

	Title: Guideline for Pre-Shipment UV Curing of Solder Mask on EIT PCBs		Doc No.: EMS-W0041
			Revision: A
Associated Document: CP205 Planning of Product Realization	Applicable Facilities: EMS1	Release Date: 06/19/2015	Page 1 of 3

1.0 Scope and Purpose

The purpose of this document is to describe the pre-shipment UV curing requirement and guideline. UV curing is required within 72 hours on all EIT printed circuit boards at PCB fabrication facilities prior to shipment to EIT.

2.0 Responsibility and Authority

This procedure applies to all EIT approved PCB fabrication facilities.

3.0 Revision History (Changes are in **Blue**)

3.1 Document number changed from 751105 to EMS-W0041.

3.2 Updated the entire work instruction to match the new format for all QMS documents

NOTE: This revision was reviewed and reformatted but virtually stayed identical to the “A” version. The original release date of 07/13/2012 was changed to indicate the review had taken place. The revision stayed at “A”.

4.0 Definitions

4.1 PCB Printed Circuit Board

5.0 References and Related Documents

N/A

6.0 Work Instruction

See Attachment 1 for brief information on Joules and Watt terminologies used in UV curing systems and an example of a UV curing profile.

6.1 Pre shipment UV curing is required a minimum of 72 hours prior to shipment to EIT. The process must be performed in a calibrated* UV curing oven to ensure the solder mask is completely cured to meet EIT’s acceptability requirement.

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6.2 Objective evidence must be maintained and available for EIT review (as required). which ensures the UV curing capabilities meet the following guidelines.

- A. A UVA band shall be used for UV curing process.
- B. A dosage of 12 ± 1 Joules/cm² of delivered radiant accumulated energy is to be absorbed by the printed circuit board.
- C. Note: Multiple passes of PCBs through the UV curing oven might be needed to achieve the 12 J/cm^2 absorbed energy level on the printed circuit board.
- D. A Peak intensity of $0.3 \pm 0.1/0$. irradiant Watt/cm² is to be measured during each pass.
- E. Energy Level must be measured using a calibrated UV measurement instrument (radiometer) to ensure that the required dosage is achieved. Actual measurement results are required on the Certification of Compliance (C of C)

6.3 Documentation required for each lot shipment:

- Certification of Compliance (C of C) must include the actual measured energy level.

7.0 Records

- C of C
- UV curing profile (see sample 8.0) **
- *Calibration Records / Certifications traceable to NIST **

** Records are to be maintained at Supplier for a minimum of 3 years.

8.0 Attachments

Attachment 1

Brief information on Joules and Watt terminologies used in UV curing systems:

UV dosage is measured in Joules/cm². MilliWatts are units of measure for lamp intensity, and MilliJoules are a measure of the accumulation of the MilliWatts over time of exposure. The formula for calculating Joules/cm² is: $1 \text{ W/cm}^2 \times 1 \text{ s} = 1 \text{ J/cm}^2$. The calculation for MilliJoules is the same, only the UV level is 1,000 times less: $1 \text{ mW/cm}^2 \times 1 \text{ s} = 1 \text{ mJ/cm}^2$. MilliWatts are intensity; MilliJoules are dosage.

Example of UV Curing Profile:

UV Measurements - C Sun Oven, 1.1 m/min, both lamps on, high power
K Bostian / EIT / 2006-08-08

Band	Radiant Energy Density (J/cm ²)	Irradiance (W/cm ²)
UVA	4.2262	0.29183
UVB	3.6945	0.25983
UVC	0.19952	0.04083
UVV	2.5938	0.20495

