



DIVISION OF
CORPORATION FINANCE

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

Mail Stop 3030

October 21, 2009

VIA U.S. MAIL AND FAX (408) 875-4266

Mark P. Dentinger
Chief Financial Officer
KLA-Tencor Corporation
One Technology Drive
Milpitas, California 95035

Re: KLA-Tencor Corporation
Form 10-K for the year ended June 30, 2009
Filed August 7, 2009
File No. 000-09992

Dear Mr. Dentinger:

We have reviewed your filings and have the following comments. We have limited our review to only your financial statements and related disclosures and do not intend to expand our review to other portions of your document. Where indicated, we think you should revise your document in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Form 10-K for the fiscal year ended June 30, 2009

Item 7. Management Discussion and Analysis of Financial Condition and Results of Operations, page 34

Critical Accounting Estimates and Policies, page 34

Goodwill and Intangible Assets, page 36

1. We note that you consider goodwill impairment to be a critical accounting estimate, which requires the use of assumptions and estimates that could be affected by uncertainties that could result in a material impact on the estimated fair values of your reporting units. In this regard, for reporting units that are at risk of failing step one of the impairment test (i.e. has a fair value that is not substantially in excess of carrying value), please provide us with and revise MD&A in your future filings to disclose the following:
 - Percentage by which fair value exceeded carrying value as of the date of the most recent test;
 - Amount of goodwill allocated to the reporting unit;
 - Description of the methods and key assumptions used and how the key assumptions were determined;
 - Discussion of the degree of uncertainty associated with the key assumptions. The discussion regarding uncertainty should provide specifics to the extent possible (e.g., the valuation model assumes recovery from a business downturn within a defined period of time); and
 - Description of potential events and/or changes in circumstances that could reasonably be expected to negatively affect the key assumptions.

Product revenues, page 43

2. We note that your fiscal year 2009 product revenue has decreased by approximately 47% as compared to the previous year and that the decrease in 2009 product revenue compared to 2008 product revenue was a result of a reduction in capital spending by your customers due to the recent weakness in the semiconductor industry and deteriorating macroeconomic environment...” In light of the significant declines in product revenue for fiscal year 2009 as compared to the prior year, your MD&A disclosure appears broad and does not provide a thorough analysis that provides readers a view of the company through the eyes of management. When individual line items, disclosed in your statements of operations, significantly fluctuate in comparison to the comparable prior period, please quantify, and disclose the nature of each item that caused the significant change. For example, please quantify each material factor (i.e. such as price changes and or volume changes by type of product), disclose separately the effect on operations attributable to each factor causing the aggregate change from year to year and disclose

the nature of or reason for each factor causing the aggregate change. The analysis should reveal underlying material causes of the factors described and any future impact on operating results. Please consider the use of tables when quantifying changes, with narrative discussions following the tables to explain the underlying business reasons for the changes. Please consider the above comment for all your disclosures in your results of operations section with MD&A. As part of your response, please provide us with your proposed disclosure to include in future filings that addresses our concerns. See Item 303 of Regulation S-K and FR-72 for guidance.

Consolidated Statements of Operations, page 59

3. Please revise your statements of operations in future filings to state separately the costs of revenue for product and the cost of revenue for service, as required by Rule 5-03(b) of Regulation S-X.

Note 1 – Summary of Significant Accounting Policies

Reclassifications, page 68

4. We note from your disclosure that cash flows from trading securities were reclassified from operating to investing activities in the consolidated statements of cash flows, and purchases and proceeds from the sale of trading securities are presented separately (previously reported on a net basis) based on your analysis of the provisions of SFAS No. 159. It is unclear why your adoption and analysis of the provisions of SFAS No. 159, would cause a change in classifying cash flows receipts and payments from trading securities in your statement of cash flows from operating to investing in your current period. In this regard, please cite the provisions in SFAS No. 159, which requires this classification change for cash flows from trading securities, and explain to us how it differs from the guidance outlined in paragraphs 14 through 24 of SFAS No. 95, which was applicable for your prior years financial statements. Also, please tell us the trading securities balance carried on your balance sheets for all years presented and provide us with a description of the types of trading securities held by you for each year presented in your financial statements. We may have further comment upon receipt of your response.

As appropriate, please amend your filing and respond to these comments within 10 business days or tell us when you will provide us with a response. Please furnish a cover letter with your amendment that keys your responses to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your amendment and responses to our comments.

Mark P. Dentinger
KLA-Tencor Corporation
October 21, 2009
Page 4

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes all information required under the Securities Exchange Act of 1934 and that they have provided all information investors require for an informed investment decision. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

In connection with responding to our comments, please provide, in writing, a statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filing; and
- the company may not assert staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in our review of your filing or in response to our comments on your filing.

You may contact Andri Boerman, Staff Accountant, at (202) 551-3645 or myself, at (202) 551-3212 if you have any questions regarding these comments. In this regard, do not hesitate to contact Martin James, Senior Assistant Chief Accountant, at (202) 551-3671.

Sincerely,

Jeff Jaramillo
Accounting Branch Chief