



# IPC-TM-650 TEST METHODS MANUAL

**1 Scope** This test method is used to evaluate 1:1 artwork masters for layer to layer registration, conductor to edge spacing, screened nomenclature positioning, and solder mask to conductor relationships.

**2 Applicable Documents** None

## 3 Test Specimens

**3.1** 1:1 artwork masters for each printed circuit layer

## 4 Apparatus

**4.1** Light table

**4.2** Magnifier

## 5 Procedure

### 5.1 Preparation of Artwork Masters

**5.1.1** One layer must be selected and used for the evaluation of all other layers. The layer selected should have one or more of the following attributes:

- a. Layer used for drill programming
- b. Layer possessing the smallest pads
- c. Layer possessing all the pads

**5.1.2** Prepare a positive film of the selected layer

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**5.1.3** Prepare negatives of all the other layers.

### 5.2 Test

**5.2.1** Tape the drilled positive artwork to the light table.

**5.2.2** Align the first piece of negative film to the positive artwork master and adjust for maximum blockage of transmitted light. In the case of varying pad sizes, adjust for maximum concentricity.

**5.2.3** Evaluate the result under magnification. Remove the negative.

**5.2.4** Align the next negative and evaluate in the same manner. Continue this process until all layers have been evaluated.

### 5.3 Evaluation

**5.3.1** Examine each layer when aligned to the positive under magnification for the following deficiencies:

- a. Misregistration of pads
- b. Misregistration of solder mask image
- c. Screened nomenclature falling on land areas
- d. Screened nomenclature falling in holes
- e. Conductors or ground planes too close to board edges