THE ARCHER 100™ OVERLAY CONTROL SYSTEM, based on the industry proven Archer™ platform, meets stringent performance and cost of ownership (CoO) requirements for 45nm design rules and below. Fully redesigned optics, tighter stage tolerances, new imaging and illumination modes, shorter MAM time, enhanced algorithms and built-in diagnostics combine to deliver the high levels of process robustness and productivity needed to address increasingly tighter overlay error budgets. Leveraging KLA-Tencor’s patented AIM™ technology and Archer Analyzer™ software, the Archer 100 enables in-chip metrology and in-field analysis for advance dispositioning and higher-order overlay control. A smart new automatic recipe optimization (ARO) sequence improves ease of use and tool utilization, enabling relatively unskilled operators to quickly create high quality recipes offline.
Archer 100

**Benefits**
- Significantly reduces TMU (by 30% over previous generation) to satisfy tighter overlay error budgets for ≤45nm design rules
- Improved tool utilization and CoO increases productivity by 20% over previous generation
- Micro-grating (µAIM) targets enable in-field modeling and higher-order overlay control; with increased process robustness
- Enhances measurement of low-contrast targets; especially benefits HVM memory (aCL) applications
- Automatic Recipe Optimization (ARO) enables faster, easier recipe creation
- Recipe Database Manager (RDM+) reduces setup time, and increases reliability, success rate and traceability of measurement recipes
- Extendible platform addresses immersion technology challenges, and provides clear upgrade path for next-generation double patterning lithography

**Applications**
- Low-Contrast Measurements
  The Archer 100 effectively solves the problem of lower contrast measurements, increasingly seen in such applications as amorphous carbon layer (aCL) hard mask films. A new illumination system option improves measurement accuracy and robustness for 45nm and below overlay error budgets in HVM memory production.
- Bright Field Critical Dimension (BF CD)
  The BF CD measurement calculates the distance between one feature and another. BF CD measurements can be horizontal or vertical, with their specific direction determined by the orientation of the measured feature. Using the Archer 100, the BF CD capability can also be effectively applied for measuring “Fuse Box” structures with high topography.
- Immersion Lithography
  The industry leading specifications of the Archer 100 platform increase the overall equipment effectiveness of lithography cell tools. The tool reliably and accurately measures exact process conditions at increased sampling rates, needed for better stepper matching and lithography process control in today’s emerging immersion lithography applications. The Archer 100 platform is designed with the flexibility and extendibility to meet the 32nm requirements of R&D fabs, including next-generation strategies such as double patterning lithography (DPL).