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Joint Council on Aging Aircraft
Joint Group on Pollution Prevention



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Lead-Free Solder Project Teleconference Minutes 19 August, 2004

Comments:

Attached please find the minutes for the August 19, 2004 Lead-Free Solder teleconference.

Attendees:

ATTENDING	AFFILIATION	EMAIL
Dave Hillman	Rockwell Collins	ddhillma@rockwellcollins.com
Denny Jarvi	ITB, Inc.	djarvi@itb-inc.com
Jeff Bradford	Raytheon	jbradford@raytheon.com
Kurt Kessel	ITB, Inc.	Kurt.Kessel-1@ksc.nasa.gov
Lee Whiteman	ACI	lwhiteman@aci-corp.org
Lety Campuzano-Contreras	BAE Systems	ana.l.campuzano-contreras@boeing.com
Tom Woodrow	Boeing	thomas.a.woodrow@Boeing.com



MEMORANDUM FOR RECORD

Subject: – Teleconference, Summary and Minutes – August 19, 2004

Minutes:

1. Ms. Lety Campuzano-Contreras's firm, the Boeing Commercial Electronics Manufacturing Facility, has been acquired by BAE Systems. She reported that her management supports her continued involvement in the lead-free solder project.

2. Test Vehicles:

Mr. Kessel asked the group to provide comment on the condition of the test vehicles that they received and asked everyone to identify any problems they might have with the test vehicles.

Discussion:

- a. Mr. Hillman stated that the boards looked great and there were no problems with the boards associated with assembly. It was discovered that there were a couple of quad flat packs with missing wire bonds.
- b. Mr. Whiteman stated that he received all of the boards and that the boards looked good.
- c. Dr. Woodrow indicated that the boards looked fine and he also found some components to be defective, mainly DIPs and quad flat packs.

3. Testing:

Mr. Kessel asked everyone to provide a status of the testing activities being conducted at their respective locations.

Discussion:

- a. Mr. Hillman is currently soldering wires to the boards for data collection and monitoring purposes. The goal is to have the test vehicles in the thermal cycle chamber by the end of August 2004.
- b. Mr. Whiteman is planning to start the salt atmosphere testing the week of August 23. Hardware is being procured for the mechanical shock test which could start in mid-September.
- c. Dr. Woodrow explained that for the mechanical shock testing, the test had to be divided into four tests since the thermal shock chamber has a capacity of 512 channels, about 8 boards worth. The initial set of test vehicles has nearly completed testing. Dr. Woodrow reported that most of the CLCCs have failed. For the first eight boards, the Sn/Ag/Cu solder alloy has not performed well. The Sn/Ag/Cu/Bi and Sn/Pb solder alloys are performing about the same with regards to reliability. Dr. Woodrow pointed out that for the solder joints contaminated with lead, because the components had Sn/Pb on them, they have not been performing better or worse than the uncontaminated solder joints. It was also pointed out that the Sn/Ag/Cu/Bi TSOP component contaminated with lead failed early. This observation was not unexpected.



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Dr. Woodrow stated that for one board he ran the entire vibration test vibration in order to trouble shoot the testing procedure, fixtures and wiring prior to performing the actual testing procedure. It was discovered that following the duration of the test, only 55% of the components had failed. Dr. Woodrow then ramped the testing up to 28 g_{rms} and obtained about 75% part failure. The full vibration test could start in about two weeks. Dr. Woodrow also stated that he calculated the first resonance frequency of the board to be 72 hertz. Thermal cycle testing could start either the first or second week of September.

- d. Mr. Kessel reported for Mr. Kerr and stated that the EMR test is under way.
4. Mr. Hillman stated that he has the hybrid components and the correct CSP components for any follow-on testing that may occur.

- Next Meeting(s):**
- Confirmed; Face-to-face, September 21 Harris Corporation Melbourne Florida
 - Tentative; WebEx, December 2004
 - Tentative; Face-to-face, April 2005 APEX Conference