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# Statement of Work

NEMI Board Assembly TIG

Project: Pb-Free Defects Per Million Opportunities (DPMO)

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**Purpose:**

To create an effective environment to improve the delivered and quality of ROHS compliant manufacturing processes, assist in reducing costs of assembly, test, rework, scrap, and warranty and help improve line utilization and reduce cycle time.

**Background and Motivation:**

Now that we are on the brink of transition to ROHS compliance, benchmarking information of Pb-Free Defects Per Million Opportunities (DPMO) rates for printed circuit board (PCB) is now more readily available and of greater interest to member's assemblies. This project team plans to build on iNEMI's original DPMO project results by package and technology type in an effort to help manufacturers benchmark their own relative quality performance. Pb-Free DPMO data by package and technology type will allow manufactures to better estimate manufacturing costs and delivered quality so that they can make strategic decisions about investment of resources.

**Scope of Work:**

- Implement methods to protect confidentiality of data collected from participants
- Define how data will be shared and communicated between team members and to outside parties
- Define Pb-Free DPMO data collection methods around existing IPC standards (9261 & 7912)
- Define data stratification and classification methods for data collection
- Collect DPMO data from several component types into software database
- Summarize data and generate reports and documents

**Data Sharing Policies:**

For the project to be successful data is needed from as many companies as possible. Therefore participating companies that submit Pb-Free DPMO data at a package level and/or significant resources will have access to all information (except company names), while companies that do not contribute Pb-Free DPMO data or significant resources (as determined by the iNEMI Pb-Free DPMO Working Group) will not have access to all information.

The following data sharing policies are aimed at encouraging all companies to share Pb-Free DPMO data:

1. The following data can be shared with companies inside as well as outside the NEMI community: (This also includes companies that participate in the iNEMI DPMO Working Group, but do not submit any Pb-Free DPMO data or do not contribute significant resources).
  - Average Pb-Free DPMO level and fault spectrum for all board types averaged together within each anonymous company [1 statistic per company]
  - Average Pb-Free DPMO level and fault spectrum for the board type with the lowest defect levels within each anonymous company [1 statistic per company]
  - NO package-level Pb-Free DPMO data will be shared with non-contributing companies
2. For companies participating with Pb-Free DPMO a package level, all data will be available in form of a spreadsheet, database, or the form the Working Group selects.

In both cases data may be eliminated if the Working Group does not think it has significant sample size to be included in the work.

Prior to the completion of this project, companies within the Pb-Free DPMO Working Group will not be permitted to present, distribute, or publish Pb-Free DPMO (package-level or otherwise) acquired from this project to companies outside the Pb-Free DPMO Working Group. As part of the project closing activities, the Pb-Free DPMO Working Group will decide when, with whom, and in what format project data may be shared.

Note that the team may share very few package-level Pb-Free DPMO statistics for marketing purposes to encourage more industry participation prior to the completion of the project. A majority of the Pb-Free DPMO Working Group must consent to the release of any package-level data to the industry.

***Schedule: TBD***

***Specifications and Standards:***

This project anticipates recommending changes to IPC 7912 and IPC 9261. No new standards or specifications are expected.

***Resources Required from Participants:***

For this project to have benchmarking value, package-level Pb-Free DPMO data from several sources is required. The target critical mass level is defined as:

- minimum of 10 different companies contributing package-level Pb-Free DPMO data
- minimum of 100 different board types
- 75% of the board types should have volume greater than 200.

Participating companies should expect to contribute package-level Pb-Free DPMO data for 10 different board types or contribute approximately 1 man month of time supporting the scope of work activities.

In the event project expenses are incurred, the costs will be shared evenly among participants.

***Confidentiality of Collected DPMO Data:***

The project has confirmed participation by a neutral party to protect the confidentiality of submitted data. Data contributing companies will submit their data to this neutral party in a pre-defined format. This neutral party will remove the specific participant company references detailed in the Project Participation Agreement. Data from all contributing companies will then be combined and handed over to the iNEMI Pb-Free DPMO Working Group for further processing. Georgia Tech has agreed to play the role of this neutral party.