The Institute for Interconnecting and Packaging Electronic Circuits
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IPC-TM-650
TEST METHODS MANUAL

Number	
2.2.1	
Subject	
Mechanical Dimensional Verification	
Date	Revision
8/97	**A**
Originating Task Group	
Rigid Board T.M. Task Group, 7-11d	

1.0 Scope This method is intended to cover all mechanical dimension inspections typically referenced on a Printed Board drawing. This will cover non-optically enhanced measurement techniques which are not covered by IPC-TM-650, Method 2.2.2.

2.0 Applicable Documents

ANSI NCSL Z540 International Calibration Standards or Physical Constants

3.0 Test Specimens The test specimen(s) shall be defined in the applicable performance specification or standard.

4.0 Apparatus or Material

4.1 Mechanical measurement gage capable of sufficient accuracy precision and resolution to accomplish the necessary measurement (i.e., calipers, micrometers, pin gages, templates, etc.).

4.2 All mechanical measurement gages shall be calibrated in accordance with ANSI NCSL Z540, International Calibration Standards or Physical Constants.

5.0 Procedure

5.1 Gages which use an origin based system (i.e., calipers, micrometers) shall be initialized at the origin.

5.2 Operate the gage in a manner consistent to obtain the accuracy, repeatability, and precision required.

5.3 If the attribute to be measured can vary across the printed board, multiple measurements must be made to characterize the variation within the sampled area (i.e., hole sizes, thickness).

5.4 Read and record the dimensions for the attribute(s) measured using the same number of significant digits specified by the drawing, standard, or specification as a minimum or maximum limiting value.

6.0 *Notes*

The following items can affect the test results.

Tool wear & maintenance
Environment effects
Delicacy of gages – proper storage
Improper calibration