

## INITIAL STATEMENT OF BENEFICIAL OWNERSHIP OF SECURITIES

Filed pursuant to Section 16(a) of the Securities Exchange Act of 1934 or Section 30(h) of the Investment Company Act of 1940

(Print or Type Responses)

1. Name and Address of Reporting Person* Bell Bobby R (Last) (First) (Middle) C/O KLA-TENCOR CORPORATION, ONE TECHNOLOGY DRIVE (Street) MILPITAS, CA 95035 (City) (State) (Zip)	2. Date of Event Requiring Statement (Month/Day/Year) 08/05/2010	3. Issuer Name and Ticker or Trading Symbol KLA TENCOR CORP [KLAC]		
		4. Relationship of Reporting Person(s) to Issuer (Check all applicable) <input type="checkbox"/> Director <input type="checkbox"/> 10% Owner <input checked="" type="checkbox"/> Officer (give title below) <input type="checkbox"/> Other (specify below) Executive Vice President		5. If Amendment, Date Original Filed(Month/Day/Year)
		6. Individual or Joint/Group Filing(Check Applicable Line) <input checked="" type="checkbox"/> Form filed by One Reporting Person <input type="checkbox"/> Form filed by More than One Reporting Person		

### Table I - Non-Derivative Securities Beneficially Owned

1. Title of Security (Instr. 4)	2. Amount of Securities Beneficially Owned (Instr. 4)	3. Ownership Form: Direct (D) or Indirect (I) (Instr. 5)	4. Nature of Indirect Beneficial Ownership (Instr. 5)
Common Stock	27,812	D	
Common Stock - Restricted Stock Units	129,733	D	

Reminder: Report on a separate line for each class of securities beneficially owned directly or indirectly.

SEC 1473 (7-02)

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### Table II - Derivative Securities Beneficially Owned (e.g., puts, calls, warrants, options, convertible securities)

1. Title of Derivative Security (Instr. 4)	2. Date Exercisable and Expiration Date (Month/Day/Year)		3. Title and Amount of Securities Underlying Derivative Security (Instr. 4)		4. Conversion or Exercise Price of Derivative Security	5. Ownership Form of Derivative Security: Direct (D) or Indirect (I) (Instr. 5)	6. Nature of Indirect Beneficial Ownership (Instr. 5)
	Date Exercisable	Expiration Date	Title	Amount or Number of Shares			
Non-Qualified Stock Option (Right to Buy)	07/10/2001 <sup>(1)</sup>	07/10/2011	Common Stock	5,000	\$ 46.67	D	
Non-Qualified Stock Option (Right to Buy)	07/10/2001 <sup>(1)</sup>	07/10/2011	Common Stock	1,740	\$ 46.67	D	
Non-Qualified Stock Option (Right to Buy)	08/13/2001 <sup>(1)</sup>	07/10/2011	Common Stock	8,260	\$ 46.67	D	
Non-Qualified Stock Option (Right to Buy)	11/10/2001 <sup>(1)</sup>	07/10/2011	Common Stock	4,083	\$ 46.67	D	
Non-Qualified Stock Option (Right to Buy)	02/19/2002 <sup>(1)</sup>	07/10/2011	Common Stock	4,791	\$ 46.67	D	
Non-Qualified Stock Option (Right to Buy)	04/04/2002 <sup>(1)</sup>	07/10/2011	Common Stock	3,666	\$ 46.67	D	
Non-Qualified Stock Option (Right to Buy)	11/08/2003 <sup>(1)</sup>	11/08/2012	Common Stock	1,354	\$ 37.05	D	
Non-Qualified Stock Option (Right to Buy)	11/08/2003 <sup>(1)</sup>	01/28/2013	Common Stock	542 <sup>(2)</sup>	\$ 34.67	D	
Non-Qualified Stock Option (Right to Buy)	11/08/2003 <sup>(1)</sup>	07/30/2013	Common Stock	3,250	\$ 51.229	D	
Non-Qualified Stock Option (Right to Buy)	10/27/2004 <sup>(1)</sup>	10/27/2013	Common Stock	6,200	\$ 53.86	D	
Non-Qualified Stock Option (Right to Buy)	10/27/2004 <sup>(1)</sup>	01/27/2014	Common Stock	3,100	\$ 58.1	D	
Non-Qualified Stock Option (Right to Buy)	10/27/2004 <sup>(1)</sup>	04/26/2014	Common Stock	3,875	\$ 45.16	D	

Non-Qualified Stock Option (Right to Buy)	10/27/2004 <sup>(1)</sup>	08/02/2014	Common Stock	2,325	\$ 40.66	D	
Non-Qualified Stock Option (Right to Buy)	01/04/2005 <sup>(1)</sup>	07/10/2011	Common Stock	1,334	\$ 53.35	D	
Non-Qualified Stock Option (Right to Buy)	01/08/2005 <sup>(1)</sup>	11/08/2012	Common Stock	1,896	\$ 37.43	D	
Non-Qualified Stock Option (Right to Buy)	01/10/2005 <sup>(1)</sup>	07/10/2011	Common Stock	917	\$ 53.35	D	
Non-Qualified Stock Option (Right to Buy)	01/19/2005 <sup>(1)</sup>	07/10/2011	Common Stock	209	\$ 53.35	D	
Non-Qualified Stock Option (Right to Buy)	09/16/2005 <sup>(1)</sup>	09/16/2014	Common Stock	20,500	\$ 39.89	D	
Non-Qualified Stock Option (Right to Buy)	09/02/2006 <sup>(1)</sup>	10/02/2011	Common Stock	600	\$ 45.25	D	
Non-Qualified Stock Option (Right to Buy)	09/16/2006 <sup>(3)</sup>	09/16/2014	Common Stock	10,250	\$ 39.89	D	
Non-Qualified Stock Option (Right to Buy)	09/26/2006 <sup>(3)</sup>	09/26/2012	Common Stock	17,000	\$ 47.95	D	

## Reporting Owners

Reporting Owner Name / Address	Relationships			
	Director	10% Owner	Officer	Other
Bell Bobby R C/O KLA-TENCOR CORPORATION ONE TECHNOLOGY DRIVE MILPITAS, CA 95035			Executive Vice President	

## Signatures

Brian M. Martin as Attorney-In-Fact for Bobby R. Bell		08/09/2010
<small>**Signature of Reporting Person</small>		<small>Date</small>

## Explanation of Responses:

- \* If the form is filed by more than one reporting person, *see* Instruction 5(b)(v).
- \*\* Intentional misstatements or omissions of facts constitute Federal Criminal Violations. *See* 18 U.S.C. 1001 and 15 U.S.C. 78ff(a).
- (1) This option is fully-vested and exercisable.
- (2) An option to purchase 6,500 shares was originally granted. As of the date hereof, 5,958 shares have been exercised.
- (3) Twenty percent (20%) of the shares subject to this option became exercisable on this date, and the remaining shares became (or will become) exercisable in equal monthly installments over the subsequent 48 months.

Note: File three copies of this Form, one of which must be manually signed. If space is insufficient, *See* Instruction 6 for procedure.

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Limited Power of Attorney - Securities Law Compliance

This statement confirms that the undersigned, as an officer, director or beneficial owner of more than 10% of any class of any equity security of KLA-Tencor Corporation (the "Corporation"), hereby appoints Brian Martin (in his role as corporate secretary) and Jeffrey Eisenberg (in his role as corporate assistant secretary), and each of them, the undersigned's true and lawful attorney-in-fact and agent to:

1. complete and execute Forms 3, 4 and 5 and other forms (including any amendments thereto) as such attorney-in-fact shall in his discretion determine to be required or advisable pursuant to Section 16 of the Securities Exchange Act of 1934 (as amended) and the rules and regulations promulgated thereunder, or any successor laws and regulations, as a consequence of the undersigned's ownership, acquisition or disposition of securities of the Corporation; and
2. to do all acts necessary in order to file such forms with the Securities and Exchange Commission, any securities exchange or national association, that the Corporation and such other person or agency as the attorney-in-fact shall deem appropriate.

The undersigned hereby ratifies and confirms all that said attorneys-in-fact and agents shall do or cause to be done by virtue hereof. The undersigned acknowledges that the foregoing attorneys-in-fact, in serving in such capacity at the request of the undersigned, are not assuming, nor is the Corporation assuming, any of the undersigned's responsibilities to comply with Section 16 of the Securities Exchange Act of 1934 (as amended). This Limited Power of Attorney shall remain in full force and effect until the undersigned is no longer required to file Forms 3, 4 and 5 with respect to the undersigned's ownership of and transactions in securities of the Corporation, unless earlier revoked by the undersigned in a signed writing delivered to the Corporation and the foregoing attorneys-in-fact.

This Limited Power of Attorney is executed at Milpitas, California as of the date set forth below.

Signature: /s/ Bobby R. Bell  
Print Name: Bobby R. Bell  
Dated: August 5, 2010

Witness Signature: /s/ Lisa Cianciarulo  
Print Name: Lisa Cianciarulo  
Dated: August 5, 2010