

# SEMI D21-92

## DEFINITIONS FOR FLAT PANEL DISPLAY MASKS

This Standard was technically approved by the Flat Panel Display Global Technical Committee. This edition was approved by full ballot procedures in 1992.

### 1 Pattern Dimension

#### 1.1 Long Dimension Accuracy

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

1.1.1.1 *Long Dimension Error* — The difference ( $\Delta D$ ) between the measured value ( $DM$ ) and designed value ( $DD$ ) of the long distance.

$$\Delta D = DM - DD$$

1.1.2 *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.

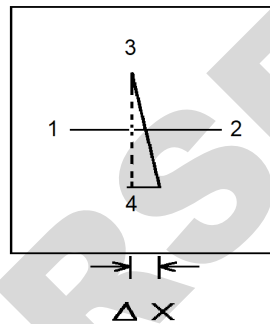


**Figure 1**  
**Rectangularity**

1.2 *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.

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

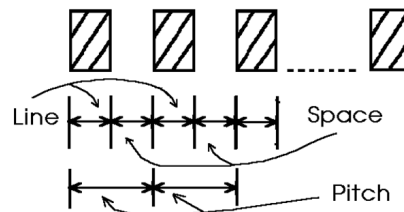


**Figure 2**  
**Element Dimension Accuracy**

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

1.5 *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.

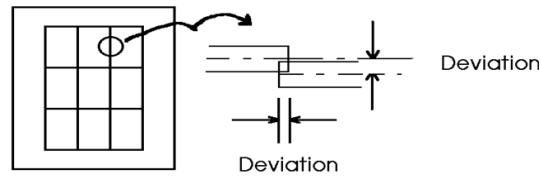


**Figure 3**  
**Stitching Error**

## 2 Pattern Positioning Accuracy

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

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

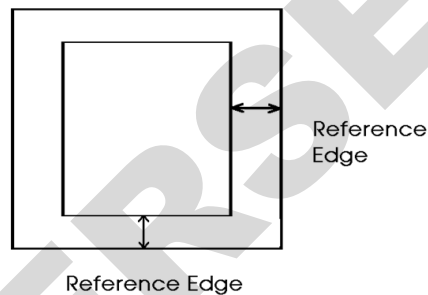


**Figure 4**  
**Pattern Positioning Accuracy**

2.2.1 *Reference Edge* — Two adjacent edges are considered as the reference edge.

2.3 *Pattern Rotation* — Deviation of a printed pattern on a glass mask caused by rotation. Usually, it is expressed by the difference between two measured distances at separated points within one side as shown in the figure.

$$\theta = (D_1 - D_2) / C_1$$

Usually fix the value of  $C_1$  and use the value of  $D_1 - D_2$ .

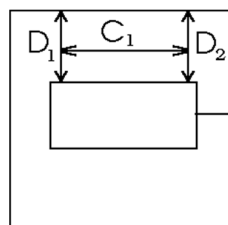


**Figure 5**  
**Pattern Rotation**