AGC inputs onto the current SEMI 4580

AGC would like to propose the modification of the current SEMI 4580 in the following two points.
AGC hopes this can be one of triggers to further discussions for the modification.

(1) Common marks for various tools

The current SEMI 4580 defines two kinds of fiducial marks, large cross and small cross. E-beam writers draw patterns with a reference to the large cross, while defect inspection tools give the location of blank defects with a reference to the small cross. In this case, we need to know the coordination of the large cross with a reference to the small cross by other tools such as IPRO, which can cause the additional coordination error as well as the additional cost.

Same marks should be used by both the defect inspector and the e-beam writer.

(2) Mark size

The current size is not the optimum from the readability point of view, based upon investigation results which AGC has done with collaborations of tool suppliers.

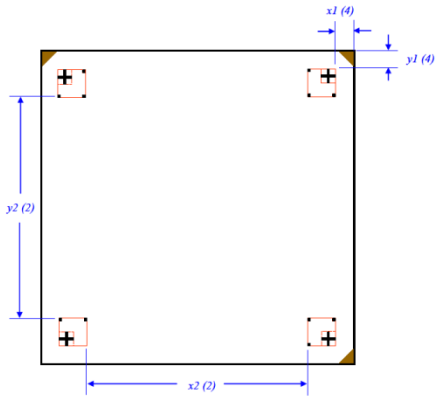

Figure 1
Layout of Fiducial Mark Areas on EUV Blank

Table 1 Fiducial Mark Specification

Symbol Used	*Figure*	*Value (mm unless specified)*	*Tolerance (mm unless specified)*	*Reference Measured From*	*Feature Measured To*
x1	1	8.45	Minimal	Nearest edge of mask blank	Outmost line end of coarse mark
x2	1	131.500	±0.010	Inmost line ends of the fine marks on the left	Inmost line ends of the fine marks on the right
x3	2	1.750	±0.010	The left line ends of fine/coarse marks	The right line ends of other fine/coarse marks in the same corner.
x4	2	1.000	±0.010	Left line end of coarse mark	Right line end of coarse mark
x5	2	0.100	±0.010	Left line end of fine mark	Right line end of fine mark
y1	1	8.45	Minimal	Nearest edge of mask blank	Outmost line end of coarse mark
y2	1	131.500	±0.010	Inmost line ends of fine marks on top	Inmost line ends of fine marks on bottom
y3	2	1.750	±0.010	Top line ends of fine/coarse marks	Bottom line ends of other fine/coarse marks in the same corner
y4	2	1.000	±0.010	Upper line end of coarse mark	Lower line end of coarse mark
y5	2	0.100	±0.010	Upper line end of fine mark	Lower line end of fine mark
CD		4.0 ~ 8.0 um	0.1 um	Line width of both fine and coarse marks.	
LER		10.0 nm	Maximal	3σ variations as measured on each side of crosslines	