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## **Hybrid Pre Cap Visual Inspection (TM 2017)**

1 DAY

Hybrids/MCMs/RF Microwave Modules all require a visual inspection step just prior to encapsulation or hermetic seal. This is a critical process step that requires a high degree of operator skill and understanding of what to look for and reject as part of the inspection process. This course defines the inspection criteria based on traditional Mil Spec requirements in conjunction with industry accepted best commercial practices. Over 200 color photographs of actual production defects are reviewed and discussed in detail. The students are exposed to a variety of defects and how the defects relate to the materials and process flow. Inspection checklists are used to simplify the criteria and focus on the major problem areas. Students learn what to look for as part of Pre Cap visual inspection and how to interpret and apply MIL-STD-883 criteria.

The course is intended for quality assurance personnel, inspectors, lead operators and others responsible for inspection of the hardware prior to the final package sealing process.

### **Course Outline**

Hybrid Materials and Processing Overview

- Review of terminology

General Inspection Guidelines and Procedures

- Visual inspection requirements flow down

- MIL-PRF-38534 MIL-STD-883 TM 2017

Pre Cap Visual Inspection Criteria

- Defects related to wafer fab, saw and break, probe test etc.

- Thick film/thin film substrate defects e.g., cracks, chipouts

- Laser Trim defects

- Epoxy die attach, fillet criteria for active and passive elements

- Eutectic solder attach

- Epoxy attach of chip capacitors and chip resistors

- Wirebond defects, e.g., excessive squash out, heel cracks, misplaced bonds, etc.

  - ball bonds, wedge bonds, ribbon bonds and heavy wedge aluminum

Foreign Material Identification and Contamination Control

Rework and Repair Limitations

External Visual Inspection Criteria (Optional)

Course Summary

Student Examination Test and Review

Student Feedback and Course Critique