tom	Motoki	Murata Electronics
Len	Metzger	Panasonic
Bill	Russell	Raytheon
Joe	Biernacki	Stackpole Electronics
Doug	Romm	Texas Instruments
Karun	Malhotra	Murata Mfg Co Japan
Ted	Coler	Vishay
Dave	Richardson	Vishay
Dave	Toomey	Vishay

<u>Member Organizations Present</u>	<u>Present Reno</u>	<u>Present Ft Lauderdale</u>	<u>Present Memphis</u>
AVX	Y	Y	N
Cornell Dubilier	Y	Y	Y
KEMET	Y	Y	Y
Mini-Systems Inc	Y	Y	N
Murata	Y	Y	Y
Panasonic	Y	Y	N
Stackpole Electronics	Y	N	Y
Texas Instruments	Y	Y	N
Vishay	Y	Y	Y

^Indicates activated as member of committee

<u>Member Organizations Absent</u>	<u>Present Reno</u>	<u>Present Ft Lauderdale</u>	<u>Present Memphis</u>
IBM	N	Y	Y
KOA	N	N	Y
Phoenix Contact	N	Y^	n/a
San-O-Industrial Corp	N	Y	Y
TDK	N	Y	N

*** Indicates not used in determination of quorum due to record of non-attendance**

<u>Other Organizations Present</u>
EIA
EIA/ECA
Raytheon

1 Committee organization and procedures

1.1 Membership and attendance

Self-introductions were made and attendance was taken. A quorum was present.

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-002-C

The committee reviewed status of J-STD-002C which is in committee draft status now. The STC ballot summary was reviewed. In the EIA ballot for J-STD-002C 10 members approved, 2 members approved with comments, 4 members did not respond, and no members did not approve. The committee reviewed the ballot comments from Mary Carter-Berrios and Stephen Oster. Dave Hillman is dispositioning these comments now. Result after ballot of J-STD-002C in EIA, IPC and JEDEC is that J-STD-002C will likely go back out for 15-day “No Vote Ballot” in mid-October. Goal is to be able to publish by Thanksgiving.

3 New business

The committee spent the rest of the meeting time discussing future projects.

3.1 Replacement for Steam Preconditioning

Committee members agreed that an area for future work is the replacement of steam pre-conditioning. Investigation of industry data and other pre-condition methods in use will be needed. Majority of time was spent discussing a designed experiment (DOE) to support this activity. Details of the DOE discussion are:

- Possible conditions for replacement of steam preconditioning:
 - Dry bake:
 - Siemens 4hrs @ 155C
 - 8hrs @ 155C
 - 16hrs @155C
 - Action: need to verify IEC conditions for dry baking?
 - Steam preconditioning (8 hrs or 1 hr?)
- Finishes
 - SnPb on Cu leadframe SOIC ICs (TI)
 - NiPdAu on Cu leadframe SOIC ICs (TI)
 - Sn finish for Cu leadframe SOIC ICs (TI)
 - SnPb on Cu leadframe PDIP ICs (TI)
 - NiPdAu on Cu leadframe PDIP ICs (TI)
 - Sn finish for Cu leadframe PDIP ICs (TI)
 - SnPb finish on Cu leadframe (Ni flash) for 7343 molded capacitor (AVX - Reynolds)
 - Sn finish on Cu leadframe (Ni flash) for 7343 molded capacitor (AVX - Reynolds)
 - SnPb finish on brass leadframe for 16-pin DIP resistor network (Vishay – Coler)
 - Sn finish on brass leadframe for 16-pin DIP resistor network (Vishay – Coler)
 - SnPb finish on Cu dipped termination (Ni barrier) for 0805 MLCC (Berrios – Kemet)
 - Sn finish on Cu dipped termination (Ni barrier) for 0805 MLCC (Berrios – Kemet)

- SnBi finish on Cu plated steel for 10mm V-Chip aluminum electrolytic (Metzger – Panasonic)
 - We need to identify a sample that is “intended to fail” to be included. What exposure conditions to be used to make the “marginal” parts.
 - Sample size = ?? (?) for wetting balance testing
 - Sample size = 22 (?) for solderability testing (DNL)
- Responses
 - Dip-and-look (estimate coverage %) – AVX, KEMET, VISHAY (?)
 - Wetting balance (would need to be performed by IPC members, not STC members)
 - Assembly processing (need board design for processing – Hillman?)
 - Surface analysis before and after aging (SERA – Hillman?, SEM work -- Abbott?)

Bill Russell will review the inputs from the committee and propose a DOE based on the desired inputs and responses. The committee agreed that Doug Romm, Bill Russell, and Dave Hillman consolidate the inputs, design the experiment, and then provide the updated proposal to the committee.

3.2 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 committee discussed a DOE to investigate. The committee was in agreement that this may be worked in conjunction with the steam preconditioning study. Other committee inputs were:

- Passive component suppliers all indicate that they do not use wetting balance test method as a go/no-go production method now. If used, it is sometimes used for engineering evaluations. One of the main reasons is that passives (and other components) are so small now that WB is grossly inaccurate and unrepeatable due to very low component mass.
- However, differences in PWB versus component geometries may mean a difference in performance.
- Action: Contact someone in IEC community who is doing the test method now to do gauge R&R
- Action: Get Gerard's paper from Dave on PWB wetting balance gauge R&R
- Action: See if Gerard knows of advocates who would be able to do component wetting balance testing
- J-STD-003 has a coupon to use to calibrate the wetting balance. Need to include coupon in gauge R&R.

4 Next meeting

The next meeting is scheduled to be held in conjunction with the ECA Spring 2007 ECA Engineering Summit. ECA Engineering Summit will be held at the Holiday Inn San Diego Bayside in San Diego, CA week of April 16-19, 2007.

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

STC Chairperson