

Attachment No. 1

Minutes of the CE-2.1 Subcommittee on Test Procedures 31 March – 1 April 2008 Louisville, KY

Subcommittee Chair Carl Fritz welcomed everyone, and said that the meeting would be conducted following the published agenda.

1. Approval of the 24 – 25 September 2007 Minutes

The minutes of the 24 – 25 September 2008 meeting in San Antonio, TX were approved. Moved by John Healey and seconded by Ralph Antonelli. The motion was unanimously moved and approved.

It is noted that all actions taken by the subcommittee will be simultaneously approved by the CE-2.0 committee.

2. TEST PROCEDURE PROJECTS (BY PROJECT NUMBER)

A. SP-4942-B, EIA-364-60A, General Methods for Porosity Testing (John Healey)

The standard was published 28 February 2008 and received by US Mail on 15 March 2008.

B. PN-4943, TP-65, MFG (Max Peel)

Carl Fritz reported that work is on going.

C. SP-5083, TP- 5, 7, 8, 24, 25, 27, 37, 40, 44, 79, 85, 87, 88, 93, 94, 97, 98 (J. Toran)**

Carl reported that he sent a letter to Max Peel (mpeel26) on behalf of Jeff Toran on 15 August 2006 acknowledging his comments, and sent a letter to EIA for EDEC ballot (mccwil267) on 15 August 2006 to reaffirm all listed standards, except TP-7, 25 and 87. The standards still have not been reaffirmed.

Carl Fritz reported that he notified EIA that there was no need to reaffirm TP-07 since it has was revised and published 19 July 2007.

Attachment No. 1

D. SP-5089-A-1, TP-55A, Current Cycling (Max Peel)**

Carl Fritz reported that the standard and cover memo (mccwil322) was sent to EIA for a Short 30-day SP ballot on 5 October 2007. Sent letter acknowledging the favorable comments to Bob Druckenmiller (mdruckenmiller13).

Ballot issued 26 October with a ballot expiration date of 26 November 2007.

- The following reply was received from Bob Druckenmiller on his approved ballot with comment 24 October 2007:

Recommended Changes:

Para 3.2.7.2: Change font size to match the rest of the document

Table 1: Change font size to match the rest of the document

Para 6.4, 6.5, 6.6: Can all be deleted, that information is already covered by the blanket heading for section 6 which specifies that all information from section 5 be documented. This information is covered in section 5 therefore does not need to be repeated in section 6

Ballot count received from Cecelia Yates on 14 January 2008 is: 5 favorable and 1 favorable with comment from Bob Druckenmiller.

Sent letter to Bob Druckenmiller (mdruckenmiller15) on behalf of Max Peel on 14 January 2008 acknowledging acceptance of his editorial comments. Sent standard and cover memo mccwil335) to EIA for EDEC ballot 15 January 2008.

E. SP-5107, EIA-364-1002, Test Methodology for Assessing the Performance of Compliant Contact Terminations Used as Free Standing Contacts or in Electrical Connectors and Sockets (Max Peel)

Carl Fritz reported that the standard and cover memo (mccwil324) was sent to EIA for EDEC ballot on 15 October 2007 on behalf of Max Peel.

Attachment No. 1

F. SP-5108, TP- ~~2, 3, 9, 13, 14, 26, 28, 35, 38, 42, 50, 54, 95, 99, 100, 102 and 103~~ (C. Fritz)**

Carl Fritz reported that he sent a letter (mccwil231) to EIA for EDEC ballot to reaffirm all listed standards on 13 January 2006.

TP-13 published as **revised** (see SP-5157) 2 July 2007. No need to reaffirm. Received US Mail 23 July 2007.

The open standards remain to be reaffirmed.

G. SP-5126, TP-86, Polarizing/coding key overstress (Carl Fritz)

Carl Fritz reported that he sent letter (mccwil306) to EIA for EDEC ballot to reaffirm on 31 May 2007.

H. SP-5127, TP-92, Wire bending for insulation displacement contacts (Carl Fritz)

Carl Fritz reported that he sent letter (mccwil306) to EIA for EDEC ballot to reaffirm on 31 May 2007.

I. SP-5142, Standards due for 5-year review: TP-~~01, 21, 22, 39, 43, 45, 53~~, 66, 83, 90, 101, 106, 107 and 108 (Carl Fritz)

Sent letter (mccwil277) to EIA for EDEC ballot to reaffirm all listed standards on 29 October 2006. The open standards remain to be reaffirmed.

J. SP-5143-1, EIA-364-1000, Environmental Test Methodology for Assessing the Performance of Electrical Connectors and Sockets Used in Controlled Environment Applications (John Healey)

Carl Fritz noted that he sent a revised copy dated 5 October 2007 to John Healey for review.

- Reply from John on 8 October 2007.

Changes...

- The second bullet under clause 2.2.1 should read, "If Option #1 of test group 4 is chosen, then twice the sample size for that test sequence is required." Also, there should be no fourth bullet. Start that sentence on the left-hand margin and it should read, "If the connector or socket contains contacts that differ in the design of the critical area, then the sample size requirement should be applied to each design and the test results should be distinguishable." Note that "If separate samples are used..." is deleted.

- Under Table 4, Option 1, A - Plug components, 1) should read, "Expose half of the specimens in the unmated condition per table 4.1."

- Under Table 4, Option 1, B - Receptacle components, 1) should read, "Expose half of the specimens in the unmated condition per table 4.1. Be sure that they were not mated to the plug components that were similarly exposed under section A."

Attachment No. 1

- Under Table 4, Option 3, 1) should read, "Expose the one-piece connector or socket or the half of the two-piece connector that is expected to be unmated in the field in the unmated condition per table 4.1."

- Under Table 4, Option 3, 2) should read, "Mate each piece to the same piece that it was mated to during temperature life (preconditioning)."

- Under Table 4, Option 4, 1) should read, "Expose all specimens in the mated condition for the total MFG exposure duration per table 4.1."

Sent revised copy dated 15 October 2007 to John Healey for review. Copy was approved by John Healey on 15 October 2007.

Carl Fritz sent revised standard and new cover memo (mccwil326) to EIA for a short 30-day SP ballot on 15 October 2007.

Ballot issued 1 November 2007 with a ballot expiration date of 3 December 2007.

- The following reply was received from Max Peel on his disapproved ballot with comment 3 December 2007:

Dear Cecelia,

The following are my reasons for rejecting referenced SP.

1. Incorrect title. Proposed title states controlled environments. See Item 2
2. Page 1, Note 1): This note state that controlled environments are classified as no more severe then Class 1.2. By definition, Class 1.0 is for clean rooms and the like. Class 1.1 is for applications with controlled heating and humidity control. Class 1.2 is for uncontrolled heat non year round air conditioning without humidity control. Note 1) In the existing TS1000.01 is for Class 1.3. Is this a change in the application for TS1000.01 away from business office applications? Also by referring 1.2 as a controlled environment is not in agreement with other definitions such as Fed. STD's and ISO documents.
3. Table 4: Delete test durations or as a minimum delete reference to 3,5 and 10 year field life. In a past meeting in Newport Rhode Island, IBM had made a proposal to change the "consensus" duration equivalency of 2 days in the chamber equals 1 year of field life. After a lengthy discussion, it was ruled that IBM must submit data to substantiate their claim. No response or submittal was ever received to my knowledge. To indicate a life expectancy duration is not acceptable without data to support it. Particularly when the existing duration levels had supporting data from the Battele Institute and was accepted by the industry as such. If the test standard wishes to keep 7, 10 and 14 day exposure options, I have no objection. I oppose relating them to anticipated field life. Since there is not supporting data submitted for consideration.
4. Table 4, Options 1 thru 4: I think I understand the intent. However, its not as clear as it should be. I would suggest revisiting these options in an attempt to clarify them. For example, What is the difference between Option 1 and Option 3? Option 2 and 4 appear to be OK.
5. Table 4.1: Delete "field Life" indicators and substitute Condition A, B, C and D.

See comment 2. Above.

Attachment No. 1

6. It appears that Tables 8 and 9 were expanded. What is the rationale for the expansion and where did the numbers come from?

The above is the basis for rejection at this time. There are other issues as well that should be covered but these issues can be discussed at a further date.

Best regards,



Max Peel
Senior Fellow
Contech Research, Inc.

MP:cf
cc: File

- The following reply was received by e-mail from John Healey to Max Peel's disapproved ballot with comment 25 January 2008:

Max,

I'm sorry for not responding to your negative ballot (submitted on 12/3/07) sooner. Year-end activities pretty much consumed my time. I must inform you that I do not accept your vote as a valid response for the reasons stated below. If you feel that your objections are unresolved you may appeal this decision by following the process found in EP-20A which is available upon request. In any case, please complete the attached postcard and return it to me within one week of the date of this letter. Thank you for your interest in the activities of the EIA CE-2.1 committee.

1. Incorrect title. Proposed title states controlled environments. See Item 2.

There is no change to the title being proposed in this SP ballot. The current title indicating "controlled environment applications" was previously approved under SP-5038.

2. Page 1, Note 1): This note states that controlled environments are classified as no more severe than Class 1.2. By definition, Class 1.0 is for clean rooms and the like. Class 1.1 is for applications with controlled heating and humidity control. Class 1.2 is for uncontrolled heat non year round air conditioning without humidity control. Note 1) In the existing TS1000.01 is for Class 1.3. Is this a change in the application for TS1000.01 away from business office applications? Also by referring 1.2 as a controlled environment is not in agreement with other definitions such as Fed. STD's and ISO documents.

There is no change to the environment class being proposed in this SP ballot. Reference to Class 1.2 was approved under SP-5038.

Attachment No. 1

3. Table 4: Delete test durations or as a minimum delete reference to 3,5 and 10 year field life. In a past meeting in Newport Rhode Island, IBM had made a proposal to change the "consensus" duration equivalency of 2 days in the chamber equals 1 year of field life. After a lengthy discussion, it was ruled that IBM must submit data to substantiate their claim. No response or submittal was ever received to my knowledge. To indicate a life expectancy duration is not acceptable without data to support it. Particularly when the existing duration levels had supporting data from the Battelle Institute and was accepted by the industry as such. If the test standard wishes to keep 7, 10 and 14 day exposure options, I have no objection. I oppose relating them to anticipated field life. Since there is not supporting data submitted for consideration.

Reference to 3, 5, and 10-year field life was part of the original release of the document. There is no change to their respective test durations being proposed in this SP ballot. Rather, the committee was asked to include a test to simulate a 7-year field life. Furthermore, my recollection is that the 2 days MFG = 1 year field life was for the Battelle 3-gas test. With the universal adoption of the EIA 4-gas test a higher corrosion rate was expected. Hence, 5 days MFG = 3 year field life, 7 days MFG = 5 year field life, etc.

4. Table 4, Options 1 thru 4: I think I understand the intent. However, its not as clear as it should be. I would suggest revisiting these options in an attempt to clarify them. For example, What is the difference between Option 1 and Option 3? Option 2 and 4 appear to be OK.

I consider this to be an editorial comment and offer the following clarification. Option 1: Two-piece connectors where one half, but not both, may be unmated in the field for a portion of its life prior to mating with a new counterpart. Option 3: One-piece connectors or sockets which may be unmated in the field for a portion of its life prior to mating with a new counterpart, or two-piece connectors where it's known which half may be unmated in the field for a portion of its life prior to mating with a new counterpart.

5. Table 4.1: Delete "field Life" indicators and substitute Condition A, B, C and D. See comment 2.

See item #3.

6. It appears that Tables 8 and 9 were expanded. What is the rationale for the expansion and where did the numbers come from?

The expansion is required to address the addition of a field temperature of 95C. and a field life of 7 years. The test durations at each test temperature are based on the same stress relaxation behavior of brass and phosphor bronze that was considered prior to the original release of this document.

*(See attached file: EIA-364-1000.doc) (See attached file: SP-5143-1_DISAPPROVED XXXX.doc)
(See attached file: SP-5143-1 rejection letter 12-3-2007 .doc) (See attached file:
unfav_postcard.pdf)*

Druckenmiller – approved
Healey – approved
Peel - disapproved with reasons

John Healey
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Attachment No. 1

- e-mail from Max Peel to John Healey on 11 February 2008.

John,

Cannot return the card since I can't make a disposition on it. You have to send me it. Having said that I'm still disagree with you.

First, Classification 1.2 is clearly not controlled per EIA 364. I do not understand how it could be interpreted any other way since it clearly states that humidity is uncontrolled and humidity is a major element for corrosion. If this got changed at some point in time, I missed it but that does not justify the change. Since I authored the document, I know that we agreed to include it in the table but the intent was not to considered a controlled environment since both heat and humidity must be controlled for that to claimed and 1.2 does not fit the bill.

Secondly the old TS specifically states "office building"

Thirdly, the federal standards are clear in their definitions and 1.2 simply doesn't cut it.

As far as the corrosion rate. When the four gas test became the popular test in the 1990's, The corrosion rate was 12 - 16 for class IIA as well as Class II for copper coupons. The same was true for Class III and IIIA. Silver coupons were not required for the four gas tests due to the SO₂. The experts at the time saw no reason to change the copper coupon values. So I don't understand how this could change the accelerator. The corrosion rates have not changed to my recollection for copper coupons at all. As a matter of fact, it's still widely accepted. Many tests that we have performed do correlate with the original accelerator when failures have occurred in the field. I cannot support the time lines since no supporting data has ever been shared with the industry to reduce the accelerator.

I'm OK with the explanations for Item's 4 and 5 of my objections and those two issues have been resolved.

However I still object to the approval based on the original rejection and the above

- e-mail from Max Peel to John Healey on 11 February 2008.

John,

Find attached the documents summarized which defines a controlled environment. By this Federal and ISO document, classification 1.2 thus is not considered a controlled environment. If it got missed, fine but that is not a reason not to correct it.

(See word file labeled "definition controlled environment" in TS 1000 folder)

After considerable discussion the committee feels that this standard sufficiently defines "controlled environment", for this standard, as classifications no more severe than EIA-364, class G.1.2. It was noted that the final ballot count received from Cecelia Yates on 14 January 2008 is: 7 favorable and 1 unfavorable with comments from Max Peel.

Attachment No. 1

It was moved by Dave Bouzek and seconded by Kevin Rickard to override the rejection submitted by Max Peel and submit the standard to EIA for publication as an ANSI standard. The vote was 5 approved and 1 rejection by Carl Fritz on behalf of Contech Research. The motion was approved.

It was also noted that EIA-364 should be revised to reflect the number change and reference to controlled environment after EIA-364-1000 is published.

K. SP-5148, TP-71B, Solder Wicking (Wave Solder Technique) (Bob Druckenmiller)

Carl Fritz reported that he sent the standard and cover memo (mccwil313) to EIA for EDEC ballot on 7 June 2007 on behalf of Bob Druckenmiller. Sent letter acknowledging the favorable editorial comments to Max Peel (mpeel28).

L. PN-5150, EIA-364-31C, Humidity Test Procedure for Electrical Connectors and Sockets (Max Peel)

Carl Fritz reported that Max Peel is reviewing the comments he received on the letter ballot.

M. SP-5158, TP-56D, Resistance to Soldering Heat Test Procedure for Electrical Connectors and Sockets (Carl Fritz)

Carl Fritz reported that the standard was published 28 February 2008 and received by US Mail on 15 March 2008.

N. SP-5160, TP-20D, Withstanding Voltage Test Procedure for Electrical Connectors, Sockets, and Coaxial Contacts (Max Peel)

Carl Fritz reported that the standard was published March 2008.

O. SP-5161, TP-21D, Insulation Resistance Test Procedure for Electrical Connectors, Sockets, and Coaxial Contacts (Max Peel)

Carl Fritz reported that the standard was published 3 March 2008 and received by US Mail on 20 March 2008.

P. SP-5163, TP-105A, Altitude - Low Temperature Test Procedure for Electrical Connectors (Max Peel)

Carl Fritz reported that the standard was published 28 February 2008 and received by US Mail on 15 March 2008.

Attachment No. 1

Q. SP-5164, TP-111, Ionic contamination (John Healey)

Carl Fritz reported that he sent standard, background data sheet, and cover memo (mccwil323) to EIA for a Letter ballot on 5 October 2007 on behalf of John Healey.

Ballot issued 26 October 2007 with a ballot expiration date of 26 November 2007.

- Received the following e-mail from John Healey that he has polled the committee to go out on SP ballot on 16 January 2008.

The subject letter ballot had a due date of 11/26/07. I received only 2 responses (myself and Dave Bouzek), both approved without comments. I would like to send it out on an SP ballot before our next meeting. To do so, I need your approval. Please respond (Y or N) ASAP. Thanks.

- Received the following e-mail from John Healey on 25 January 2008.

I got 7 approvals to go out on an SP ballot (no disapprovals or abstentions). So, send it out. Thanks.
John Healey

Sent standard, background data sheet, and cover memo (mccwil338) to EIA for a SP ballot on 28 January 2008 on behalf of John Healey.

SP Ballot issued 4 February 2008 with a ballot expiration date of 4 April 2008.

Ballot count received from Cecelia Yates on 25 March 2008 9 favorable and 2 unofficial comments received through SAE from Alan Miklos and Eric Shepler.

- Received marked copy from Dave Bouzek for Alan Miklos (Glenair) via SAE comments. **(See Attachment No. 11 for Alan Miklos comments).**
- Received the following comment from Dave Bouzek for Eric Shepler (Amphenol) via SAE comment.

David,

What is driving this new Total Ionic Contamination method?

See comments below from our Materials Lab:

Ionic cleanliness is traditionally **only to test for effectiveness in flux removal**/cleaning after soldering and prior to conformal coating of PCB terminations. It is performed on solid components without inserts and etc which may trap significant amounts of extraneous "ions". The flux is an ionic contamination that can corrode and cause electric problems.

No- this test does not make sense on general connectors (non soldered).

Are finished connectors (non solder PCB) now required to be "sterile"?

Attachment No. 1

Testing finished connectors will open up Pandora's Box. This procedure specifies no maximum ppm on the individual compounds, therefore this could be a witch hunt.

It will also be difficult to calculate the total surface area of the finished connector.

The testing solution would be expected to get into insert and cavities.

It will detect general effectiveness and improper plating rinsing, dirty degreasers and possibly incomplete processing such as cures or bakes on inks and etc. Basically, it would be anticipated to see a significant amount of the periodic table!

Eric Shepler

607-563-5287

The committee acknowledged and reviewed the unofficial comments submitted by Alan Miklos and Eric Shepler. The committee noted that EIA 364 test standards intentionally do not include pass-fail criteria, and stated that there is a need for a test procedure at the component. The project leader will address the addition of tolerances to certain values, change annex from normative to informative, determination of test specimens, and addition items deemed appropriate. It was moved by John Healey and seconded by Don Chambers to revise the standard based on comments received and send out on a short 30-day SP ballot. The motion was unanimously approved. It was also unanimously moved and approved that if there are sufficient ballots and no rejections received that the standard be sent to EIA for EDEC ballot and publication as an ANSI standard.

R. SP-5166, TP-10E, Fluid Immersion Test Procedure for Electrical Connectors and Sockets (Ralph Antonelli)

Carl Fritz reported that the standard was published 28 February 2008 and received by US Mail on 15 March 2008.

Carl Fritz presented a comparison he created on the history of past revision levels. This comparison also includes comparison to MIL-STD-1344 test conditions. **(See Attachment No. 12 for EIA -364-10 history).**

S. SP-5167, Standards Due for 5-Year Review, EIA-364 (separate project), TP-19, 47, 68, and 104 (Carl Fritz)

Carl Fritz reported that he confirmed with EIA on 18 October 2007 that the final ballot count of 8 approvals after the 6 October 2007 ballot expiration date, and there were no comments or rejections.

Carl Fritz reported that he sent a memo (mccwil331) to EIA for EDEC ballot for reaffirmation on 19 October 2007.

Attachment No. 1

T. SP-5168, TP-32E, Thermal Shock (Temperature Cycling) Test Procedures for Electrical Connectors and Sockets (Carl Fritz)

Carl Fritz reported that he sent the standard and cover memo (mccwil328) to EIA for EDEC ballot on 16 October 2007.

U. SP-5169, TP-38C, Cable Pull-Out Test Procedures for Electrical Connectors (Carl Fritz)

Carl Fritz reported that the final ballot count of 8 approvals, and one editorial comment from Max Peel, and no rejections had not changed by the 18 September 2007 ballot expiration date.

- Comment from Max on his approved ballot. Purely editorial. Par 6.7 seems to have been stretch out. Should be corrected.

Carl Fritz reported that he sent the standard, cover memo (mccwil329) and memo to Max Peel (mpeel29) on his approved ballot with editorial comment to EIA for EDEC ballot on 16 October 2007.

V. SP-5170, TP-41D, Cable Flexing Test Procedure for Electrical Connectors (Carl Fritz)

Carl Fritz noted that Max Peel sent in a rejection that needs to be changed to an approval. A new project has been initiated to deal with his objections. Carl Fritz sent e-mail to Max Peel on 16 October 2007.

Max Peel sent revised approved ballot to EIA on 17 September 2007.

Carl Fritz reported that he sent standard and cover memo (mccwil333) to EIA for EDEC ballot on 26 October 2007.

W. SP-5171-1, EIA-364E, Electrical Connector / Socket Test Procedures Including Environmental Classifications (Max Peel)

Carl Fritz reported that verification with EIA on 17 October 2007 confirmed that the final ballot count, after the 1 October 2007 ballot expiration date, had not changed from what was reported in the September 2007 EIA CE-2.1 meeting minutes.

Sent revised standard and cover memo (mccwil332) to EIA for a short 30-day SP ballot on 25 October 2007, as well as memos to John Healey (mhealey18) and Bob Druckenmiller (mdruckenmiller14) acknowledging their approved ballots with comments..

Ballot issued 7 November 2007 with a ballot expiration date of 7 December 2007.

Ballot count received from Cecelia Yates on 14 January 2008 is: 7 favorable.

Carl Fritz sent standard and cover memo (mccwil336) to EIA for EDEC ballot on 15 January 2008.

Attachment No. 1

X. SP-5174 (previous designation PN-3787), EIA-364-1004, Environmental Test Methodology for Verifying the Current Rating of Free-Standing Power Contacts or Electrical Connectors and Sockets (Max Peel)

Carl Fritz reported that he sent copy dated 5 October 2007 to Max to review. Ticked him on 26 October 2007.

- The following is Max's reply to my tickler on 25 November 2007.

The following is my final determination of comments received on this SP:

- 1) No problem with the title change.
- 2) No problem with the scope change.
- 3) No problem with the change except change the second sentence to read as follows.

The test sequence in this standard are extreme environmental stresses and thus -----
Max. Did you mean to change the last sentence in 1.2.1? Reply "YES"

- 4) No problem with 2.1.2 except add to the end of the sentence "for each Condition to be tested [see 3.1.1).
Max. There is no paragraph 2.1.2. Did you mean 2.2.1? Reply "YES"

- 5) Change 3.1 to read Test "Groups."
OK.

6) Leave test condition B in place. Reason: The expression otherwise specified allows people to delete any condition they want. The reason for this condition is to generate data to extrapolate at 25% loading as an example. We have been requested to test loading conditions with more than 1 contact or less than 100% loading to some intermediate level. We have found that the three conditions will allow extrapolation to be performed in a fairly accurate manner which a user can use as his requirement changes without retesting the product. With two points the extrapolation cannot be performed.
OK.

- 7) Delete paragraph 3.2.3 in total.
OK.

- 8) No problems in deleting (mated) from Table 1
OK.

- 9) As far as the final comments from John I believe I stated my response in my prior e-mail.

If there were no outright rejections then I think we can proceed to send it to EIA. I consider this as editorial or clarification changes. Let me know what you think.

By the way has the 100% approval rule been changed. I would support 2/3 approval. Let me know your thoughts.

Attachment No. 1

Sent standard and cover memo (mccwil334) and new PINS form to EIA for a SP ballot on 27 November 2007. NOTE: EIA requested that a new project number (PN-5174) be issued since they have no record of the old project number (PN-3787).

Ballot issued 28 November 2007 with a ballot expiration date of 28 January 2008.

- The following is the unofficial comment received from SAE via David Bouzek on 6 December 2007:

Reference: Request for comments, e-mail from Bobby Crumb

Comment # 1-Technical:

Paragraph 2.2.1- From-A minimum of 5 connectors or sockets shall be prepared for each test group.

To- A minimum of 6 connectors or sockets shall be prepared for each test group. For this paragraph to agree with paragraph 2.2.1, the minimum number of samples should be 6 since 2.2.1 requires an equal number of samples for both minimum and maximum wire terminations, 5 samples can not be divided equally.

Reason for change-The two paragraphs should not be contradicting.

Comment # 2-Technical:

Paragraph 2.2.5- From- The maximum connector size (number of positions) shall be tested. To- Whatever the requirement needs to be, maximum connector size, maximum insert density, or both. This requirement needs to be clarified. Maximum connector size does not mean the number of positions, that requirement would be maximum insert density. Is maximum connector size (this would be shell size) and maximum insert density needed or just maximum insert density?

Reason for change-To clarify requirement

Comment # 3-Technical:

Paragraph 3.1.7- From- If the temperature rise is ≥ 10 °C, then test groups 2 or 3 and 4 shall be performed. To- If the temperature rise is ≥ 10 °C, then test groups 2 and 3 or test groups 3 and 4 shall be performed.

Reason for change-To clarify the requirement and specify the same test groups as paragraph 3.2.

- The following is the unofficial comment received from Vince Pascucci on 20 December 2007:

The scope states that it is to verify the current rating. Now this could be read a couple of ways. In our own case, we sometimes are told they want a current rating of X and we test to that and if we can achieve X below 30 C t-rise and initially we continue and if we meet it at the end then we are done. Even if the t-rise is below 30, we may just stick to the desired level despite having some room to maneuver. On the other hand, sometimes they'll ask what is the current rating they can get away with. In that case we'll run an initial t-rise curve, use the 18 C (20 C as chosen in the proposed spec) for the vibration part, then redo t-rise and establish the current rating at the value that gives 30 C (with some adjustments for mean and std dev). So either interpretation can still use the sequence, it's just a matter of whether you want to verify some level or determine the level.

Two problems with the draft doc:

Attachment No. 1

1 - There is no "items to be specified" and "documentation" sections. Under the assumption that the goal is to verify a desired rating, it never states in the doc that this rating must be provided in order to set up the test.

2 - There is no statement of what constitutes verification that the desired current rating is legit. At the end of the test, what is the interpretation as to whether or not we're good to go with the current rating desired? I can imagine this has been a source of contentious debate with Molex pushing some delta mvd criterion and FCI looking toward t-rise and Tyco not there to break the tie. At the very least, it could be covered in the items to be verified section with a statement of something like "criterion(a) to evaluate compliance to the stated current rating". Better, there ought to be an informative annex defining how to use the data to determine if the current rating is verified.

- The following comments were received from John Healey on his approved ballot with comments by e-mail on 16 January 2008:

Cecelia,

Here's my approved ballot. I offer the following comments.

Per the San Antonio meeting, I thought my comment about para. 2.1.1 was accepted. If so, it should read, "A minimum of 5 connectors or sockets shall be prepared for each test group. For contacts designed to perform without a housing, a minimum of 30 free-standing contacts shall be tested." Also, para. 3.1.4 is not clear (at least to me). I'm not sure what 3 specimens means. Shouldn't it read, "Testing of single, 50%, and 100% energized contacts may be performed on the same specimen or on separate specimens, whichever is more practical."

(See attached file: SP-5174 cover & balt.doc)

John Healey
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Ballot count received from Cecelia Yates on 31 January 2008 is 7 favorable in addition approved ballot with comment received from John Healey on 16 January 2008.

The committee reviewed the comments received. It was moved by Frank Ruffino and seconded by Ralph Antonelli that the project leader will revise the standard and send out on a short 30-day SP ballot. The motion was unanimously approved. It was also unanimously moved and approved that if there are sufficient ballots and no rejections received that the standard be sent to EIA for EDEC ballot and publication as an ANSI standard.

** Past due for 5-year review

Attachment No. 1

3. TEST PROCEDURES AWAITING PROJECT NUMBERS (BY TP NUMBER)

A. New TP-XXX, Effective Resistance of Parallel Circuits Test Procedure for Electrical Connectors and Sockets (Frank Ruffino)

Frank reported the there have been some meetings and conference calls with the members of the JEDEC JC-11 committee.

B. EIA-364-41E, Cable Flexing (Max Peel)

Carl Fritz reported that he sent a marked up copy to Max to review on 31 October 2007.

The committee agreed to review the draft dated 4mar08 and provide input to project leader Max Peel. Carl Fritz agreed to include the draft with the minutes, as an attachment, and also to send copy to all members as a reminder to review the test procedure and provide input to the project leader. (See Attachment No. 13 for EIA-364-12E 4mar08).

C. TP-87A, Nanosecond Event Detection (Max Peel)

It was reported that work is on going.

D. TP-52, Solderability (Max Peel)

It was reported that further action is awaiting the release of J-STD-002C.

Carl Fritz reported that Max Peel recommends superseding TP-52 by the J standard when released.

4. OTHER BUSINESS

A. TP-14, Ozone Test Procedure for Electrical Connectors and Sockets

- Carl Fritz reported that he sent the following e-mail to Kevin Rickard on 17 October 2007:

Kevin, Just had a few minutes and did some investigation into the ozone concentration in the subject standard that you brought up under new business at the September EIA meeting. I went back to EIA-364-14A dated 1983, and MIL-STD-1344, method 1007.1 dated 1 September 1977. The current EIA-364-14B is a result of the harmonization activity that took place the later part of the 1990's. All references clearly state that the **ozone concentration unless otherwise specified shall be 100 ppm to 150 ppm by volume for 2 hours**. Everything is clearly parts per million NOT parts per hundred million. As of now it appears that the ASTM procedure may be in error.

It appears that both the EIA method and MIL-STD-1344 method have agreed for 30 years. Unfortunately I do not have access to ASTM documents to verify the information.

Regards Carl Fritz

Attachment No. 1

- Carl Fritz reported that he sent the following e-mail from harmonization meeting #6 to Al Davis 2 January 2008:

EIA Special Meeting #6
364/1344 Comparison
October 28-29, 1998
Myrtle Beach, SC

10) EIA 364-14 / Mil Std 1344-1007.1 Ozone exposure

Clause 1.1. Recommendation to remove the word Aspecimen@ and exchange with the word Ashall@. Agreed

Clause 2.1.1.2. The 4 cubic feet should be changed to 5 cubic feet as the proper translation of cubic meters to cubic feet. Agreed.

Recommend removing Alf the ozone generating source is a silent arc discharge,@ from the beginning of the 4th sentence. Not agreed as this implies that all air must be pre-dried to B55 degrees C and this may not be necessary with the equipment available today.

Clause 4.1. A question was raised by committee members about the 100-150 ppm or whether it should be 100-150 pphm (parts per hundred million), as the chamber supplier said the chamber can supply ozone from 15-750 pphm. Agreed to not change the values in the test procedure, but first to test reports to see what values have been used and to identify other test procedures that may be available (ASTM-D-1149-64 which is referenced in the text) to see what levels are specified. If we can get a quick answer the test procedure will be modified and rebaloted.

B. TP-75 Lightning Strike

- Carl Fritz reported that he sent the following e-mail to Dave Bouzek 13 December 2007.

Your e-mail on Lightning strike could not have come at a more appropriate time. The other night I was watching the weather channel and they were doing a segment on disasters. Then they got into lightning strikes on aircraft. It tweeked my interest so I was rivited to the screen. Then the mentioned a company that does lightning strike testing a developed a product to harmlessly conduct a strike through the aircraft and out the tail. The name of the company was DTB Company. I looked them up on the web when I got home this morning. Their e-mail address is: <http://www.dtbtest.com> . Maybe it would be worthwhile contacting them and asking if they would be willing to participate in developing a test standard for us on connectors, contacts and sockets, etc. They appear to be quite capable on what I saw. Has anyone else heard of this company?

- The following is a reply that I received from Don Chambers on 26 March 2008 on the subject.

I am not familiar with the spec. Lightning Technologies, Inc is a pretty good lightning test house. Andy Plumber is their chief engineer (previous owner). They can be contacted at (413) 499-2135 (E-mail LTI@lightningtech.com). Web site- <http://www.lightningtech.com>

Don Chambers has agreed to take on the project of revising EIA-364-75. It was moved by Kevin Rickard and seconded by Arnold Offner to obtain a project number and send out on a letter ballot. The motion was unanimously approved.

Attachment No. 1

5. NEW BUSINESS

A. TP-03, Altitude Immersion

- Carl Fritz reported that he received the following e-mail from Vince Pascucci (Tyco Electronics) on 22 January 2008.

I am requesting a change to EIA364-03 - Altitude Immersion. Currently there is a sentence on page 2, section 4.1 under the title Mounting which is part of the Test Procedure section of the document that reads as follows:

"The wires of the test specimen shall be bent at approximately 90° on 63.5 mm (2.5 in) bend radius, and brought out of the solution within 76.2 mm (3 inches) from each end of the connector assembly."

I would like to request the removal of this sentence.

Rationale:

Until recently, the majority of the altitude immersion testing was performed in accordance with MIL-STD-1344, method 1004 which does not specify a bend radius or distance in which the wires are to be brought out of the salt water. On October 22, 2004 MIL-STD-1344 was cancelled and superseded by the EIA364 document series. It was to my understanding that the EIA documents were to be revised to mirror MIL-STD-1344 test methods. This issue with the bend radius and exit distance apparently was left in EIA364-03. The problem this creates is since the bend radius and distance are specific dimensions, in order to comply with the EIA version, we essentially would need to build fixturing for every product type to be tested to the EIA version. The wire configurations and connector sizes can vary greatly between product lines thereby making it impossible to make a 1 size fits all type of fixture. Furthermore, the distance and bend radius are irrelevant as long as the wires are straight when they exit the connector before they are bent, so whether you bend them at 3 inches or 10 inches should not matter. Removing the statement would allow the flexibility to test with or without fixturing and thereby allow those who already have fixtures built for a specific product in order to comply with EIA364-03 may continue to test in this manner.

Another option as opposed to totally removing the sentence for those in the industry that are concerned about not specifying anything would be to re-word the sentence. The most detailed the mounting instructions would need to be regarding the wire would be to re-word the statement similar to the following: "The wires of the test specimens shall be gradually bent and brought out of the solution and unless otherwise specified, the wires shall be as straight as possible out of each end of the connector."

Vince, Lee, and Jim, feel free to comment as you see fit. Do you guys think we need to provide 2 options? Ideally, I would like to just see the sentence removed but I am thinking ahead to if we meet opposition for some reason as to a simple re-wording may be a compromise. For your easy reference, I attached both the EIA test method and the 1344 test method.

...Mike

Michael Cherrup
Test Engineer & Team Coordinator
Aerospace & Defense Test Team
Tyco Electronics

Attachment No. 1

The committee reviewed the comments submitted by Vince Pascucci (Tyco Electronics) and has recommended the following:

Change clause 4.1 from:

The test specimen shall be placed in the container in the chamber in such a manner that the connector assembly will be entirely immersed in the salt solution. The uppermost point of the connector shall be 25.4 mm (1 in) maximum below the surface of the solution. ~~The wires of the test specimen shall be bent at approximately 90° on 63.5 mm (2.5 in) bend radius, and brought out of the solution within 76.2 mm (3 inches) from each end of the connector assembly.~~ Unless otherwise specified, termination of the wires of the test specimen shall be unsealed and within the sealed chamber as specified. The wires shall be arranged so as to prevent any voltage breakdown or low insulation resistance that might incorrectly indicate connector failure.

Change clause 4.1 to:

The test specimen shall be placed in the container in the chamber in such a manner that the connector assembly will be entirely immersed in the salt solution. The uppermost point of the connector shall be 25.4 mm (1 in) maximum below the surface of the solution. Unless otherwise specified in the referencing document, the wires of the test specimen shall be aligned to maintain grommet seal with the free end brought out of the test solution. Unless otherwise specified, termination of the wires of the test specimen shall be unsealed and within the sealed chamber. The wires shall be arranged so as to prevent any voltage breakdown or low insulation resistance that might incorrectly indicate connector failure.

It was moved by Kevin Rickard and seconded by Ralph Antonelli to obtain a project number and send out on a SP ballot. The motion was unanimously approved. It was also unanimously moved and approved that if there are sufficient ballots and no rejections received that the standard be sent to EIA for EDEC ballot and publication as an ANSI standard.

B. Standards Due for 5-Year Review, SP-XXXX, EIA-364, TP-04, 16, 30, 33, 69, and 78

Test	EIA-364 TP	Rev	Date of last issue	5 Year due date	Years past due	Comments
Normal force	4	A	March-02	February-07	1	Published Mar 02
Stripping force (wrapped connectors)	16	A	April-02	March-07	1	Published Apr 02
Capacitance	30	A	May-02	April-07	1	Published May 02
Inductance	33	A	January-02	December-06	1	Published Jan 02
Low level inductance	69	A	March-02	February-07	1	Published Mar 02
Cavity-to-cavity leakage bonding integrity	78	A	February-02	January-07	1	Published Feb 02

NOTE: Document format up to date on all of the above listed standards for 5-year review.

It was moved by Kevin Rickard and seconded by Don Chambers to obtain a project number and send out on a SP ballot to reaffirm. The motion was unanimously approved. It was also unanimously moved and approved that if there are sufficient ballots and no rejections received that the standard be sent to EIA for reaffirmation.

Attachment No. 1

C. SP-5150, TP-31C, Humidity Test Procedure for Electrical Connectors and Sockets (Carl Fritz)

It was moved Ralph Antonelli by and seconded Frank Ruffino to take out a new project number to revise EIA-364-31B to incorporate the cross reference to the previous designations listed in MIL-STD-1344 and send out on a SP ballot. It was also unanimously moved and approved that if there are sufficient ballots and no rejections received that the standard be sent to EIA for EDEC ballot and publication as an ANSI standard.

D. Report from Mike Peppas

Carl Fritz reported that he had received a report prepared by Mike Peppas via Alan Miklos (Glenair) via David Bouzek (Tri-Star Electronics). The report contained a comparison of EIA-364 and MIL-STD-1344 test methods. Due to many items being accepted by Mike Peppas and other items previously addressed during the 5-years of harmonization meeting, Mike Peppas has agreed to sanitize the report, provided that SAE tasks him to take on this project. After considerable discussion Carl Fritz agreed to provide Mike Peppas with the minutes of the harmonization meeting. Mike Peppas has agree, if tasked by SAE, to revise his report based on the review of the minutes of the harmonization meetings and provide a revised report to the members prior to the next meeting . Discussion and review of the revised report will be addressed at the next meeting. Carl Fritz has also assured Mike Peppas that in the event he is unable to be tasked by SAE to sanitize the report that the comments requiring action will be addressed by the committee at the next meeting.

Respectfully submitted,

Carl Fritz, Chairman CE-2.1