



inEMI

International Electronics Manufacturing Initiative

High Reliability RoHS Task Force

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Advancing manufacturing technology

High Reliability Perspective

- **Sn-Pb assembly is well understood and reliable - primary reason for taking the RoHS Pb exemption or being listed as “Out of Scope”.**
- **The components supply chain has rapidly been converting to RoHS compliant offerings (Pb-free) with little motivation to continue to produce SnPb product.**
- **Work to date has not provided the assurance of long term reliability with Pb-free assembly**
- **Work is underway that will provide the industry with better understanding of Pb-free alternatives.**

High Rel Task Group

Objectives

- **Gain a common understanding of the supply chain challenges facing High Reliability OEMs/EMS providers who are:**
 - Taking Pb exemption (e.g. telecom switching, high end servers, etc.)
 - Out of Scope of RoHS (e.g. measurement equipment, medical)
- **Share experiences between OEMs/EMS providers on current state of supply base**
- **Understand impact of high volume (consumer product) transition to Pb-free components and assembly.**
- **Define the gaps and that this Pb-free move leaves for the high reliability products.**
- **Influence supply base to meet on-going needs of these industry segments.**

High Rel. OEM/EMS Participants



Alcatel-Lucent



DELPHI



invent



JABIL



SANMINA-SCI



Group Process

- **Team Leaders**
 - Mike Davisson, Agilent
 - Thilo Sack, Celestica
 - Joe Smetana, Alcatel-Lucent
- **Primary product of group has been creation of position papers.**

Scope:

1. **Address availability of SnPb compatible BGA's for High Rel segment.**
2. **Communicate requirements for Tin Whisker mitigation and testing practices.**
3. **Communicate manufacturing issues for thermally complex assemblies.**
4. **Communicate unique requirements for RoHS 5/RoHS 6 subassemblies.**

Status:

Three position papers released -

- **Recommendations to Electronics Industry Component Supply Base**
- **Pb-Free Manufacturing Requirements for High-Complexity, Thermally Challenging Electronic Assemblies**
- **RoHS5 & RoHS6 Subassembly Modules**
- **http://www.inemi.org/cms/projects/ese/High_Rel_RoHS.html**

Supply Base Impact

- **Firms are paying attention to these documents:**
 - **Among most popular downloads from web site**
 - **Questions of clarification continue to be asked**
- **Supply base is addressing technical requirements (e.g. Tin Whisker mitigation).**
- **Availability of SnPb compatible BGA's remains a key concern.**

The Business Challenge

- **Consumer electronics is Driving Component supply base.**
- **Total Available Market (TAM) for all High Reliability categories (Servers, Telecom, Military, etc.) is on the order of <10% of Revenue for component Supply Base.**
- **Most suppliers prefer to have their entire product line converted to Pb-free.**
- **Maintaining a dual supply chain to satisfy the High Rel segments is costly and adds complexity.**
- **There is uncertainty on how long the Pb-free exemptions will last or when High Rel. segment will convert.**
- **Today's alternatives are not very attractive:**
 - **Supply risk of not being able to secure SnPb compatible BGAs and other critical component and sub-assemblies.**
 - **Risk of rapid conversion of products prior to full understanding of long term reliability test results.**

Scenarios

- **Long term solution is to reduce reliability risk of Pb-free components and assembly.**
 - The economic incentive is compelling
 - Well worth technology investment
 - Could take several years to complete but this is cumulative, so strides made today are useable.
- **What can we do in the short term to help encourage the availability of SnPb compatible BGAs?**
- **What can we do in the mid term to close remaining knowledge gaps that the High Rel. segments face?**
- **What can be done longer term to better understand and predict reliability of electronics hardware using Pb-free components and assembly?**

BGA Availability Workshop

- http://www.inemi.org/cms/projects/ese/SnPb_BGAs.html
- **CALL FOR PARTICIPATION**

**Availability of SnPb-Compatible BGAs Workshop
Thursday, March 1, 2007**

9:00 a.m. to 3:30 p.m. (registration opens at 8:30)

Hosted by Hewlett-Packard

**19483 Pruneridge Avenue, Building 48, Oak Room
Cupertino, California 95014**

- **Registration is now closed.**

Closing Remaining Knowledge Gaps

- High Rel. Task Group is undertaking effort to develop an industry view and communicate results to supply base.
- Proposed tasks include:

- Define list of key knowledge gaps for High Rel. Pb-free
 - Reliability
 - Manufacturing
- Create matrix of work underway to close gaps
 - Consider existing sources of data
 - Consider all industry/university cooperative efforts
- Create timeline for completion
- Coordinate work and communicate results.

Improve Reliability Evaluations

- **IPC and iNEMI in co-operation with GEIA, HDPUG and JEDEC are sponsoring a Free Forum**
- **Reliability Summit: “Keeping industry reliability test protocols current with rapidly changing markets”**
- **Friday February 23, 2007. 8:30-4:30
Room 404AB, Los Angeles Convention Center
201 S. Figueroa St. Los Angeles, California**

www.inemi.org

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