

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

FORM S-3
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

KLA-TENCOR CORPORATION
(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

**One Technology Drive
Milpitas, California 95035
(408) 875-3000**

04-2564110
(I.R.S. Employer
Identification Number)

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

**Teri A. Little
Executive Vice President and Chief Legal Officer
KLA-Tencor Corporation
One Technology Drive
Milpitas, California 95035
(408) 875-3000**

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

**Lisa L. Stimmell
Wilson Sonsini Goodrich & Rosati,
Professional Corporation
650 Page Mill Road
Palo Alto, California 94304
(650) 493-9300**

Approximate date of commencement of proposed sale to the public From time to time after this Registration Statement becomes effective.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto and shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large Accelerated Filer

Accelerated Filer

Non-accelerated Filer

Smaller Reporting Company

Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for not complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act.

CALCULATION OF REGISTRATION FEE

Title of Each Class of Securities to be Registered	Amount to be Registered ⁽¹⁾	Proposed Maximum Aggregate Offering Price Per Unit ⁽¹⁾	Proposed Maximum Offering Price ⁽¹⁾	Amount of Registration Fee ⁽¹⁾
Debt securities				

(1) An indeterminate amount of securities to be offered at indeterminate prices is being registered pursuant to this registration statement. The registrant is deferring payment of the registration fee pursuant to Rule 456(b) and is omitting this information in reliance on Rule 456(b) and Rule 457(f).



**KLA-Tencor Corporation
Debt Securities**

We may offer from time to time debt securities. Specific terms of these debt securities will be provided in supplements to this prospectus. You should read this prospectus and any prospectus supplement carefully before you invest.

Investing in these securities involves certain risks. Investors should review the risks contained or described in the documents incorporated by reference in this prospectus or any accompanying prospectus supplement before investing in the securities offered hereby.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities, or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus is February 1, 2018.

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We have not authorized anyone to provide any information other than that contained or incorporated by reference in this prospectus or in any free writing prospectus prepared by or on behalf of us or to which we have referred you. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. We are not making an offer of these securities in any state where the offer is not permitted. You should not assume that the information contained in or incorporated by reference in this prospectus or any prospectus supplement or in any such free writing prospectus is accurate as of any date other than their respective dates. Our business, financial condition, results of operations and prospects may have changed since those dates.

Unless otherwise specified, references in this prospectus to “KLA-Tencor,” “we,” “us” or “our” refer to KLA-Tencor Corporation and its direct and indirect subsidiaries.

KLA-TENCOR CORPORATION

We are a leading supplier of process control and yield management solutions for the semiconductor and related nanoelectronics industries. Our products are also used in a number of other high technology industries, including the advanced packaging, light emitting diode, or LED, power devices, compound semiconductor, and data storage industries, as well as general materials research.

Within our primary area of focus, our comprehensive portfolio of inspection and metrology products, and related service, software and other offerings, helps integrated circuit, or IC or chip, manufacturers manage yield throughout the entire semiconductor fabrication process—from research and development, or R&D, to final volume production. These products and offerings are designed to provide comprehensive solutions to help our customers to accelerate their development and production ramp cycles, to achieve higher and more stable semiconductor die yields, and to improve their overall profitability.

Our products and services are used by the vast majority of bare wafer, IC, lithography reticle (reticle or mask) and disk manufacturers around the world. These customers turn to us for inline wafer and IC defect monitoring, review and classification; reticle defect inspection and metrology; packaging and interconnect inspection; critical dimension, or CD, metrology; pattern overlay metrology; film thickness, surface topography and composition measurements; measurement of in-chamber process conditions, wafer shape and stress metrology; computational lithography tools; and overall yield and fab-wide data management and analysis systems. Our advanced products, coupled with our unique yield management services, allow us to deliver the solutions our customers need to accelerate their yield learning rates and significantly reduce their risks and costs.

Company Information

We were formed in April 1997 through the merger of KLA Instruments Corporation and Tencor Instruments, two long-time leaders in the semiconductor equipment industry that originally began operations in 1975 and 1976, respectively. Our common stock is listed and traded on the NASDAQ Global Select Market under the symbol “KLAC.” Our principal executive offices are located at One Technology Drive, Milpitas, California 95035 and our telephone number is (408) 875-3000. Our website is located at <http://www.kla-tencor.com>. The information on, or accessible through, our website is not part of this prospectus.

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or SEC, utilizing a “shelf” registration process. Under this shelf process, we may sell the securities described in this prospectus in one or more offerings. This prospectus provides you with a general description of the securities we may offer. The form of the indenture and other documents establishing the terms of the offered securities are or may be filed as exhibits to the registration statement. Each time we sell securities, we will provide a prospectus supplement that will contain specific information about the terms of that offering. The prospectus supplement may also add, update or change information contained in this prospectus. You should read both this prospectus and any prospectus supplement together with additional information described under the heading “Where You Can Find More Information.”

RISK FACTORS

Investing in the debt securities involves risk. Please see the risk factors described in our most recent Annual Report on Form 10-K and our most recent Quarterly Report on Form 10-Q and any amendments thereto, which are incorporated by reference in this prospectus. Before making an investment decision, you should carefully consider these risks as well as other information contained or incorporated by reference in this prospectus and any accompanying prospectus supplement. The risks and uncertainties described are those presently known to us. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial may also materially adversely affect our business, financial condition, results of operations and cash flows.

WHERE YOU CAN FIND MORE INFORMATION

We are subject to the informational requirements of the Securities Exchange Act of 1934, as amended, or the Exchange Act, and in accordance therewith file annual, quarterly and other reports and information with the SEC. For further information regarding us, you may desire to review reports and other information filed under the Exchange Act, including the reports and other information incorporated by reference into this prospectus. Such reports and other information may be read and copied at the public reference room maintained by the SEC at 100 F Street, N.E., Washington, D.C. 20549. Copies can be obtained by mail at prescribed rates by writing to the public reference room mentioned above. You may obtain information on the operation of the public reference room by calling the SEC at 1-800-SEC-0330. You can also find our filings at the SEC's website at <http://www.sec.gov> and on our website at <http://www.kla-tencor.com>. Our website and the information contained on, or accessible through, our website are not part of this prospectus.

INCORPORATION BY REFERENCE

The SEC allows us to "incorporate by reference" the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be part of this prospectus, and information that we file later with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings we make with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Exchange Act (except the information contained in such documents to the extent "furnished" and not "filed"):

- (1) Annual Report on Form 10-K for the fiscal year ended June 30, 2017, as filed with the SEC on August 4, 2017;
- (2) Information specifically incorporated by reference into our Annual Report on Form 10-K for the fiscal year ended June 30, 2017 from our Definitive Proxy Statement on Schedule 14A filed on September 21, 2017.
- (3) Quarterly Reports on Form 10-Q for the quarters ended September 30, 2017 and December 31, 2017, as filed with the SEC on October 27, 2017 and January 25, 2018, respectively; and
- (4) Current Reports on Form 8-K filed with the SEC on August 3, 2017, August 15, 2017, November 3, 2017, November 30, 2017 and February 1, 2018.

You may request a copy of these filings at no cost by contacting KLA-Tencor's Investor Relations department by calling (408) 875-3000 or by writing to Investor Relations, KLA-Tencor Corporation, One Technology Drive, Milpitas, California 95035.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus and documents that are incorporated by reference into this prospectus contain certain forward-looking statements within the meaning of Section 21 of the Securities Exchange Act of 1934, as amended, and the Private Securities Litigation Reform Act of 1995. All statements other than statements of historical fact may be forward-looking statements. You can identify these and other forward-looking statements by the use of words such as "may," "will," "could," "would," "should," "expects," "plans," "anticipates," "relies," "believes," "estimates," "predicts," "intends," "potential," "continue," "thinks," "seeks" or the negative of such terms, or other comparable terminology. Forward-looking statements also include the assumptions underlying or relating to any of the foregoing statements. These forward-looking statements are based on current information and expectations, and involve a number of risks and uncertainties. We claim the protection of the safe harbor for forward-looking statements contained in the Private Securities Litigation Reform Act of 1995 for all forward-looking statements.

Actual results may differ materially from those projected in such statements due to various factors, including but not limited to: the demand for semiconductors; the financial condition of the global capital markets and the general macroeconomic environment; new and enhanced product and technology offerings by competitors; cancellation of orders by customers; the ability of our research and development teams to successfully innovate and develop technologies and products that are responsive to customer demands; our ability to successfully manage our costs; market acceptance of our existing and newly issued products; and changing customer demands. We also refer you to those factors discussed in “Risk Factors” included in documents that we file from time to time with the SEC, including KLA-Tencor’s Annual Report on Form 10-K for the fiscal year ended June 30, 2017 and Quarterly Report on Form 10-Q for the quarter ended December 31, 2017, which are incorporated by reference herein.

We have no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or risks, except to the extent required by applicable securities laws. If we do update one or more forward-looking statements, no inference should be drawn that we will make additional updates with respect to those or other forward-looking statements. New information, future events or risks could cause the forward-looking events we discuss in this prospectus not to occur. You should not place undue reliance on these forward-looking statements, which reflect our expectations only as of the date of this prospectus or as of the date of the documents incorporated by reference herein, as applicable.

USE OF PROCEEDS

Unless otherwise indicated in a prospectus supplement, the net proceeds from the sale of the securities will be used for general corporate purposes, including working capital, acquisitions, retirement of debt and other business opportunities.

RATIO OF EARNINGS TO FIXED CHARGES

Our ratio of earnings to fixed charges was as follows for the respective periods indicated.

Six Months Ended December 31,		Fiscal Year Ended June 30,				
2017	2016	2017	2016	2015	2014	2013
12.5	9.4	10.3	7.8	4.8	13.9	13.1

For purposes of calculating the ratio of earnings to fixed charges, earnings refers to the amount resulting from adding earnings before income taxes, plus fixed charges. Fixed charges for these purposes include interest expense, amortization of bond issuance costs, amortization of bond discount and one-third of rental expense, which KLA-Tencor considers to be a reasonable approximation of the interest factor included in rental expense.

DESCRIPTION OF DEBT SECURITIES

The debt securities will constitute the senior debt of KLA-Tencor. The debt securities will be issued under an indenture between KLA-Tencor and Wells Fargo Bank, National Association, as trustee. We will include in a prospectus supplement the specific terms of each series of debt securities being offered. In addition, the material terms of any indenture, which will govern the rights of the holders of our debt securities, will be set forth in the applicable prospectus supplement.

PLAN OF DISTRIBUTION

We will set forth in the applicable prospectus supplement a description of the plan of distribution of the securities that may be offered pursuant to this prospectus.

VALIDITY OF SECURITIES

The validity of the securities in respect of which this prospectus is being delivered will be passed on for us by Wilson Sonsini Goodrich & Rosati, Professional Corporation, Palo Alto, California.

EXPERTS

The financial statements and management's assessment of the effectiveness of internal control over financial reporting (which is included in Management's Report on Internal Control over Financial Reporting) incorporated into this Prospectus by reference to the Annual Report on Form 10-K for the fiscal year ended June 30, 2017 have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The following table sets forth the costs and expenses payable by KLA-Tencor Corporation (the "Registrant") in connection with the sale of the securities being registered.

	Amount to be Paid
SEC registration fee	†
Printing and engraving expenses	*
Legal fees and expenses	*
Accounting fees and expenses	*
Trustee fees	*
Miscellaneous fees and expenses	*
Total	*

† Omitted because the registration fee is being deferred pursuant to Rule 456(b).

* Estimated expenses are not presently known.

Item 15. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation Law provides that a corporation may indemnify its directors and officers as well as other employees and individuals against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with any threatened, pending or completed actions, suits or proceedings in which such person is made a party by reason of such person being or having been a director, officer, employee or agent to the Registrant. The Delaware General Corporation Law provides that Section 145 is not exclusive of other rights to which those seeking indemnification may be entitled under any bylaw, agreement, vote of stockholders or disinterested directors or otherwise. Registrant's amended and restated certificate of incorporation, as amended, and Article VIII of the Registrant's amended and restated bylaws provide for indemnification by the Registrant of its directors, officers and employees to the fullest extent permitted by the Delaware General Corporation Law.

Section 102(b)(7) of the Delaware General Corporation Law permits a corporation to provide in its certificate of incorporation that a director of the corporation shall not be personally liable to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except for liability (i) for any breach of the director's duty of loyalty to the corporation or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) for unlawful payments of dividends or unlawful stock repurchases, redemptions or other distributions, or (iv) for any transaction from which the director derived an improper personal benefit. The Registrant's amended and restated certificate of incorporation, as amended, provides for such limitation of liability.

The Registrant maintains standard policies of insurance under which coverage is provided (a) to its directors and officers against loss rising from claims made by reason of breach of duty or other wrongful act, and (b) to the Registrant with respect to payments which may be made by the Registrant to such officers and directors pursuant to the above indemnification provision or otherwise as a matter of law.

Item 16. Exhibits.

- 1.1† Form of Underwriting Agreement
- 4.1# [Indenture dated November 6, 2014 by and between KLA-Tencor Corporation and Wells Fargo Bank, National Association, as Trustee](#)
- 5.1* [Opinion of Wilson Sonsini Goodrich & Rosati, Professional Corporation](#)
- 12.1* [Computation of Ratio of Earnings to Fixed Charges](#)
- 23.1* [Consent of PricewaterhouseCoopers LLP, independent registered public accounting firm](#)
- 23.2* [Consent of Wilson Sonsini Goodrich & Rosati, Professional Corporation \(included in Exhibit 5.1\)](#)
- 24.1* Power of Attorney (reference is made to the signature page hereto)
- 25.1* [Form T-1 Statement of Eligibility under the Trust Indenture Act of 1939, as amended, of Wells Fargo Bank, N.A., as Trustee under the Indenture for the Notes](#)

† To be filed, if necessary, as an exhibit to a Current Report on Form 8-K and incorporated by reference herein.

* Filed herewith.

Incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K filed by the Registrant with the SEC on November 7, 2014.

Item 17. Undertakings.

(a) The undersigned Registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made of securities registered hereby, a post-effective amendment to this registration statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933, as amended (the "Securities Act of 1933");

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Securities and Exchange Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement; and

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

provided, however, that paragraphs (i), (ii) and (iii) above do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Securities and Exchange Commission by the registrant pursuant to Section 13 or Section 15(d) of the Securities Exchange Act of 1934 as amended (the "Securities Exchange Act of 1934"), that are incorporated by reference in this registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered herein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(A) Each prospectus filed by the Registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(B) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by Section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof. *Provided, however,* that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

(5) That, for the purpose of determining liability of the Registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities:

The undersigned Registrant undertakes that in a primary offering of securities of the undersigned Registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned Registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) Any preliminary prospectus or prospectus of the undersigned Registrant relating to the offering required to be filed pursuant to Rule 424;

(ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned Registrant or used or referred to by the undersigned Registrant;

(iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned Registrant or its securities provided by or on behalf of the undersigned Registrant; and

(iv) Any other communication that is an offer in the offering made by the undersigned Registrant to the purchaser.

(b) The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the Registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Securities Act of 1933 and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933 and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Milpitas, State of California, on this 1st day of February, 2018.

KLA-TENCOR CORPORATION

By: /s/ Richard P. Wallace
Richard P. Wallace
President and Chief Executive Officer

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Richard P. Wallace and Bren D. Higgins, and each of them, his or her true and lawful attorneys-in-fact and agents, with full power of substitution and resubstitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in connection therewith, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents, or any of them, or their or his or her substitutes or substitute, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Richard P. Wallace Richard P. Wallace	President, Chief Executive Officer and Director (<i>Principal Executive Officer</i>)	February 1, 2018
/s/ Bren D. Higgins Bren D. Higgins	Executive Vice President and Chief Financial Officer (<i>Principal Financial Officer</i>)	February 1, 2018
/s/ Virendra A. Kirloskar Virendra A. Kirloskar	Senior Vice President and Chief Accounting Officer (<i>Principal Accounting Officer</i>)	February 1, 2018
/s/ Edward W. Barnholt Edward W. Barnholt	Chairman of the Board	February 1, 2018
/s/ Robert M. Calderoni Robert M. Calderoni	Director	February 1, 2018
/s/ John T. Dickson John T. Dickson	Director	February 1, 2018
/s/ Emiko Higashi Emiko Higashi	Director	February 1, 2018
/s/ Kevin J. Kennedy Kevin J. Kennedy	Director	February 1, 2018
/s/ Gary B. Moore Gary B. Moore	Director	February 1, 2018
/s/ Kiran M. Patel Kiran M. Patel	Director	February 1, 2018
/s/ Robert A. Rango Robert A. Rango	Director	February 1, 2018
/s/ David C. Wang David C. Wang	Director	February 1, 2018

OPINION OF WILSON SONSINI GOODRICH & ROSATI, PROFESSIONAL CORPORATION

February 1, 2018

KLA-Tencor Corporation
One Technology Drive
Milpitas, California 95035

Ladies and Gentlemen:

KLA-Tencor Corporation, a Delaware corporation (the “**Company**”) is filing with the Securities and Exchange Commission a Registration Statement on Form S-3 (the “**Registration Statement**”) for the purpose of registering under the Securities Act of 1933, as amended (the “**Securities Act**”), the Company’s debt securities (the “**Debt Securities**”), which may be issued pursuant to an indenture (the “**Indenture**”) between the Company and Wells Fargo Bank, National Association, as trustee (the “**Trustee**”).

We, as your counsel, have examined originals or copies of such documents, corporate records, certificates of public officials and other instruments as we have deemed necessary or advisable for the purpose of rendering this opinion.

In rendering the opinions expressed herein, we have, without independent inquiry or investigation, assumed that (i) all documents submitted to us as originals are authentic and complete, (ii) all documents submitted to us as copies conform to authentic, complete originals, (iii) all documents filed as exhibits to the Registration Statement that have not been executed will conform to the forms thereof, (iv) all signatures on all documents that we reviewed are genuine, (v) all natural persons executing documents had and have the legal capacity to do so, (vi) all statements in certificates of public officials and officers of the Company that we reviewed were and are accurate and (vii) all representations made by the Company as to matters of fact in the documents that we reviewed were and are accurate.

Based upon the foregoing, and subject to the additional assumptions and qualifications set forth below, we advise you that, in our opinion, when the Indenture and any supplemental indenture to be entered into in connection with the issuance of any Debt Securities have been duly authorized, executed and delivered by the Trustee and the Company; the specific terms of a particular series of Debt Securities have been duly authorized and established in accordance with the Indenture; and such Debt Securities have been duly authorized, executed, authenticated, issued and delivered in accordance with the Indenture and the applicable underwriting or other agreement against payment therefor, such Debt Securities will constitute valid and binding obligations of the Company, enforceable in accordance with their terms, subject to applicable bankruptcy, insolvency and similar laws affecting creditors’ rights generally, concepts of reasonableness and equitable principles of general applicability, provided that we express no opinion as to (x) the enforceability of any waiver of rights under any usury or stay law or (y) the effect of fraudulent conveyance, fraudulent transfer or similar provision of applicable law on the conclusions expressed above.

In connection with the opinions expressed above, we have assumed that, at or prior to the time of the delivery of any such Debt Securities, (i) the Board of Directors of the Company shall have duly established the terms of such Debt Securities and duly authorized the issuance and sale of such Debt Securities and such authorization shall not have been modified or rescinded; (ii) the Company shall remain validly existing as a corporation in good standing under the laws of the State of Delaware; (iii) the Registration Statement shall have become effective and such effectiveness shall not have been terminated or rescinded; (iv) the Indenture and the Debt Securities are each valid, binding and enforceable agreements of each party thereto (other than as expressly covered above in respect of the Company); and (v) there shall not have occurred any change in law affecting the validity or enforceability of such Debt Securities. We have also assumed that the execution, delivery and performance by the Company of any Debt Securities whose terms are established subsequent to the date hereof (a) require no action by or in respect of, or filing with, any governmental body, agency or official and (b) do not contravene, or constitute a default under, any provision of applicable law or regulation or any judgment, injunction, order or decree or any agreement or other instrument binding upon the Company.

We are members of the Bar of the States of New York and California and the foregoing opinion is limited to the laws of the State of New York and the General Corporation Law of the State of Delaware.

We hereby consent to the filing of this opinion as an exhibit to the Registration Statement referred to above and further consent to the reference to our name under the caption "Legal Matters" in the prospectus, which is a part of the Registration Statement. In giving this consent, we do not admit that we are in the category of persons whose consent is required under Section 7 of the Securities Act.

Very truly yours,

/s/ WILSON SONSINI GOODRICH & ROSATI,
PROFESSIONAL CORPORATION

KLA-Tencor Corporation
Computation of Ratio of Earnings to Fixed Charges

(In thousands, except ratios)	Six months ended December		Fiscal year ended June 30,				
	2017	2016	2017	2016	2015	2014	2013
Earnings:							
Income before income taxes	\$ 683,459	\$ 529,065	\$ 1,173,246	\$ 858,192	\$ 434,131	\$ 734,461	\$ 690,621
Add back fixed charges:							
Interest expense ⁽¹⁾	57,948	61,356	122,476	122,887	110,311	53,812	54,176
Interest portion of rental expense	1,668	1,605	3,203	2,912	3,023	2,915	3,081
Total adjusted earnings	\$ 743,075	\$ 592,026	\$ 1,298,925	\$ 983,991	\$ 547,465	\$ 791,188	\$ 747,878
Fixed charges:							
Interest expense ⁽¹⁾	\$ 57,948	\$ 61,356	\$ 122,476	\$ 122,887	\$ 110,311	\$ 53,812	\$ 54,176
Interest portion of rental expense	1,668	1,605	3,203	2,912	3,023	2,915	3,081
Total fixed charges	\$ 59,616	\$ 62,961	\$ 125,679	\$ 125,799	\$ 113,334	\$ 56,727	\$ 57,257
Ratio of earnings to fixed charges	12.5	9.4	10.3	7.8	4.8	13.9	13.1

(1) Interest expense for the fiscal year ended June 30, 2015 includes interest expense, amortization of bond issuance costs, amortization of bond discount and portion of the bond issuance costs and bond discount that were expensed as part of our redemption of the 2018 Senior Notes during the three months ended December 31, 2014.

For purposes of calculating the ratio of earnings to fixed charges, earnings refer to the amount resulting from adding earnings before income taxes, plus fixed charges. Fixed charges for these purposes include interest expense, amortization of bond issuance costs, amortization of bond discount and one-third of rental expense, which KLA-Tencor considers to be a reasonable approximation of the interest factor included in rental expense.

The decline in the ratio of earnings to fixed charges for the fiscal year ended June 30, 2015 compared to the fiscal years presented is attributable to the decline in earnings, primarily as a result of the impact of the pre-tax net loss of \$131.7 million for the loss on extinguishment of debt and certain one-time expenses of \$2.5 million associated with the leveraged recapitalization that was completed during the three months ended December 31, 2014.

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in this Registration Statement on Form S-3 of our report dated August 4, 2017 relating to the financial statements, financial statement schedule and the effectiveness of internal control over financial reporting, which appears in KLA-Tencor Corporation's Annual Report on Form 10-K for the year ended June 30, 2017. We also consent to the reference to us under the heading "Experts" in such Registration Statement.

/s/ PricewaterhouseCoopers LLP

San Jose, California
February 1, 2018

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM T-1

STATEMENT OF ELIGIBILITY
UNDER THE TRUST INDENTURE ACT OF 1939 OF A
CORPORATION DESIGNATED TO ACT AS TRUSTEE

CHECK IF AN APPLICATION TO DETERMINE ELIGIBILITY OF A TRUSTEE PURSUANT TO SECTION 305(b)(2)

WELLS FARGO BANK, NATIONAL ASSOCIATION

(Exact name of trustee as specified in its charter)

A National Banking Association

(Jurisdiction of incorporation of organization if not a U.S.
national bank)

94-1347393

(I.R.S. Employer Identification No.)

101 North Phillips Avenue

Sioux Falls, South Dakota

(Address of principal executive offices)

57104

(Zip code)

**Wells Fargo & Company
Law Department, Trust Section
MAC N9305-175**

**Sixth Street and Marquette Avenue, 17th Floor
Minneapolis, Minnesota 55479
(612) 667-4608**

(Name, address and telephone number of agent for service)

KLA-TENCOR CORPORATION

(Exact name of obligor as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

04-2564110

(I.R.S. Employer Identification No.)

One Technology Drive

Milpitas, California

(Address of principal executive offices)

95035

(Zip code)

Debt Securities

(Title of the indenture securities)

Item 1. General Information. Furnish the following information as to the trustee:

- (a) Name and address of each examining or supervising authority to which it is subject.

Comptroller of the Currency
Treasury Department
Washington, D.C.

Federal Deposit Insurance Corporation
Washington, D.C.

Federal Reserve Bank of San Francisco
San Francisco, California 94120

- (b) Whether it is authorized to exercise corporate trust powers.

The trustee is authorized to exercise corporate trust powers.

Item 2. Affiliations with Obligor. If the obligor is an affiliate of the trustee, describe each such affiliation.

None with respect to the trustee.

No responses are included for Items 3-14 of this Form T-1 because the obligor is not in default as provided under Item 13.

Item 15. Foreign Trustee. Not applicable.

Item 16. List below all exhibits filed as a part of this Statement of Eligibility.

List of Exhibits.

Exhibit A copy of the Articles of Association of the trustee as now in effect.*

1.

Exhibit 2. A copy of the Comptroller of the Currency Certificate of Corporate Existence for Wells Fargo Bank, National Association, dated January 14, 2015.*

Exhibit 3. A copy of the Comptroller of the Currency Certification of Fiduciary Powers for Wells Fargo Bank, National Association, dated January 6, 2014.*

Exhibit Copy of By-laws of the trustee as now in effect.*

4.

Exhibit Not applicable.

5.

Exhibit The consent of the trustee required by Section 321(b) of the Act.

6.

Exhibit 7. A copy of the latest report of condition of the trustee published pursuant to law or the requirements of its supervising or examining authority.

Exhibit Not applicable.

8.

Exhibit Not applicable.

9.

* Incorporated by reference to the exhibit of the same number to the trustee's Form T-1 filed as exhibit to the Filing 305B2 dated March 13, 2015 of Navient Funding, LLC and Navient Credit Funding, LLC, file number 333-190926.

SIGNATURE

Pursuant to the requirements of the Trust Indenture Act of 1939, as amended, the trustee, Wells Fargo Bank, National Association, a national banking association organized and existing under the laws of the United States of America, has duly caused this statement of eligibility to be signed on its behalf by the undersigned, thereunto duly authorized, all in the City of Los Angeles and State of California on the 1st day of February, 2018.

WELLS FARGO BANK, NATIONAL ASSOCIATION

/s/ Michael Q. Tu
Michael Q. Tu
Vice President

EXHIBIT 6

February 1, 2018

Securities and Exchange Commission
Washington, D.C. 20549

Gentlemen:

In accordance with Section 321(b) of the Trust Indenture Act of 1939, as amended, the undersigned hereby consents that reports of examination of the undersigned made by Federal, State, Territorial, or District authorities authorized to make such examination may be furnished by such authorities to the Securities and Exchange Commission upon its request therefor.

Very truly yours,

WELLS FARGO BANK, NATIONAL ASSOCIATION

/s/ Michael Q. Tu

Michael Q. Tu
Vice President

Exhibit 7
Consolidated Report of Condition of

Wells Fargo Bank National Association
of 101 North Phillips Avenue, Sioux Falls, SD 57104
And Foreign and Domestic Subsidiaries,

at the close of business September 30, 2017, filed in accordance with 12 U.S.C. §161 for National Banks.

	Dollar Amounts In Millions	
ASSETS		
Cash and balances due from depository institutions:		
Noninterest-bearing balances and currency and coin	\$	18,593
Interest-bearing balances		205,447
Securities:		
Held-to-maturity securities		142,316
Available-for-sale securities		254,889
Federal funds sold and securities purchased under agreements to resell:		
Federal funds sold in domestic offices		118
Securities purchased under agreements to resell		30,628
Loans and lease financing receivables:		
Loans and leases held for sale		7,834
Loans and leases, net of unearned income	924,987	
LESS: Allowance for loan and lease losses	10,292	
Loans and leases, net of unearned income and allowance		914,695
Trading Assets		45,303
Premises and fixed assets (including capitalized leases)		7,810
Other real estate owned		691
Investments in unconsolidated subsidiaries and associated companies		11,686
Direct and indirect investments in real estate ventures		339
Intangible assets		
Goodwill		22,481
Other intangible assets		16,825
Other assets		58,325
Total assets	\$	1,737,980
LIABILITIES		
Deposits:		
In domestic offices		1,242,149
Noninterest-bearing	425,384	
Interest-bearing	816,765	
In foreign offices, Edge and Agreement subsidiaries, and IBFs		118,326
Noninterest-bearing	929	
Interest-bearing	117,397	
Federal funds purchased and securities sold under agreements to repurchase:		
Federal funds purchased in domestic offices		12,165
Securities sold under agreements to repurchase		6,652
Trading liabilities		10,606

	<u>Dollar Amounts In Millions</u>
Other borrowed money	
(includes mortgage indebtedness and obligations under capitalized leases)	131,262
Subordinated notes and debentures	12,971
Other liabilities	<u>40,287</u>
Total liabilities	\$ 1,574,418
EQUITY CAPITAL	
Perpetual preferred stock and related surplus	—
Common stock	519
Surplus (exclude all surplus related to preferred stock)	111,189
Retained earnings	51,446
Accumulated other comprehensive income	20
Other equity capital components	—
Total bank equity capital	<u>163,174</u>
Noncontrolling (minority) interests in consolidated subsidiaries	<u>388</u>
Total equity capital	<u>163,562</u>
Total liabilities, and equity capital	<u>\$ 1,737,980</u>

I, John R. Shrewsberry, Sr. EVP & CFO of the above-named bank do hereby declare that this Report of Condition has been prepared in conformance with the instructions issued by the appropriate Federal regulatory authority and is true to the best of my knowledge and belief.

John R. Shrewsberry
Sr. EVP & CFO

We, the undersigned directors, attest to the correctness of this Report of Condition and declare that it has been examined by us and to the best of our knowledge and belief has been prepared in conformance with the instructions issued by the appropriate Federal regulatory authority and is true and correct.

Directors

Enrique Hernandez, Jr.
Federico F. Pena
James Quigley