

SEMI D21-0706 (Reapproved 0815) TERMINOLOGY FOR FPD MASK PATTERN ACCURACY

This Standard was technically approved by the Flat Panel Display – Material & Components Global Technical Committee. This edition was approved for publication by the global Audits and Reviews Subcommittee on May 19, 2015. Available at www.semiviews.org and www.semi.org in August 2015; originally published in 1992; previously published July 2006.

1 Purpose

1.1 This Document defines terminology for FPD masks. By this Standard, it is intended that the concepts of terms which should be used at the technical conferences, business discussion, etc. are clarified and that standardization as to masks will be promoted.

2 Scope

2.1 These terms apply to photomasks that are principally used in fabricating flat panel display.

NOTICE: SEMI Standards and Safety Guidelines do not purport to address all safety issues associated with their use. It is the responsibility of the users of the Documents to establish appropriate safety and health practices, and determine the applicability of regulatory or other limitations prior to use.

3 Referenced Standards and Documents

3.1 None.

NOTICE: Unless otherwise indicated, all documents cited shall be the latest published versions.

4 Pattern Dimension

4.1 Long Dimension Accuracy

4.1.1 *Long Dimension* — The distances in the *X* and *Y* directions between the outermost elements of a pattern on the mask.

4.1.2 *Long Dimension Error* — The difference (ΔD) between the measured value (DM) and designed value (DD) of the long distance.

$$\Delta D = DM - DD \quad (1)$$

4.1.3 *Rectangularity* — Rectangularity of array pattern. Generally, it is indicated as deviation between *X* coordinate 3 and 4, when *Y* coordinate of 1 and 2 are coincident.

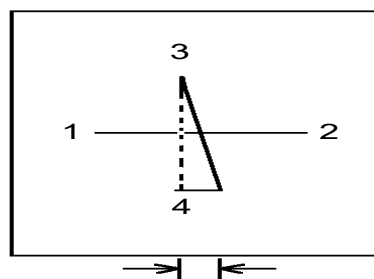


Figure 1
Rectangularity

4.2 *Overlay Accuracy* — Deviation between two or more masks in the direction of the long dimension *X*, *Y*. Generally, the two methods are as follows:

- Deviation is measured by comparing the two masks.

- Deviation is measured by comparing measured data of each long dimension of the two masks.

4.3 *Element Dimension Accuracy* — Dimension accuracy of element (line or space).

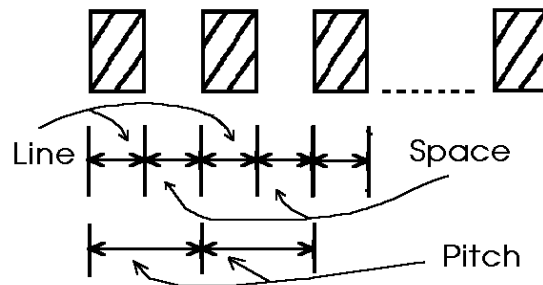


Figure 2
Element Dimension Accuracy

4.4 *Repeat Pitch Accuracy* — Deviation of measured pitch length from designed value.

4.5 *Stitching Error* — Joint accuracy of a pattern when a pattern is composed in a mask (e.g., pattern composition by a stepper). Usually, it is deviation as shown in the following figure.

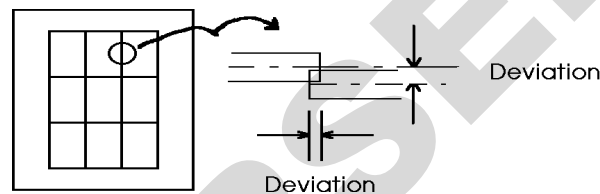


Figure 3
Stitching Error

5 Pattern Positioning Accuracy

5.1 *Pattern Positioning Accuracy* — Relation between the actual and desired locations of a printed pattern on a glass substrate.

5.2 *End Plane Reference* — Positioning accuracy of the printed pattern measured from the reference edge of a glass mask.

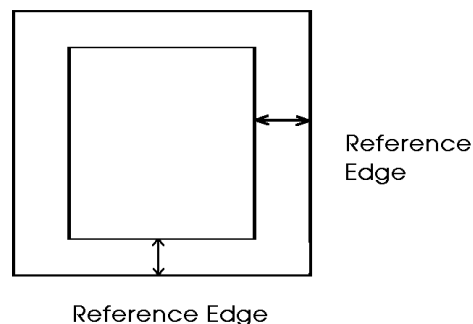


Figure 4
Pattern Positioning Accuracy