EPTAC CORPORATION

ELECTRONICS TRAINING Webinar Series

THE LEADER IN HI-TECH TRAINING

800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

Sponsored by:
STANLEY Supply & Services

Developing - Implementing And Maintaining Processes to 001 & 610

You are connected to our live presentation delivered via the internet.
The webinar will begin shortly.

NEW FEATURE

See It and Hear It
Right on your computer

EPTAC CORPORATION

ELECTRONICS TRAINING Webinar Series

THE LEADER IN HI-TECH TRAINING

800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

Sponsored by:
STANLEY
Supply & Services

Attendee Quick Reference

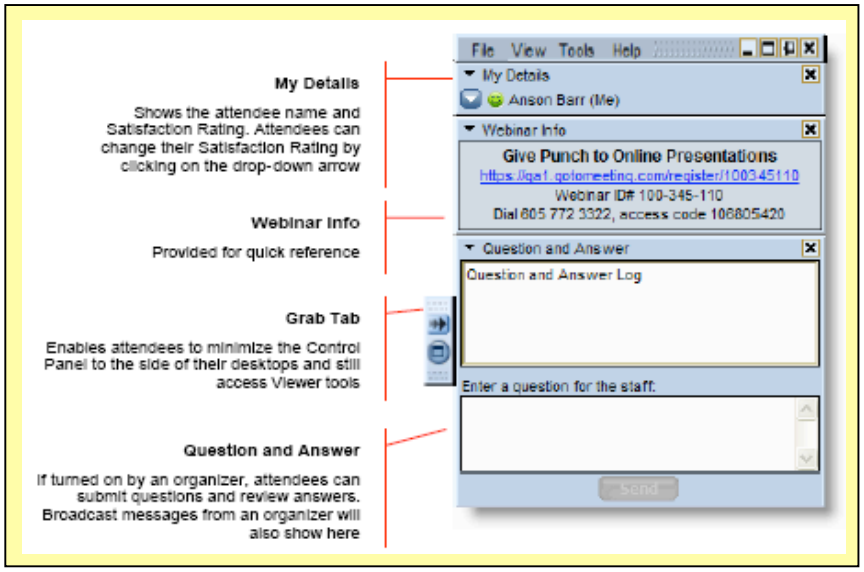
- You can ask questions by typing text directly to the presenter using the "Question and Answer" box

Control Panel Features:

Once you have joined our Webinar, you will see this GoToWebinar Control Panel and Grab Tab. The control panel contains three panes that can be expanded or collapsed by clicking the arrow on the left side of each pane.

To Leave a Webinar:

1. From the Attendee Control Panel ***File*** Menu, select ***Exit – Leave Webinar***.
2. On the ***Leave Webinar?*** Confirmation dialog box, click ***Yes.***



EPTAC CORPORATION

ELECTRONICS TRAINING Webinar Series

THE LEADER IN
HI-TECH TRAINING

800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

Developing - Implementing And Maintaining Processes to IPC Specifications 610 and 001

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

What is the 5-20 A&J Committee?

- Simply put, it is the forum within IPC for the exchange of technical information and for the preparation of both guidelines and standards in the areas of:
  - Joining techniques and soldering requirements
  - Solderability Testing/Soldering Materials
  - Opto-Electronic Assembly

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

What Committees Fall Within Domain of 5-20

- 5-20 Assembly and Joining Committee
  - 5-21Component Mounting Subcommittee
  - 5-22 Soldering Subcommittee
  - 5-23 Solderability Subcommittee
  - 5-24 Assembly & Joining Subcommittee
  - 5-25 Opto-Electronics Assembly Subcommittee

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

List of Documents Controlled by 5-20 Committee

5-20	IPC-TR-460
	IPC-TA-722
	IPC-TA-723
	IPC-TA-724
5-20/ 7-35	IPC-AJ-820
5-21a	IPC-CM-770
5-21c	IPC-9501, 2, 4
	IPC-9503 now J-STD-075 under B-10a
5-21e	IPC-7525
5-21f	J-STD-013
	J-STD-032
	IPC-7095

5-21g	J-STD-012
	J-STD-026, 027
	J-STD-028
5-22a	J-STD-001
	IPC-TR-467
5-22as	J-STD-001xS
5-22g	IPC-7912
	IPC-9261
5-22h	IPC-7530
5-23a	J-STD-003
	IPC-TR-461
	IPC-TR-462
	IPC-TR-464

5-23b	J-STD-002
	IPC-TR-465-1
	IPC-TR-465-2
	IPC-TR-465-3
	IPC-TR-466
5-23d	IPC-TR-585
5-24a	J-STD-004
5-24b	J-STD-005
	IPC-HDBK-005
5-24c	J-STD-006
5-24d	IPC-SM-817
	IPC-CA-821
	IPC-3406
	IPC-3408
5-24f	J-STD-030

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

IPC-A-610, *Acceptability of Electronic Assemblies*

- This documents contains visual representations of what good solder joints look like in addition to assembly criteria, hardware installation, terminal connections, through hole and surface mount component mounting, laminate and assembly criteria, discrete wiring, markings, high power requirements, etc.

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

IPC-A-610 D Comment Compilation

- IPC-A-610 Rev D has 78 pages and 384 comments for review
  - 24% of comments are about 16% of book
  - 76% of comments are about the remaining 84%

THE LEADER IN
HI-TECH TRAINING
800-643-7822
www.eptac.com

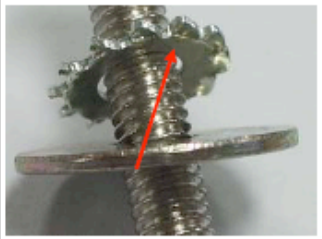
ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

IPC-A-610E aComments

These are following the January 2009 meeting and will be continuously updated as new comments and completed action items are added.

COMMENTS NEEDING RESOLUTION

Commenter name, company	Ref	Type		Recommendation	Reason for Recommendation	Committee Resolution
Zhang Yuan, Zhou HuiLing, Huawei Technologies Co.,LTD	Flex X		1.	Possibly include in 10.2.8.5 with other flex criteria.- Propose new chapter for flexible board connection requirements X.1 FOB Solder Connection FOB Solder Connection means the FPC connect with the PCB by solder. The heat method include hotbar, reflow, and so on. The solder joints requirements include the follow item:	In current electronics assemblies, flexible board connection are applied in many products, such as mobile phone, optical modules, and so on. Flexible board connection include FOB (Flex on PCB), FOF (Flex on Flex). And the main connect material are solder and ACF. So it's necessary to add new chapter for flexible board connection requirements. In this meeting, Huawei recommend FOB Solder connection requirements. In the future, FOB ACF connection, FOF ACF connection also can be recommended. Welcome everyone give new comments on Flexible Board Connection ACF---Anisotropically Conductive Adhesive Film FOB——FPC (Flexible Printed Board) connect with PCB by solder, ACF and so on. FOF--- FPC connect with PCB by solder, ACF and so on	The committee appreciates these additional proposed criteria and would like to move forward to include as much as possible. ACTION: Teresa Rowe, AAI, Dan Foster, STI Electronics and Bev Christian, RIM to develop additional proposal for content and location. <Sep08>

He Yun, Manson Engineering Ind. Ltd	4.1.4		12.	Proposed to add 4.1.4: Hardware mounting- Assemble face & order of tooth washer Top side where has sharp edge to avoid slippery is specified as face A  Opposite side where the face has relatively not sharp is specified as face B  Acceptable – Class 1, 2 and 3 • Face A mounted onto the component which wanted to fix (Refer to Fig.4-8) • Components are assembled in correct order. Solder plate is placed on the top of tooth washer (Refer to Fig. 4-9) Acceptable – Class 1, 2 and 3 • Face A mounted onto the component which wanted to fix (Refer to Fig.4-8) • Components are assembled in correct order. Solder plate is placed on the top of tooth washer (refer to Fig. 4-9) Acceptable - Class 1 Defect - Class 2 and 3 1. Face B mounted onto the component and face A on the top side	Face A should be mounted onto the component which wanted to be fixed to ensure fix security and also good electrical conductively.   1. Solder plate or grounding plate 2. Tooth washer (can be internal or external tooth) 3. Plain washer or any metal component  Face A is not mounted onto the metal so that cannot be

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

The 610 Hot Topics Addressed

- Hardware
  - Cable fabrication
  - Hardware sequence
- Plated Through
  - Lead protrusion

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

Program Document Feedback

- Submit comments and suggestions for improvement to training program to IPC
- For suggestions on the IPC-A-610 document, use the Standard Improvement Form included in the document

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

Standard Improvement Forms

IPC
ASSOCIATION CONNECTING ELECTRONICS INDUSTRIES ®

Standard Improvement Form IPC-A-610D

The purpose of this form is to provide the Technical Committee of IPC with input from the industry regarding usage of the subject standard.

Individuals or companies are invited to submit comments to IPC. All comments will be collected and dispersed to the appropriate committee(s).

If you can provide input, please complete this form and return to:
IPC
3000 Lakeside Drive, Suite 309S
Bannockburn, IL 60015-1219
Fax 847 615.7105
E-mail: answers@ipc.org

1. I recommend changes to the following:
___ Requirement, paragraph number _____
___ Test Method number _____, paragraph number _____

The referenced paragraph number has proven to be:
___ Unclear ___ Too Rigid ___ In Error
___ Other _____

2. Recommendations for correction:

3. Other suggestions for document improvement:

Submitted by:

IPC
ASSOCIATION CONNECTING ELECTRONICS INDUSTRIES ®

Standard Improvement Form IPC J-STD-001D

The purpose of this form is to provide the Technical Committee of IPC with input from the industry regarding usage of the subject standard.

Individuals or companies are invited to submit comments to IPC. All comments will be collected and dispersed to the appropriate committee(s).

If you can provide input, please complete this form and return to:
IPC
3000 Lakeside Drive, Suite 309S
Bannockburn, IL 60015-1219
Fax 847 615.7105
E-mail: answers@ipc.org

1. I recommend changes to the following:
___ Requirement, paragraph number _____
___ Test Method number _____, paragraph number _____

The referenced paragraph number has proven to be:
___ Unclear ___ Too Rigid ___ In Error
___ Other _____

2. Recommendations for correction:

3. Other suggestions for document improvement:

Submitted by:

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

J-STD-001, *Requirements for Soldered Electrical and Electronic Assemblies*

This Specification covers the process and product requirements to make a quality solder joint.

Core topical subjects:

- How to select and set up your soldering materials
- How to make a good solder joint
- How to inspect the final solder joints

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

J-STD-001 Comment Compilation

- J-STD-001 Rev D has had 26 pages and 121 comments to be reviewed

J-STD-001E
Compiled Comments as of the January 2009 Meeting
UPDATED 6 March 2009

COMMENTS NEEDING RESOLUTION

Commenter's name, company	Reference	Type	0	Recommendation	Reason for Recommendation	Committee Resolution
Gabriel Rosin, ELBIT System LTD - Israel			1	Propose to add "First Article" requirements: First Article: Assemblies furnished after modification and under this std shall be products which have passed the first article inspection. First Article Inspection shall be performed by the contractor. First Article Inspection shall be performed on sample circuit card assemblies. From MIL-C-28809B, Para 3.2 & 4.4 First Article: "First Article Inspection : The organization's system shall provide a process for the inspection , verification , and documentation of a representative item from the first production run of a new part or Following any subsequent change that invalidate the previous first article inspection result." Para 8.2.4.2 of AS9100	Looking for Good Quality in the first time production.	
Debbie Wade ART	1.5.1		2	Hardware Defects and Process Indicators. Add 1.8.8 in brackets after title to encourage the user to read definition of P.I	Some users are not familiar with the term Process Indicator but the definition is not covered until pg 3. We give clause number on pg 1 for the word User	
Vijay Kumar/Linda Woody, Lockheed Martin	1.5.2		3	Material and Process non conformance – The second paragraph should start with "The disposition other than rework shall address	Clarification Every rework degrades	
David Posner	1.8.3		4	Section 1.8.3, Electrical Clearance, and Appendix D have always bothered me for they can be misused by the people for which this standard is designed. In Section 1.8.3, the sentence "In the absence of a known design standard use Appendix D (derived from IPC-2221)." can be taken literally by assemblers when it should only be interpreted by the design/engineering function. Typical assemblers don't know what voltages will be present in the circuitry so I suggest that the sentence replaced with this: "The User or applicable design authority shall determine the Minimum Electrical Clearance." Appendix D should be removed. It serves no purpose in J-STD-001 and can be misinterpreted.		
Garry McGuire NASA/MSFC	1.8.3		5	Delete the last sentence and create a clause in Section 4 making any violation of minimum electrical clearance a defect [D1D2D3].	1.8.3 is a definition - the last sentence includes a requirement. Section 4 is the appropriate place for "General Soldering and Assembly" requirements.	
Peter Lambert, Ross Engineering Corp.	1.8.10		6	Add the wok "plated" to "through-hole" to read 'plated-through hole"	The discussion is to solder flowing through the hole so it has to be plated, can't be unsupported.	

Commenter's name, company	Reference	Type		Recommendation	Reason for Recommendation	Committee Resolution
Action Dec08	5.4.2.1		93	From Kathy Johnston, Dan Foster, Garry McGuire Sep08 action item Leads and wires should be mechanically secure to their terminals before soldering (See Figure 5-9). Such mechanical securing should prevent movement between the parts of the connection during the soldering operation. Minimum and maximum contact between the lead/wire and terminal post shall be in accordance with Table 5-X. Wire wrap may abut itself.		Accepted with modification<Jan09>

TABLE 5-X

Criteria	Class 1	Class 2	Class 3
Less than 90 degrees (<90°) contact between the lead/wire and terminal post	Defect	Defect	Defect
Wrap has 90 to 179 degrees contact between the lead/wire and terminal post (90^{O} - 179^{O})	Accept	Process Indicator	Defect
Contact between lead/wire and post is 180 degrees to 360 degrees (180^{O} - 360^{O})	Accept	Accept	Accept
Wrap exceeds 360 degrees (>360^{O}), and does not overlap itself. - Note 1	Accept	Process Indicator	Process Indicator
Wrap exceeds 360 degrees (>360°) and overlaps itself. Note 1	Defect	Defect	Defect
Wire violates minimum electrical clearance.	Defect	Defect	Defect

Note 1: A wire that is wrapped more than 360 degrees and remains in contact with the terminal post is considered an overwrap or spiral wrap and is not a defect. A wire that is wrapped more than 360 degrees and crosses over itself, i.e., does not remain in contact with the terminal post, is an overlap and is a defect.

Leo Lambert, EPTAC	5.4.2..1	Tech	94	Change Title to read as follows. Wire and Lead Wrap Around – Turret and Square Pin	A new requirement of Rev D is the last sentence in the paragraph stating leads and wires **shall not** have less than 90 degrees of contact between the wire and the terminal. (See Figure 5-9) This figure illustrates Turret terminals and not square terminals and for round turret terminals the wrap must be 180 degrees.	On discussion the task group did not accept this recommendation. <Sep07>
Vijay Kumar/Linda Woody, Lockheed Martin	5.4.2.1	T	95	Wire and lead wrap-around – Delete the last sentence: "Leads and wires shall not have less than 90……"	the minimum is 180 degrees contact as noted in the previous sentence.	The task group did not agree to this change. There are criteria where less than 180 is acceptable. <Sep07>
Raytheon - Kathy Johnston	5.4.2.1		96	This is confusing, to clarify, reword both sentences, and move the second sentence in front of the first: **2)** For Class 1 an 2, leads and wires shall not have less than 90 degrees of contact between the wire and the terminal. Class 3 Requirement in the verbage. **1)** For Class 3, leads and wires shall have a minimum of 180 degrees contact between the wire/lead and the terminal.	Last two sentences need to be clarified. 1) Leads and wires shall have a minimum of 180 degrees contact between the wire/lead and the terminal. 2) Leads and wires shall not have less than 90 degrees of contact between the wire and the terminal. ?? (WHAT??) Wrap requirements need to be reworded. (wording issue, IPC-610 6.7.1 is OK)	After discussion the commenter agreed to review with others in her company and will provide additional recommendations if warranted. <Sep07>

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

The 001 Hot Topics Addressed

- Plated through hole fill requirements for Class 2 and 1 regarding all board thicknesses
- Wires and terminals and the appropriate wrap around terminals

EPTAC CORPORATION

ELECTRONICS TRAINING Webinar Series

THE LEADER IN HI-TECH TRAINING

800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

Sponsored by:
STANLEY
Supply & Services

J-STD-001 DS

Space Applications Electronics hardware Addendum to J-STD-001 Requirements for Soldered Electrical and Electronic Assemblies

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

J-STD-001 DS Status

- Feb 2009 document out to ballot
- Some of the issues addressed by last round of comments:
  - Inclusion of visual acuity in Personnel Proficiency section.
  - Gold removal criterion was modified, it must be removed regardless of initial thickness, with the exception of ENIG boards
  - Reflow soldering shall have a documented process with defined requirements
  - Blistering and delamination are not allowed

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

Questions We Try To Answer

- Solder training is needed, can you help me out?
- My people need to be certified, do I take 001, 610 or what?
- Does 610 cover cables, my customers wants to build cables, but my people are certified to 610? What do I do?
- Are plant certifications offered for any of these specifications?

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

Specification Training Programs

- IPC has two levels of programs
  - CIT
  - CIS
- Training Programs are available for the following:
  - J-STD-001, IPC-A-610, IPC-A-600, WHMA-A-620, IPC-7711/21,

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

Specification Training Programs

- All IPC certifications belong to the individuals taking the programs
  - They are personal and portable certifications
- The programs cover both knowledge and skills based information and demonstrations

EPTAC CORPORATION

ELECTRONICS TRAINING Webinar Series

THE LEADER IN HI-TECH TRAINING

800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

Sponsored by:
STANLEY Supply & Services

IPC-A-610 Training

- Who should attend?
  - Inspectors, Lead People, Group Leaders, Engineers, Operators and Technical Staff
- What will they learn?
  - The Target, Acceptable and Reject Conditions of various state of electronic assembly

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

J-STD-001 Training

- Who should attend?
  - People who have demonstrated soldering skills as they will have to demonstrate those skills in this class.
  - Operators can attend a modular version of this program
  - Trainers cover the entire document

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

EPTAC's WEB Page

- Check the web page for all our programs
  http://www.eptac.com/training.htm
- Fiber optics training also available
- Customized programs designed and developed for unique applications

THE LEADER IN HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

Further Information

For questions regarding this webinar, please contact Leo Lambert at leo@eptac.com

For information on any of EPTAC's or IPC's Certification Courses, please visit our website at http://www.eptac.com

THE LEADER IN
HI-TECH TRAINING
800-643-7822
www.eptac.com

ABOUT THE PRESENTER
Leo Lambert
Vice President,
Technical Director

Thank you