

**Working Minutes of the CE-2.0 National Connectors Standards Committee  
28 – 29 April 2009  
New Orleans, LA**

| Members Present            |                         |                 |              |            |
|----------------------------|-------------------------|-----------------|--------------|------------|
| Name                       | Organization or Company | Meeting Present |              |            |
|                            |                         | April 2009      | October 2008 | March 2008 |
| Ralph Antonelli            | DSCC-VAI                | X               | X            | X          |
| David Bouzek               | Tri-Star Electronics    | X               | X            | X          |
| Don Chambers               | Northrop-Grumman        | X               | X            | X          |
| Kevin Rickard              | Amphenol                | X               | X            | X          |
| Frank Ruffino (Chairman)   | Molex Inc.              | X               | X            | X          |
| Carl Fritz (Vice Chairman) | Contech Research        | X               | X            | X          |
| Members Absent             |                         |                 |              |            |
| Bob Druckenmiller          | FCI                     |                 |              |            |
| H. John Healey, PhD        | IBM                     |                 | X            | X          |
| Arnold Offner              | Phoenix Contact         |                 |              | X          |
| Mike Peppas                | Glenair                 |                 |              | X          |
| Bill Peverill              | WPA                     |                 |              |            |
| Guest                      |                         |                 |              |            |
| Ken Lim                    | Cisco                   |                 | X            |            |
| Others Present             |                         |                 |              |            |
| Ed Mikowski                | EIA/TIA Staff           | X               | X            |            |
| Bob Willis                 | ECA President           | X               |              |            |

Meeting number 44 of the National Connectors and Sockets Standards Committee convened at 9:00 AM on 28 April by Chairman Frank Ruffino. It was noted that for the purpose of this meeting a quorum was met with the members present.

It is noted that the CE-2.0 committee will simultaneously approve all the actions taken by the subcommittees.

**1. Approval of the 6 – 7 October 2008 minutes**

The minutes of meeting No. 43 held in Salt Lake City, UT were unanimously moved and approved as published. The motion was made by Don Chambers and seconded by Kevin Rickard.

**2. CHAIRMAN’S REPORT AND ANNOUNCEMENTS (Frank Ruffino, Chairman)**

This is the first meeting where the use of a wireless router has been attempted. Frank extended his extreme gratitude to Bob Willis for all his effort and the work of Cecelia Yates to expedite our projects.

Carl reviewed the current EIA Contact Listing with the committee and will revise it based on this meeting. It should be noted that this is only a contact list and not an EIA member listing. **(See Attachment No. 2 for current contact list).**

### **3. SUBCOMMITTEE MEETINGS**

CE-2.1 Test Procedures (Chairman: Carl Fritz, Vice Chairman, Max Peel)

Carl Fritz convened the test procedures subcommittee. **(See Attachment No. 1 for CE-2.1 report).**

CE-2.2 Connector and Socket Specifications (was subcommittees CE-2.2, 2.3, 2.4 and 2.9) (Chairman: TBD)

The minutes of the 6 – 7 October 2008 meeting in Salt Lake City, UT were approved. Moved by Kevin Rickard and seconded by Ralph Antonelli. The motion was unanimously moved and approved.

It was determined that there was no need to continue this subcommittee. All future work will be conducted as part of the CE-2.0 committee.

CE-2.3 Contact Specifications (was subcommittee CE-2.6) (Chairman: Dave Bouzek)

Dave Bouzek gave an overview of a new contact design that he is going to present at the next SAE meeting.

CE-2.4 Editing Subcommittee (was subcommittee CE-2.7) (Chairman: Carl Fritz)

Nothing new to report at this time.

CE-2.5 International Standards Subcommittee (was subcommittee CE-2.8) (Chairman: Jeff Toran)

Carl Fritz indicated that Jeff Toran would provide a copy of the IEC minutes following the May 2009 meeting. **(See Attachment No. 3 for IEC minutes).**

## 4. CONNECTOR AND SOCKET DETAIL SPECIFICATIONS

### 4.1. Specifications by Project Number

#### A. SP-4965, EIA-540B0AE, Detail Land Grid Array (Carl Fritz)

Carl Fritz reported that he sent letter (mccwil365) to EIA for EDEC ballot to reaffirm on 5 December 2008.

Standard was published as reaffirmed on 13 January 2009 and received by US Mail on 26 January 2009.

#### B. SP-4970, EIA-540DAAA-A, Detail, DIP

Sent second letter was sent to EIA to process the EDEC ballot on 6 October 2005.

This will be reissued as a new ballot.

#### C. SP-4971: EIA-700A0AB: 68-pin Memory Card Connector

Sent second letter was sent to EIA to process the EDEC ballot on 6 October 2005.

This will be reissued as a new ballot.

#### D. SP-5112 as follows:

- EIA-700A0AC: Detail, 88-pin DRAM Connector
- EIA-540A000-A: Sectional, Chip Carrier Sockets
- EIA-540AA00: Blank, Leadless Chip Carrier Sockets
- EIA-540AAAA: Detail, Type A Chip Carrier Sockets
- EIA-540AB00: Blank, PQFP
- EIA-540ABAA: Detail, PQFP
- EIA-540AC00: Blank, PCC
- EIA-540ACAA: Detail, PCC
- EIA-540AD00: Blank, Adaptor QFP to PGA
- EIA-540B000: Sectional, PGA
- EIA-540BA00: Blank, PGA
- EIA-540BAAB: Detail, Non-Mechanical PGA
- EIA-540BAAC: Detail, Flex Carrier PGA
- EIA-540D000-A: Sectional, In-Line Packages
- EIA-540DA00: Blank, DIP (Will be sent out for review)
- EIA-540DAAB: Detail, Flex Carrier DIP
- EIA-540EA00: Blank, Round Sockets
- EIA-540EAAA: Detail, Round Sockets
- EIA-540F000: Sectional, Multi-Package Modules

A second letter (mccwil269) was sent to Cecelia Yates (EIA Staff) EDEC ballot on 14 August 2006.

This will be reissued as a new ballot.

#### 4.2 New Business

##### A. New Specification (Frank Ruffino)

Frank Ruffino introduced a new connector detail specification for the "Mini-Change A-Size (2-6 pole)" connector.

The unanimously agreed to take this on as a project to create a new Detail Specification. Frank Ruffino has agreed to be project leader. It was moved by Kevin Rickard and seconded by Don Chambers to obtain a project number and send out on letter ballot or SP as determined by the project leader.

##### B. Connector and Socket Specification Status

Carl Fritz gave a presentation on the status of all connector and socket specification that he extracted from the EIA database that appear to be the responsibility of CE-2.0. He will coordinate review of the accuracy with EIA. The following tables reflect his findings.

| <b>Connector Specifications Past Due for 5-Year Review</b> |            |   |                           |                        |                       |
|--|------------|---|---------------------------|------------------------|-----------------------|
| <b>EIA</b>   | <b>Rev</b> | <b>Title</b>  | <b>Date of last issue</b> | <b>5 Year due date</b> | <b>Years past due</b> |
| 7000000  | A          | Generic Specification for Electronic and Electrical Connectors of Certified Quality (for Frequencies Essentially Below 3 MHz) | August-96                 | July-01                | 7                     |
| 270  |            | Tools, Crimping, Solderless Wiring Devices - Recommended Procedures for User Certification                                    | January-62                | December-66            | 42                    |
| 280  | C          | Solderless Wrapped Electrical Connections   | May-92                    | May-97                 | 12                    |
| 297  | A          | Cable Connectors for Audio Facilities for Radio Broadcasting-Correction Sheet   | June-70                   | May-75                 | 34                    |
| 380  | A          | Electrical Connectors, Small Contact Standard for   | January-78                | December-82            | 26                    |
| 406  |            | General Document for Connectors, Electric, Printed-Wiring Board-IPC-C-405A  | January-74                | December-78            | 30                    |
| 429  |            | Connectors, Electrical Flat Cable Type-IPC FC-218B  | January-76                | December-80            | 28                    |
| 616  | A          | Detail Specification for 2 Millimeter, Two-Part Connectors for Use with Printed Boards and Backplanes                         | November-02               | November-07            | 1                     |
| 622  | A          | Glossary of Electrical Connector Related Terms  | August-07                 | August-12              | -4                    |
| 700A0AA  |            | Detail Specification for 1.27 mm Pitch, Ribbon Contact, Trapezoidal Shaped, Shielded I/O Connector                            | April-96                  | April-01               | 8                     |

| Connector Specifications Past Due for 5-Year Review |     |  |                    |                 |                |
|---|-----|--|--------------------|-----------------|----------------|
| EIA   | Rev | Title  | Date of last issue | 5 Year due date | Years past due |
| 700A0AD   |     | Detail Specification for the Interface of the 1.27 mm Pitch, Ribbon Contact (Leaf Spring), Trapezoidal Shaped, Self-Locking I/O Connector  | November-97        | October-02      | 6              |
| 700A0AE   |     | Detail Specification for Trapezoidal Connectors with Nonremovable Ribbon Cable Contacts on 1.27mm Pitch Double Row Used with Single Connector Attachments (SCA2)                 | January-00         | December-04     | 4              |
| 700A0AF   |     | Detail Specification for Trapezoidal Shielded Connector 0.8 mm Pitch Used with Very High Density Cable Interconnect (VHDCI)  | July-00            | June-05         | 4              |
| 700AAAB   | A   | Detail Specification for 1.0 mm, Two-Part Connectors for Use with Parallel Printed Boards  | January-96         | December-00     | 8              |
| 700B000   |     | Sectional Specification for Rectangular/Trapezoidal Connectors of Certified Quality  | May-99             | May-04          | 5              |
| 700BA00   |     | Blank Detail Specification for Rectangular/Trapezoidal Connectors of Certified Quality   | September-98       | September-03    | 5              |
| 700BAAD   |     | Detail Specification for Shielded Rectangular Connectors for Universal Serial Bus Plus Power Connectors Series "A"   | May-00             | April-05        | 4              |
| 700BAAE   |     | Detail Specification for Shielded Rectangular Connectors for Universal Serial Bus Plus Power Connectors Series "B"   | May-00             | April-05        | 4              |
| 700C000   |     | Sectional Specification for Circular Multicontact Connectors of Assessed Quality (for Frequencies Essentially Below 3 MHz)   | January-97         | January-02      | 7              |
| 700D000   |     | Sectional Specification for Discrete Contacts of Certified Quality (for Use in dc/Low Frequency Analog Applications and in Digital Applications Employing High Speed Data Rates) | January-98         | January-03      | 6              |
| 710   |     | Requirements Guide for Space Grade Electrical Connectors   | October-97         | October-02      | 6              |
| IS-47   |     | Contact Termination Finish Standard for Surface Mount Devices  | July-87            | June-92         | 17             |
| IS-753  |     | Two-Part High Density Blade and Backplane Tuning Fork Connector  | February-98        | February-03     | 6              |
| IS-84   |     | Interim Detail Specification for 2.5 mm Two Part Connector for Use in Electronic Equipment   | April-92           | April-97        | 12             |

- Approved to be obsoleted or rescinded

| Socket Specifications Past Due for 5-Year Review |     |   |                    |                 |                |
|--|-----|---|--------------------|-----------------|----------------|
| EIA  | Rev | Title   | Date of last issue | 5 Year due date | Years past due |
| 540ADAA  |     | Detail Specification for Adaptor-Carrier Quad Flatpack to Pin Grid Array Sockets for Use in Electronic Equipment  | February-92        | January-97      | 12             |
| 540B0AA  | A   | Detail Specification for Production Ball Grid Array (BGA) High Pin Count (1089 Pins and Greater) Socket for Use in Electronic Equipment-Revision  | October-01         | September-06    | 2              |
| 540BAAA  | A   | Detail Specification for Mechanically Actuated (Zero and Low Insertion Force) Sockets for Pin Grid Array Devices with 2.54 mm X 2.54 mm (0.1 in X 0.1 in) Spacing for Use in Electronic Equipment | August-96          | August-01       | 7              |
| 540CAAC  | A   | Detail Specification for 2 Pole, 10 A Relay Sockets   | November-98        | November-03     | 5              |
| 540CAAD  | A   | Detail Specification for 2 Pole, 5 A Relay Sockets  | August-99          | August-04       | 4              |
| 540CAAE  | A   | Detail Specification for 3 Pole, 10 A Relay Sockets   | August-99          | August-04       | 4              |
| 540DB00  |     | Blank Detail Specification for Decoupling Capacitor Dual In-Line Package Sockets  | January-93         | December-97     | 11             |
| 540DB00  |     | BLANK DETAIL SPEC FOR DIP SOCKETS W/DECOUPLING CAP  | June-93            | June-98         | 11             |
| 540DBAA  |     | Detail Specification for Decoupling Capacitor Dual In-Line Package Sockets for Use in Electronic Equipment  | January-94         | December-98     | 10             |
| 540E000  |     | Sectional Specification for Round-Style Sockets for Use in Electronic Equipment   | February-93        | February-98     | 11             |
| 540FA00  | A   | Blank Detail Specification for Multi-Package Module Sockets for Use in Electronic Equipment   | April-92           | March-97        | 12             |
| 540FAAA  |     | Detail Specification for Multi-Package 100 Mil Pitch, Vertical Mounting Format Module Sockets for Use in Electronic Equipment   | January-92         | December-96     | 12             |
| 540FAAB  |     | Detail Specification for Multi-Package 100 Mil Pitch, Angled Mounting Format Module Sockets for Use in Electronic Equipment   | January-92         | December-96     | 12             |
| 540FAAC  |     | Detail Specification for Multi-Package 50 Mil Pitch, Vertical Mounting Format Module Sockets for Use in Electronic Equipment  | January-92         | December-96     | 12             |
| 540FAAD  |     | Detail Specification for Multi-Package 50 Mil Pitch, Angled Mounting Format Module Sockets for Use in Electronic Equipment  | January-92         | December-96     | 12             |
| 540G000  |     | Sectional Specification for Burn-In Sockets for Use in Electronic Equipment   | January-93         | December-97     | 11             |
| 540GA00  |     | Blank Detail Specification for Burn-In Sockets for Chip Carrier Packages with Molded Carrier Rings for Use in Electronic Equipment  | January-93         | December-97     | 11             |
| 540GAAA  |     | Detail Specification for Burn-In Sockets for Chip Carrier Packages with Molded Carrier Rings for Use in Electronic Equipment  | January-93         | December-97     | 11             |

| Socket Specifications Past Due for 5-Year Review |     |  |                    |                 |                |
|--|-----|--|--------------------|-----------------|----------------|
| EIA  | Rev | Title  | Date of last issue | 5 Year due date | Years past due |
| 540HA00  |     | Blank Detail Specification for Burn-In Sockets Used with Ball Grid Array Devices for Use in Electronic Equipment | May-00             | April-05        | 4              |
| 540HAAA  |     | Detail Specification for Burn-In Sockets Used with Ball Grid Array Devices for Use in Electronic Equipment       | June-00            | May-05          | 4              |
| 540J000  |     | Sectional Specification for Battery Holders for Use in Electronic Equipment                                      | May-00             | April-05        | 4              |
| 540J0AA  |     | Detail Specification for Cylindrical Battery Holders, Standard Profile, for Use in Electronic Equipment          | May-00             | April-05        | 4              |
| 540J0AB  |     | Detail Specification for Coin Cell Battery Holders for Use in Electronic Equipment                               | June-01            | May-06          | 3              |
| 674  | A   | Specification for Dimensions and Connectors Locations of Small Form Factor 45 millimeter (1.8 inch) Disk Drive   | August-06          | August-11       | -3             |
| 675  |     | Specification for Small Form Factor 33.0 mm (1.3 in) Disk Drives   | January-96         | December-00     | 8              |
| 676  | A   | Specification for Parallel 1.8 inch Drive Form Factor (78 millimeter x 54 millimeter)                            | June-06            | June-11         | -2             |
| 677  |     | Specification for Small Form Factor Power Connector Pin Dimensions   | June-97            | June-02         | 7              |
| 740  |     | Specification for Small Form Factor 88.9 mm (3.5 in) Disk Drives   | July-99            | June-04         | 5              |
| 741  |     | Specification for Small Form Factor 133.35 mm (5.25 in) Disk Drives  | May-01             | April-06        | 3              |
| 773  |     | Check List for Document Development and Revision   | May-00             | April-05        | 4              |
| CB-5-1   |     | Recommended Test Procedure for Semiconductor Thermal Dissipating Devices-Addendum to CB5                         | May-71             | April-76        | 33             |
| IS-701   |     | Production Ball Grid Array (BGA) Socket Test Specification   | July-96            | July-01         | 7              |

- Approved to be obsoleted or rescinded

| Unknown Connector Documents |     |   |                    |                 |                |  |
|-----------------------------|-----|---|--------------------|-----------------|----------------|--|
| EIA                         | Rev | Title   | Date of last issue | 5 Year due date | Years past due | Comments                                     |
| 51                          |     | EMISSION LIMITATION AM BROADCAST TRANSMISSION                     | September-88       | August-93       |                | Number unidentifiable                        |
| 5810000                     |     | GENERIC SPEC RECTANGULAR CONNECTOR FOR FREQUENCIES BELOW 3 MHZ    |                    |                 |                | Number unidentifiable                        |
| 5880000                     |     | GEN SPEC PRINTED BD CONNECTORS OF ASSESSED QUALITY                |                    |                 |                | Number unidentifiable                        |
| 437-1                       |     | ADDENDUM NO. 1 TO EIA-437 BASIC SENSITIVE SWITCHES                | September-78       | August-83       |                | Number unidentifiable                        |
| 437-2                       |     |   | May-78             | April-83        |                | RESCINDED 9/25/89                            |
| 437-3                       |     |   | September-78       | August-83       |                | RESCINDED 9/25/89                            |
| 437-4                       |     |   | September-89       | August-94       |                | RESCINDED 9/25/89                            |
| 437-5                       |     | 20 AMP DOUBLE BREAK SENSITIVE SWITCHES                            | March-81           | February-86     |                | Number unidentifiable                        |
| 437-6                       |     | 15 AMP DOUBLE BREAK SENSITIVE SWITCHES                            | March-81           | February-86     |                | Number unidentifiable                        |
| 437-7                       |     | 10 AMP DOUBLE SENSITIVE SWITCHES                                  | June-80            | May-85          |                | Number unidentifiable                        |
| 437-8                       |     | 8 AMP DOUBLE SENSITIVE SWITCHES                                   | June-80            | June-85         |                | Number unidentifiable                        |
| 64                          |     | INTERIM STD, 2MM TWO-PART CONN FOR PRINT WIRING BD                | March-91           | March-96        |                | Number unidentifiable                        |
| 700A000                     |     | SECT SPEC FOR PRINTED BOARD CONNECTORS ESSENTIALLY BELOW 3MHZ     |                    |                 |                | No record that specification was ever issued |
| 700A0AG                     |     | DT SP TRAPEZOIDAL PIN-AND-SOCKET CONN FIBER CHANNEL APPLICATIONS  |                    |                 |                | No record that specification was ever issued |
| 700AAAA                     |     | DT SP 1.27 mm PITCH RIBBON CONTACT TRAPEZOIDAL SHIELDED I/O CONNC |                    |                 |                | No record that specification was ever issued |
| 700BAAA                     |     | CONNECTOR ELECT RECTANGULAR SCOOP-PROOF LOW FORCE SUBMINIATURE    |                    |                 |                | No record that specification was ever issued |
| 700BAAB                     |     | CONNECTORS, ELECTRICAL, RECTANGULAR, BLIND-MATE, SCOOP-PROOF      |                    |                 |                | No record that specification was ever issued |
| 700BAAC                     |     | DT SP BLIND-MATE, SCOOP PROOF EVA LOW EARTH ORBIT LEO CONNECTOR   |                    |                 |                | No record that specification was ever issued |
| 700D0AA                     |     | HIGH DENSITY TUNING FORK COMPONENTS                               |                    |                 |                | No record that specification was ever issued |
| 700DA00                     |     | DISCRETE CONTACT BLANK DETAIL SPECIFICATION                       |                    |                 |                | No record that specification was ever issued |

| Unknown Socket Documents |     |   |                    |                 |                |   |
|--------------------------|-----|---|--------------------|-----------------|----------------|---|
| EIA                      | Rev | Title   | Date of last issue | 5 Year due date | Years past due | Comments  |
| 540B0AB                  |     | Low Pin Count BGA   |                    |                 |                | Sent letter to EIA to cancel project on 13 May 2008 |
| 540D0AA                  |     | DET. SPEC - SOCKETS FOR DUAL...PACKAGES                           | January-90         | January-95      |                | No record that specification was ever issued        |
| 540F0AG                  |     | DETAIL SPEC-SMALL OUTLINE DIMM DUAL-IN-LINE MEMORY MODULE SOCKETS |                    |                 |                | No record that specification was ever issued        |
| 540FAAE                  |     | DT SP DUAL IN-LINE MEMORY (DIMM) SOCKETS 1.27 MM VERTICAL MOUNT   |                    |                 |                | No record that specification was ever issued        |
| 540FAAF                  |     | DT SP 8-BYTE 168 POSITION DUAL IN-LINE MEMORY MODULE SOCKET 1.27  |                    |                 |                | No record that specification was ever issued        |
| 540JAAA                  |     | DT SP BURN-IN SOCKETS USE W/BALL GRID ARRAY DEVICE USE IN ELEC EQ |                    |                 |                | No record that specification was ever issued        |

C. Obsolete or rescind all Generic, Sectional and Blank Detail Specifications

The unanimously agreed to obsolete all Generic, Sectional and Blank Details Specifications. Carl Fritz has agreed to be project leader. It was moved by Don Chambers and seconded by Frank Ruffino to obtain a project number and send out on SP ballot.

D. SFF Committee Project Activities

There has been a request received to prepare approximately 22 detail specifications on behalf of the SFF Committee. The committee unanimously agreed to take this on as a project to create new detail specifications. Frank Ruffino has agreed to be project leader. It was moved by Don Chambers and seconded by Kevin Rickard to obtain a project number and send out on letter ballot or SP as determined by the project leader.

## 5. LIASION REPORTS

A. DSCC, including Army, USAF, Navy; except NAVAIR (Ralph Antonelli)

Ralph presented his report.  
**(See Attachment No. 4 for DSCC report).**

B. NAVAIR (Dwight Tabit)

There was no report. Carl will contact Dwight and see if his report can be added as an attachment following the meeting.  
**(See Attachment No. 5 for NAVAIR report).**

C. SAE (Dave Bouzek)

Dave Bouzek indicated that the next SAE meeting is schedule for 18 – 22 May 2009 in Singer Island, FL.

**(See Attachment No. 6 for SAE agenda and Attachment No. 7 for SAE – AE-8C2 agenda).**

D. ASTM (Frank Ruffino)

Frank Ruffino has agreed to provide a copy of the agenda for the 5 May 2009 meeting.

**(See Attachment No. 8 for ASTM agenda)**

## **6. OTHER BUSINESS**

A. Review of questionnaire for CE-2.0 (Frank Ruffino)

Activity has been tabled for the time being.

B. Documentation Structure Strategy (Carl Fritz) (Retained for Historical Purposes)

Consensus of the committee is that there is no valid reason to continue to use the generic, sectional and blank details. These documents should be obsoleted at the next review cycle. This has now been actively introduced as a project under new business for connectors and sockets.

This has been addressed in clause 4.2.C of these minutes and is now an active project.

## **7. NEW BUSINESS**

A. Scope (Frank Ruffino)

Review our CE-2.0 Committee Scope. I think it needs adjustments and this has not been done after we merged CE-3.0. Frank agreed to prepare a revised scope of the committee.

B. Committee Process (Carl Fritz)

Also include a review of the "Official" Process for ballots and resolving negative ballots. I will ask Bob to give us presentation on what we should be doing.

Carl to provide Bob Willis with the sequence of events document as well as the draft of the revised Purple rejection card that were discussed at the meeting.

C. WEB Database Review (Carl Fritz and Frank Ruffino)

Discussed updating the database with Bob Willis. Carl has agreed to provide Bob with a listing of all standards and specification that he is aware of that are the responsibility of the CE-2.0 committee for review. Bob to provide Frank with a copy of the database for suggestions on layout and content.

## **8. FUTURE MEETINGS**

Next meeting is scheduled for Savannah, GA 5 – 8 October 2009

There appears to be a major conflict with the members on the scheduled date. Frank to discuss holding the meeting outside the summit. It appears that the week of 12 –14 October would not cause a conflict.

Respectfully submitted,

Frank Ruffino, Chairman CE-2.0

Prepared by  
Carl Fritz, Secretary CE-2.0