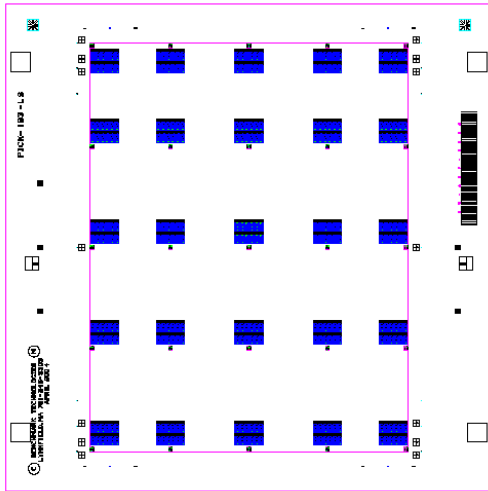


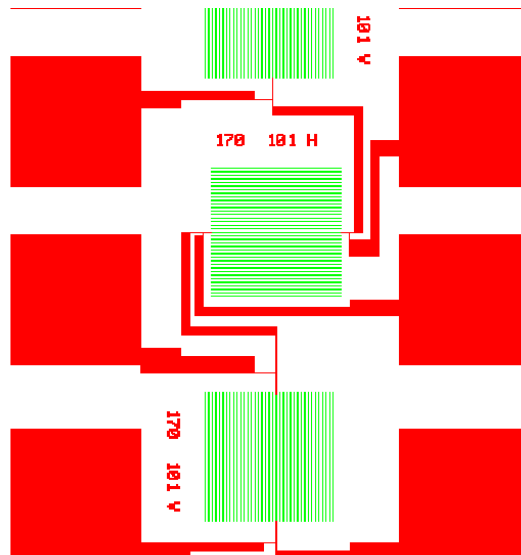
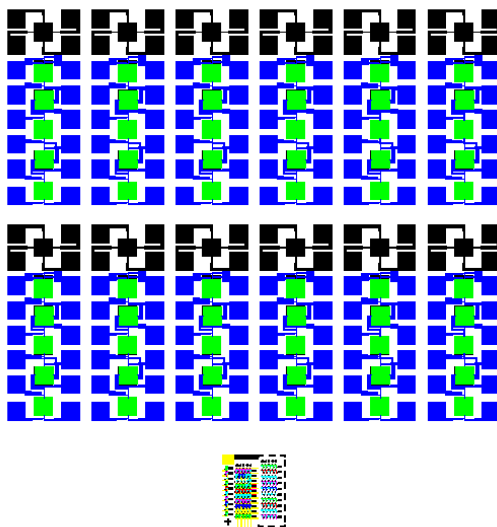
# Across Chip Line Width Variation Reticle



This reticle is used to evaluate the ACLV in a quick and accurate manner. The reticle enables three ways to measure the CD uniformity across a chip:

1. Scatterometry targets (CD and Profile Measurement)
2. Prometrics Targets (Electrical Line Width Measurement)
3. Pick-CD targets (SEM measurement)

The Scatterometry and Prometric features are incorporated in the same module. Each target is 320 um x 320 um (at the reticle)



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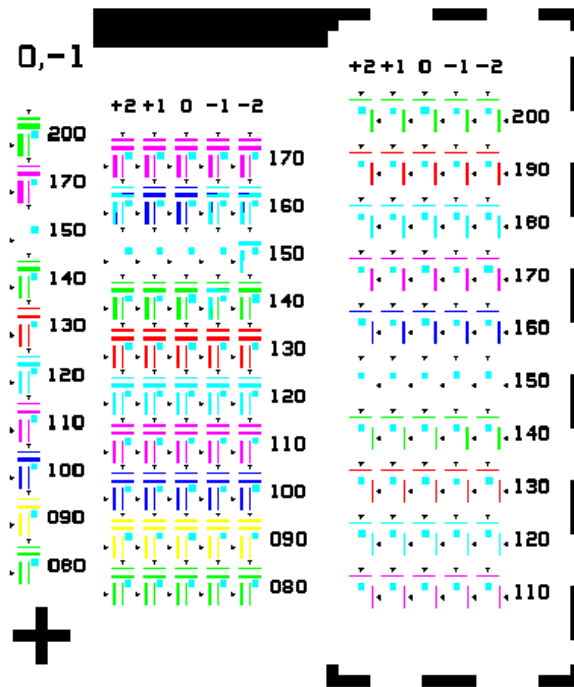
Scatterometry/PMX feature sizes include

170 1:1 H	170 1:1 V	170 1:10 H	170 1:10 V	170 10:1 H	170 10:1 V
160 1:1 H	160 1:1 V	160 1:10 H	160 1:10 V	160 10:1 H	160 10:1 V
150 1:1 H	150 1:1 V	150 1:10 H	150 1:10 V	150 10:1 H	150 10:1 V
140 1:1 H	140 1:1 V	140 1:10 H	140 1:10 V	140 10:1 H	140 10:1 V
130 1:1 H	130 1:1 V	130 1:10 H	130 1:10 V	130 10:1 H	130 10:1 V
120 1:1 H	120 1:1 V	120 1:10 H	120 1:10 V	120 10:1 H	120 10:1 V
110 1:1 H	110 1:1 V	110 1:10 H	110 1:10 V	110 10:1 H	110 10:1 V
100 1:1 H	100 1:1 V	100 1:10 H	100 1:10 V	100 10:1 H	100 10:1 V
90 1:1 H	90 1:1 V	90 1:10H	90 1:10 V	90 10:1 H	90 10:1 V
80 1:1 H	80 1:1 V	80 1:10 H	80 1:10 V	80 10:1 H	80 10:1 V

The pick-CD module consists of several line widths which are biased at 2 nm increments. CD measurements (about 15000) for each feature is measured on the reticle and reported to the user.

The ‘exact’ reticle size can then be compared to the printed feature on the wafer to evaluate the performance of the tool independent of the effects of the reticle. Besides measuring ACLV, Pick-CD features provide a precise means to evaluate linearity and MEF of the tool. We have been able to supply reticles with CD uniformity across the field of less than 15 nm (at reticle dimensions).

Pick-CD module is shown below. Dense lines (1:1) range from 76 nm to 176 nm in increments of 2 nm. Iso-lines range from 106 nm to 206 nm in increments of 2 nm.



*Please note that the reticle layout and feature sizes can be customized to the customer requirements. Please contact Benchmark Technologies for additional details or to request a quote. info@benchmarktech.com*