

Mail Stop 6010

November 5, 2008

VIA U.S. MAIL AND FAX (408) 875-4144

Mr. Mark P. Dentinger  
Executive Vice President 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, 2008**  
**Filed August 7, 2008**  
**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 documents. Where indicated, we think you should revise future filings 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 Year Ended June 30, 2008

Financial Statements, page 48

Note 3. Marketable Securities, page 62

1. We see your disclosure that in February 2008, auctions failed for approximately \$48.2 million of auction rate securities that you held and as a result you reclassified these securities to long-term assets. However, we also noted your disclosure that you may be forced to sell some of your auction rate securities portfolio under illiquid market conditions, which could result in the company recognizing a loss on such sales. Please respond to the following:
  - Please tell us about your intent and ability to hold these securities and why you believe your reclassification to long-term assets is appropriate if you believe you may, in fact, be forced to sell some of these securities.
  - Please tell us how you calculated the temporary impairment charge of \$.8 million and why it was only considered temporary based upon your failed auctions and statement that you may be forced to sell some of these securities.

Note 4. Business Combinations, page 64

2. We see that you completed the acquisition of majority control of ICOS on May 30, 2008 for cash consideration of approximately \$618.1 million and note your disclosure that the company considers the acquisition of ICOS to be material to your results of operations. Please provide us with your significance tests as set forth under Rule 1-02 (w) of Regulation S-X for this acquisition along with the reason why you believe you were not required to file historical financial statements of ICOS. Refer to the guidance in Rule 3-05 and Rule 1-02(w) of Regulation S-X.

Note 15. Segment Reporting and Geographic Information , page 90

3. We note your disclosure that you report one reportable segment. Please tell us your consideration of the need to report revenues from external customers for each product and service or each group of similar products and services pursuant to paragraph 37 of SFAS 131. It appears from your disclosures elsewhere in the document that you categorize your products into four groups: defect inspection; metrology; product related services; and software, as discussed on page 3. In addition, it appears you may also review your revenues by market as discussed on page 35, including memory, foundry and logic markets. Please address our concerns in your response and revise future filings as necessary based on our comment.

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As appropriate, please respond to these comments within 10 business days or tell us when you will provide us with a response. Please furnish a cover letter 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 responses to our comments.

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 Julie Sherman, Staff Accountant, at (202) 551-3640 or me at (202) 551-3603 if you have any questions regarding these comments. In this regard, do not hesitate to contact Angela Crane, Accounting Branch Chief, at (202) 551-3554.

Sincerely,

Jay Webb  
Reviewing Accountant