EBL Guidelines

Conditions that affect exposure results

To optimize resolution (smaller patterns):

- Resist thickness: **Thin**
- Beam current: **Small**
- Exposure field: **Small**
- Load substrate/wafer into system at least 30 minutes ahead of starting exposure to ensure temperature and environmental stabilization
- If beam current is changed, allow system to settle at the new beam current for one hour before starting exposure

To optimize speed (shorter exposure times):

- Resist sensitivity: **High**
- Beam current: **Large**
- Beam overlapping: **Small (low pixel count)**
- Exposure field: **Large**

Stitching and Overlay Errors

Field Size	Stitching Error
75 um	< 10 nm
150 um	< 20 nm
300 um	< 30 nm
600 um	< 50 nm
1.2 mm	< 150 nm (not recommended for small features)

*Note: The 2.4mm field size is not available for our system even though it appears as a choice in the settings

Overlay error: < 30 nm (independent of field size)

General Rules for Pattern Layout

- For target features sizes < 30nm:
  Use line or dot layout tool elements for features and then adjust exposure settings to give desired linewidth. (e.g., draw a line, and then over-expose to get a rectangle of the desired dimension)
- For target feature sizes > 30nm:
  Use the area layout elements (rectangle, etc) to draw features. Adjust exposure to get desired final dimension (e.g., draw a 30nm rectangle and overexpose to result in a 50nm rectangle).

Revision 1
03.10.2008
M. Walters