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

FORM 10-Q

☒ ***QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15 (d) OF THE SECURITIES EXCHANGE ACT OF 1934***
For the quarterly period ended April 28, 2019
OR
☐ ***TRANSITION REPORT PURSUANT TO SECTION 13 OR 15 (d) OF THE SECURITIES EXCHANGE ACT OF 1934***

For the transition period from ___ to ___

Commission file number 0-15451

PHOTRONICS, INC.
(Exact name of registrant as specified in its charter)

Connecticut	**06-0854886**
(State or other jurisdiction of incorporation or organization)	*(IRS Employer Identification No.)*
15 Secor Road, Brookfield, Connecticut	**06804**
(Address of principal executive offices)	*(Zip Code)*
Registrant’s telephone number, including area code	**(203) 775-9000**

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter periods that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files).

Yes ☒ No ☐

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. (Check one):

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 complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).
Yes ☐ No ☒

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
COMMON	PLAB	NASDAQ Global Select Market

The registrant had 67,065,655 shares of common stock outstanding as of June 3, 2019.

Forward-Looking Statements

The Private Securities Litigation Reform Act of 1995 provides a "safe harbor" for forward-looking statements made by or on behalf of Photronics, Inc. ("Photronics", the "Company", "we", "our", or "us"). These statements are based on management's beliefs, as well as assumptions made by, and information currently available to, management. Forward-looking statements may be identified by words like "expect," "anticipate," "believe," "plan," "project," "could," "estimate," "intend," "may," "will" and similar expressions, or the negative of such terms, or other comparable terminology. All forward-looking statements involve risks and uncertainties that are difficult to predict. In particular, any statement contained in this quarterly report on Form 10-Q or in other documents filed with the Securities and Exchange Commission in press releases or in the Company's communications and discussions with investors and analysts in the normal course of business through meetings, phone calls, or conference calls regarding, among other things, the consummation and benefits of transactions, joint ventures, business combinations, divestitures and acquisitions, expectations with respect to future sales, financial performance, operating efficiencies, or product expansion, are subject to known and unknown risks, uncertainties, and contingencies, many of which are beyond the control of the Company. Various factors may cause actual results, performance, or achievements to differ materially from anticipated results, performance, or achievements expressed or implied by forward-looking statements. Factors that might affect forward-looking statements include, but are not limited to, overall economic and business conditions; economic and political conditions in international markets; the demand for the Company's products; competitive factors in the industries and geographic markets in which the Company competes; the timing of orders received from customers; the gain or loss of significant customers; competition from other manufacturers; changes in accounting standards; federal, state and international tax requirements (including tax rate changes, new tax laws and revised tax law interpretations); changes in the jurisdictional mix of our earnings and changes in tax laws and rates; interest rate and other capital market conditions, including changes in the market price of the Company's securities; foreign currency exchange rate fluctuations; changes in technology; technology or intellectual property infringement, including cybersecurity breaches, and other innovation risks; unsuccessful or unproductive research and development or capital expenditures; the timing, impact, and other uncertainties related to transactions and acquisitions, divestitures, business combinations, and joint ventures as well as decisions the Company may make in the future regarding the Company's business, capital and organizational structures and other matters; the seasonal and cyclical nature of the semiconductor and flat panel display industries; management changes; changes in laws and government regulation impacting our operations or our products, including laws relating to export controls and import laws, rules and tariffs; the occurrence of regulatory proceedings, claims or litigation; damage or destruction to the Company's facilities, or the facilities of its customers or suppliers, by natural disasters, labor strikes, political unrest, or terrorist activity; construction of new facilities and assembly of new equipment; dilutive issuances of the Company's stock; the ability of the Company to (i) place new equipment in service on a timely basis; (ii) obtain additional financing; (iii) achieve anticipated synergies and cost savings; (iv) fully utilize its tools; (v) achieve desired yields, pricing, product mix, and market acceptance of its products and (vi) obtain necessary export licenses. Any forward-looking statements should be considered in light of these factors. Accordingly, there is no assurance that the Company's expectations will be realized. The Company does not assume responsibility for the accuracy and completeness of the forward-looking statements and does not assume an obligation to provide revisions to any forward-looking statements, except as otherwise required by securities and other applicable laws.

PHOTRONICS, INC.

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PART I. FINANCIAL INFORMATION

Item 1. CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

PHOTRONICS, INC.
Condensed Consolidated Balance Sheets
(in thousands, except per share amounts)
(unaudited)

	April 28, 2019	October 31, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	$ 167,066	$ 329,277
Accounts receivable, net of allowance of $1,360 in 2019 and $1,526 in 2018	123,371	120,515
Inventories	34,696	29,180
Prepaid expenses	8,531	6,901
Other current assets	38,304	16,858
Total current assets	371,968	502,731
Property, plant and equipment, net	654,357	571,781
Intangible assets, net	10,182	12,368
Deferred income taxes	15,121	18,109
Other assets	33,610	5,020
Total assets	$ 1,085,238	$ 1,110,009
LIABILITIES AND EQUITY		
Current liabilities:		
Current portion of long-term debt	$ 505	$ 57,453
Accounts payable	80,120	89,149
Accrued liabilities	58,659	44,474
Total current liabilities	139,284	191,076
Long-term debt	35,921	-
Deferred income taxes	829	643
Other liabilities	10,876	13,721
Total liabilities	186,910	205,440
Commitments and contingencies		
Equity:		
Preferred stock, $0.01 par value, 2,000 shares authorized, none issued and outstanding	-	-
Common stock, $0.01 par value, 150,000 shares authorized, 69,984 shares issued and 66,289 outstanding at April 28, 2019 and 69,700 shares issued and 67,142 outstanding at October 31, 2018	700	697
Additional paid-in capital	558,359	555,606
Retained earnings	245,144	231,445
Treasury stock, 3,695 shares at April 28, 2019 and 2,558 shares at October 31, 2018	(33,807)	(23,111)
Accumulated other comprehensive loss	(6,828)	(4,966)
Total Photronics, Inc. shareholders' equity	763,568	759,671
Noncontrolling interests	134,760	144,898
Total equity	898,328	904,569
Total liabilities and equity	$ 1,085,238	$ 1,110,009

See accompanying notes to condensed consolidated financial statements.

PHOTRONICS, INC.
Condensed Consolidated Statements of Income
(in thousands, except per share amounts)
(unaudited)

	Three Months Ended		Six Months Ended	
	April 28, 2019	April 29, 2018	April 28, 2019	April 29, 2018
Revenue	$ 131,580	$ 130,779	$ 256,291	$ 254,225
Cost of goods sold	105,570	97,960	204,179	193,744
Gross profit	26,010	32,819	52,112	60,481
Operating expenses:				
Selling, general and administrative	13,269	13,637	27,061	25,387
Research and development	3,542	3,817	7,805	7,921
Total operating expenses	16,811	17,454	34,866	33,308
Operating income	9,199	15,365	17,246	27,173
Other income (expense):				
Interest income and other income (expense), net	4,286	3,883	5,925	351
Interest expense	355	551	886	1,125
Income before income taxes	13,130	18,697	22,285	26,399
Income tax provision	3,278	3,508	4,665	1,729
Net income	9,852	15,189	17,620	24,670
Net income attributable to noncontrolling interests	1,373	4,524	3,874	8,107
Net income attributable to Photronics, Inc. shareholders	$ 8,479	$ 10,665	$ 13,746	$ 16,563
Earnings per share:				
Basic	$ 0.13	$ 0.15	$ 0.21	$ 0.24
Diluted	$ 0.13	$ 0.15	$ 0.20	$ 0.23
Weighted-average number of common shares outstanding:				
Basic	66,261	69,293	66,422	69,024
Diluted	70,597	75,190	71,593	75,052

See accompanying notes to condensed consolidated financial statements.

PHOTRONICS, INC.
Condensed Consolidated Statements of Comprehensive Income
(in thousands)
(unaudited)

	Three Months Ended		Six Months Ended	
	April 28, 2019	**April 29, 2018**	**April 28, 2019**	**April 29, 2018**
Net income	$ 9,852	$ 15,189	$ 17,620	$ 24,670
Other comprehensive income (loss), net of tax of $0:				
Foreign currency translation adjustments	(7,054)	(11,098)	(482)	18,989
Amortization of cash flow hedge	-	16	-	48
Other	25	54	44	22
Net other comprehensive (loss) income	(7,029)	(11,028)	(438)	19,059
Comprehensive income	2,823	4,161	17,182	43,729
Less: comprehensive income attributable to noncontrolling interests	1,515	1,841	5,298	10,301
Comprehensive income attributable to Photronics, Inc. shareholders	$ 1,308	$ 2,320	$ 11,884	$ 33,428

See accompanying notes to condensed consolidated financial statements.

PHOTRONICS, INC.
Condensed Consolidated Statements of Equity
(in thousands)
(unaudited)

	Three Months Ended April 28, 2019							
	Photronics, Inc. Shareholders							
	Common Stock							
	Shares	Amount	Additional Paid-in Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Income (Loss)	Non-controlling Interests	Total Equity
Balance at January 28, 2019	69,917	$ 699	$ 557,188	$ 236,665	$ (33,807)	$ 343	$ 152,082	$ 913,170
Net income	-	-	-	8,479	-	-	1,373	9,852
Other comprehensive (loss) income	-	-	-	-	-	(7,171)	142	(7,029)
Sale of common stock through employee stock option and purchase plans	41	1	271	-	-	-	-	272
Restricted stock awards vesting and expense	26	-	650	-	-	-	-	650
Share-based compensation expense	-	-	250	-	-	-	-	250
Subsidiary dividend payable	-	-	-	-	-	-	(18,837)	(18,837)
Balance at April 28, 2019	69,984	$ 700	$ 558,359	$ 245,144	$ (33,807)	$ (6,828)	$ 134,760	$ 898,328

	Three Months Ended April 29, 2018						
	Photronics, Inc. Shareholders						
	Common Stock						
	Shares	Amount	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income	Non-controlling Interests	Total Equity
Balance at January 29, 2018	68,869	$ 689	$ 549,328	$ 195,288	$ 32,128	$ 141,014	$ 918,447
Net income	-	-	-	10,665	-	4,524	15,189
Other comprehensive loss	-	-	-	-	(8,372)	(2,656)	(11,028)
Sale of common stock through employee stock option and purchase plans	548	5	2,892	-	-	-	2,897
Restricted stock awards vesting and expense	26	-	457	-	-	-	457
Share-based compensation expense	-	-	300	-	-	-	300
Subsidiary dividend payable	-	-	-	-	-	(8,196)	(8,196)
Balance at April 29, 2018	69,443	$ 694	$ 552,977	$ 205,953	$ 23,756	$ 134,686	$ 918,066

See accompanying notes to condensed consolidated financial statements.

PHOTRONICS, INC.
Condensed Consolidated Statements of Equity (continued)
(in thousands)
(unaudited)

	Six Months Ended April 28, 2019							
	Photronics, Inc. Shareholders							
	Common Stock							
	Shares	Amount	Additional Paid-in Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Loss	Non-controlling Interests	Total Equity
Balance at November 1, 2018	69,700	$ 697	$ 555,606	$ 231,445	$ (23,111)	$ (4,966)	$ 144,898	$ 904,569
Adoption of ASU 2014-09	-	-	-	1,083	-	-	121	1,204
Adoption of ASU 2016-16	-	-	-	(1,130)	-	-	(3)	(1,133)
Net income	-	-	-	13,746	-	-	3,874	17,620
Other comprehensive (loss) income	-	-	-	-	-	(1,862)	1,424	(438)
Sale of common stock through employee stock option and purchase plans	136	1	792	-	-	-	-	793
Restricted stock awards vesting and expense	148	2	1,217	-	-	-	-	1,219
Share-based compensation expense	-	-	744	-	-	-	-	744
Contribution from noncontrolling interest	-	-	-	-	-	-	29,394	29,394
Dividends to noncontrolling interests	-	-	-	-	-	-	(26,102)	(26,102)
Subsidiary dividend payable	-	-	-	-	-	-	(18,837)	(18,837)
Repurchase of common stock of subsidiary	-	-	-	-	-	-	(9)	(9)
Purchase of treasury stock	-	-	-	-	(10,696)	-	-	(10,696)
Balance at April 28, 2019	69,984	$ 700	$ 558,359	$ 245,144	$ (33,807)	$ (6,828)	$ 134,760	$ 898,328

	Six Months Ended April 29, 2018						
	Photronics, Inc. Shareholders						
	Common Stock						
	Shares	Amount	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income	Non-controlling Interests	Total Equity
Balance at October 30, 2017	68,666	$ 687	$ 547,596	$ 189,390	$ 6,891	$ 120,731	$ 865,295
Net income	-	-	-	16,563	-	8,107	24,670
Other comprehensive income	-	-	-	-	16,865	2,194	19,059
Sale of common stock through employee stock option and purchase plans	664	7	3,592	-	-	-	3,599
Restricted stock awards vesting and expense	113	-	843	-	-	-	843
Share-based compensation expense	-	-	798	-	-	-	798
Contribution from noncontrolling interest	-	-	148	-	-	11,850	11,998
Subsidiary dividend payable	-	-	-	-	-	(8,196)	(8,196)
Balance at April 29, 2018	69,443	$ 694	$ 552,977	$ 205,953	$ 23,756	$ 134,686	$ 918,066

See accompanying notes to condensed consolidated financial statements.

PHOTRONICS, INC.
Condensed Consolidated Statements of Cash Flows
(in thousands)
(unaudited)

	Six Months Ended	
	April 28, 2019	April 29, 2018
Cash flows from operating activities:		
Net income	$ 17,620	$ 24,670
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	38,515	44,429
Changes in assets and liabilities:		
Accounts receivable	(2,295)	(16,976)
Inventories	(9,447)	(7,765)
Other current assets	(6,114)	(9,666)
Accounts payable, accrued liabilities, and other	(40,566)	3,216
Net cash (used in) provided by operating activities	(2,287)	37,908
Cash flows from investing activities:		
Purchases of property, plant and equipment	(140,436)	(44,129)
Government incentives	5,698	-
Other	(23)	296*
Net cash used in investing activities	(134,761)	(43,833)*
Cash flows from financing activities:		
Proceeds from debt	39,633	-
Contribution from noncontrolling interest	29,394	11,998
Repayments of long-term debt	(61,220)	(2,771)
Dividends paid to noncontrolling interests	(26,102)	-
Purchase of treasury stock	(10,696)	-
Proceeds from share-based arrangements	1,033	3,776
Other	(45)	(267)
Net cash (used in) provided by financing activities	(28,003)	12,736
Effect of exchange rate changes on cash, cash equivalents, and restricted cash	2,843	6,330*
Net (decrease) increase in cash, cash equivalents, and restricted cash	(162,208)	13,141*
Cash, cash equivalents, and restricted cash at beginning of period	331,989*	310,936*
Cash, cash equivalents, and restricted cash at end of period	$ 169,781	$ 324,077*
Supplemental disclosure information:		
Accrual for property, plant and equipment purchased during the period	$ 17,454	$ 10,317
Accrual for property, plant and equipment purchased with funds receivable from government incentives	$ 13,402	$ -
Subsidiary dividend payable	$ 18,837	$ 8,196

* Amount has been modified to reflect the adoption of ASU 2016-18 (see Note 14).

See accompanying notes to condensed consolidated financial statements.

PHOTRONICS, INC.
Notes to Condensed Consolidated Financial Statements
Three Months and Six Months Ended April 28, 2019 and April 29, 2018
(unaudited)
(in thousands, except share amounts and per share data)

NOTE 1 - BASIS OF FINANCIAL STATEMENT PRESENTATION

Photronics, Inc. (“Photronics”, “the Company”, “we”, “our”, or “us”) is one of the world’s leading manufacturers of photomasks, which are high precision photographic quartz or glass plates containing microscopic images of electronic circuits. Photomasks are a key element in the manufacture of semiconductors and flat panel displays (“FPDs”), and are used as masters to transfer circuit patterns onto semiconductor wafers and flat panel display substrates during the fabrication of integrated circuits (“ICs” or “semiconductors”) and a variety of FPDs and, to a lesser extent, other types of electrical and optical components. We currently have eleven manufacturing facilities, which are located in Taiwan (3), Korea, the United States (3), Europe (2), and two recently constructed facilities in China. Our FPD Facility in Hefei, China, commenced production in the second quarter of 2019; we anticipate our IC facility in Xiamen, China, to commence production later in 2019.

The accompanying unaudited condensed consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America for interim financial information, and with the instructions to Form 10-Q and Article 10 of Regulation S-X. Accordingly, they do not include all of the information and footnotes required by accounting principles generally accepted in the United States of America for annual financial statements. In the opinion of management, adjustments, all of which are of a normal recurring nature, considered necessary for a fair presentation have been included. Our business is typically impacted during the first, and sometimes the second, quarter of our fiscal year by the North American, European, and Asian holiday periods, as some customers reduce their development and buying activities during those periods. Operating results for the interim period are not necessarily indicative of the results that may be expected for the fiscal year ending October 31, 2019. For further information, refer to the consolidated financial statements and notes thereto included in our Annual Report on Form 10-K for the year ended October 31, 2018.

NOTE 2 - INVENTORIES

Inventories are stated at the lower of cost, determined under the first-in, first-out (“FIFO”) method, or net realizable value. Presented below are the components of inventory at the balance sheet dates:

	April 28, 2019	October 31, 2018
Raw materials	$ 34,276	$ 25,110
Work in process	416	3,402
Finished goods	4	668
	$ 34,696	$ 29,180

NOTE 3 - PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment consists of the following:

	April 28, 2019	October 31, 2018
Land	$ 11,164	$ 11,139
Buildings and improvements	124,374	124,771
Machinery and equipment	1,673,574	1,566,163
Leasehold improvements	19,598	19,577
Furniture, fixtures and office equipment	13,503	12,415
Construction in progress	132,394	128,649
	1,974,607	1,862,714
Accumulated depreciation and amortization	(1,320,250)	(1,290,933)
	$ 654,357	$ 571,781

Depreciation and amortization expense for property, plant and equipment was $18.6 million and $36.2 million in the three- and six-month periods ended April 28, 2019, respectively, and $20.8 million and $42.0 million in the three- and six-month periods ended April 29, 2018, respectively.

In January 2017, we entered into a noncash transaction with a customer which resulted in the acquisition of equipment with fair values of approximately $6.7 million during the six-month period ended April 29, 2018.

NOTE 4 - PDMCX JOINT VENTURE

In January 2018, Photronics, through its wholly-owned Singapore subsidiary (hereinafter, within this Note “we”, or “Photronics”), and Dai Nippon Printing Co., Ltd., through its wholly-owned subsidiary “DNP Asia Pacific PTE, Ltd.” (hereinafter, within this Note, “DNP”) entered into a joint venture under which DNP obtained a 49.99% interest in our recently-established IC business in Xiamen, China, in which we anticipate production to commence in 2019. The joint venture, known as “Xiamen American Japan Photronics Mask Co., Ltd.” (hereinafter, “PDMCX”), was established to develop and manufacture photomasks for leading edge and advanced generation semiconductors. We entered into this joint venture to enable us to compete more effectively for the merchant photomask business in China and to benefit from the additional resources and investment that DNP will provide to enable us to offer advanced-process technology to our customers. No gain or loss was recorded upon the formation of this joint venture.

As of April 28, 2019, Photronics and DNP had each contributed cash of approximately $48 million to the joint venture. The total investment per the PDMCX operating agreement (the Agreement) is $160 million, of which approximately $13 million remained for Photronics as of April 28, 2019 and will be funded over the next several quarters with cash and local borrowings.

Under the Agreement, DNP is afforded, under certain circumstances, the right to put its interest in PDMCX to Photronics. These circumstances include disputes regarding the strategic direction of PDMCX that may arise after the initial two-year term of the Agreement and cannot be resolved between the two parties. In addition, both Photronics and DNP have the option to purchase, or put, their interest from, or to, the other party, should their ownership interest fall below 20% for a period of more than six consecutive months. Under all such circumstances, the sales of ownership interests would be at the exiting party’s ownership percentage of the joint venture’s net book value, with closing to take place within three business days of obtaining required approvals and clearance.

We recorded net losses from the operations of PDMCX of approximately $0.6 million, and $1.9 million during the three- and six-month periods ended April 28, 2019, respectively, and $0.2 million and $0.7 million in the three- and six-month periods ended April 29, 2018, respectively. General creditors of PDMCX do not have recourse to the assets of Photronics, Inc., and our maximum exposure to loss from PDMCX at April 28, 2019, was $44.7 million.

As required by the guidance in Topic 810 - "Consolidation" of the Accounting Standards Codification, we evaluated our involvement in PDMCX for the purpose of determining whether we should consolidate its results in our financial statements. The initial step of our evaluation was to determine whether PDMCX was a variable interest entity ("VIE"). Due to its lack of sufficient equity at risk to finance its activities without additional subordinated financial support, we determined that it was a VIE. Having made this determination, we then assessed whether we were the primary beneficiary of the VIE, and concluded that we were the primary beneficiary during the current and prior year reporting periods; thus, as required, the PDMCX financial results have been consolidated with Photronics, Inc. Our conclusion was based on the facts that we held a controlling financial interest in PDMCX (which resulted from our having the power to direct the activities that most significantly impacted its economic performance), had the obligation to absorb losses, and the right to receive benefits that could potentially be significant to PDMCX. Our conclusions that we had the power to direct the activities that most significantly affected the economic performance of PDMCX during the current and prior year reporting periods was based on our right to appoint the majority of its board of directors, which has, among others, the powers to manage the business (through its rights to appoint and evaluate PDMCX management), incur indebtedness, enter into agreements and commitments, and acquire and dispose of PDMCX's assets. In addition, as a result of the 50.01% variable interest we held during the current and prior-year periods, we had the obligation to absorb losses and the right to receive benefits that could potentially be significant to PDMCX.

The carrying amounts of PDMCX assets and liabilities included in our condensed consolidated balance sheets are presented in the following table, together with our exposure to loss related to these assets and liabilities.

	April 28, 2019		October 31, 2018	
Classification	**Carrying Amount**	**Photronics Interest**	**Carrying Amount**	**Photronics Interest**
Current assets	$ 31,219	$ 15,612	$ 9,625	$ 4,813
Non-current assets	116,677	58,350	43,415	21,708
Total assets	147,896	73,962	53,040	26,521
Current liabilities	22,668	11,336	21,205	10,603
Non-current liabilities	35,937	17,972	20	10
Total liabilities	58,605	29,308	21,225	10,613
Net assets	$ 89,291	$ 44,654	$ 31,815	$ 15,908

NOTE 5 – LONG-TERM DEBT

Long-term debt consists of the following:

	April 28, 2019	October 31, 2018
Project Loan due December 2025	$ 11,400	$ -
Project Loan due December 2022	14,932	-
Working Capital Loan due January 2022	10,094	-
3.25% convertible senior notes matured April 2019	-	57,453
	36,426	57,453
Current portion	(505)	(57,453)
	$ 35,921	$ -

In April 2019, the $57.5 million convertible senior notes, discussed below, matured and were repaid.

In January 2015, we privately exchanged $57.5 million in aggregate principal amount of our 3.25% convertible senior notes with a maturity date of April 1, 2016, for new 3.25% convertible senior notes with an aggregate principal amount of $57.5 million with a maturity date of April 1, 2019. The conversion rate of the new notes was the same as that of the exchanged notes, which were issued in March 2011 with a conversion rate of approximately 96 shares of common stock per $1,000 note principal, equivalent to a conversion price of $10.37 per share of common stock. Note holders could convert each $1,000 principal amount of notes at any time prior to the close of business on the second scheduled trading day immediately preceding April 1, 2019; we were not required to redeem the notes, other than upon conversion, prior to their maturity date. Interest on the notes accrued in arrears, and was paid semiannually through the notes' maturity date.

In November 2018, PDMCX was approved for credit of $50 million, subject to certain limitations related to PDMCX registered capital at the time of the borrowing, pursuant to which PDMCX will enter into separate loan agreements (“the Project Loans”) for each borrowing. The Project Loans, which are denominated in renminbi, are being used to finance certain capital expenditures in China. PDMCX has agreed to grant a lien on the land, building and certain equipment owned by PDMCX as collateral for the Project Loans. As of April 28, 2019, PDMCX had borrowed $26.3 million against this approval, which includes $11.4 million that was borrowed during the three-month period ended April 28, 2019. Subsequent to April 28, 2019, PDMCX borrowed an additional $9.7 million. Repayments on the amounts borrowed before the three-month period ended April 28, 2019, will be made semiannually, commencing in June 2020 and ending in December 2022. Repayments on the amount borrowed after the three-month period ended January 27, 2019, will be made semiannually, commencing in June 2023 and ending in December 2025. The interest rates on the Project Loans are based on the benchmark lending rate of the People’s Bank of China (4.9% at April 28, 2019). Interest incurred on these loans will be reimbursed through incentives afforded to us by the Xiamen Torch Hi-Tech Industrial Development Zone which, to a prescribed limit, provide for such reimbursements.

In November 2018, PDMCX was approved for credit of $25.0 million, pursuant to which PDMCX may enter into separate loan agreements. No guarantees were required as part of this approval. As of April 28, 2019, PDMCX had borrowed $13.8 million against this approval of which $3.7 million were 90-day loans. The remaining $10.1 million borrowed (the “Working Capital Loans”) is to be repaid semiannually from the dates of the individual borrowings; repayments commenced in May 2019 and end in January 2022. In May 2019, we borrowed an additional $1.9 million against this approval, and repaid $0.1 million. The 90-day loans were repaid in our second quarter of 2019. The Working Capital Loans, which are denominated in renminbi, are being used for general financing purposes, including payments of import and value-added taxes. The interest rates on the 90-day loans were the market rate on the date of issuance (4.9%), and interest rates on the Working Capital Loans are approximately 5%, and are based on the RMB Loan Prime Rate of the National Interbank Funding Center, plus a spread of 67.75 basis points. Interest incurred on the loans will be reimbursed through incentives provided by the Xiamen Torch Hi-Tech Industrial Development Zone, which, to a prescribed limit, provide for such reimbursements.

In September 2018, we entered into an amended and restated credit agreement (“the new agreement”) that expires in September 2023. The new agreement, which replaced our prior credit facility, has a $50 million borrowing limit, with an expansion capacity to $100 million, and is secured by substantially all of our assets located in the United States and common stock we own in certain of our foreign subsidiaries. The new agreement limits the amount we can pay in cash for dividends, distributions and redemption on Photronics, Inc. equity of up to an aggregate amount of $100 million, and contains the following financial covenants: minimum interest coverage ratio, total leverage ratio and minimum unrestricted cash balance, all of which we were in compliance with as of April 28, 2019. We had no outstanding borrowings against the new agreement as of April 28, 2019, and $50 million was available for borrowing. The interest rate on the new agreement (2.5% at April 28, 2019) is based on our total leverage ratio at LIBOR plus a spread, as defined in the credit facility.

NOTE 6 - REVENUE

We adopted Accounting Standards Update 2014-09 and all subsequent amendments which are collectively codified in Accounting Standards Codification Topic 606 - “Revenue from Contracts with Customers” (“Topic 606”) - on November 1, 2018, under the modified retrospective transition method, only with respect to contracts that were not complete as of the date of adoption. This approach required prospective application of the guidance with a cumulative effect adjustment to retained earnings to reflect the impact of the adoption on contracts that were not complete as of the date of the adoption. In accordance with the modified retrospective transition method, the results of the prior year period presented have not been adjusted for the effects of Topic 606.

Under Topic 606, we recognize revenue when, or as, control of a good or service transfers to a customer, in an amount that reflects the consideration to which we expect to be entitled in exchange for transferring those goods or services, whereas, prior to our adoption of Topic 606, we recognized revenue when we shipped to customers or, under some arrangements, when the customers received the goods. The following tables present the impacts of our adoption of Topic 606 on our April 28, 2019, condensed consolidated balance sheet, and condensed consolidated statements of income for the three and six months ended April 28, 2019, and cash flows for the six months ended April 28, 2019.

Condensed Consolidated Balance Sheet
April 28, 2019

	As Reported	Adjustments	Balance without Adoption of Topic 606
Assets			
Accounts receivable	$ 123,371	$ (794)	$ 122,577
Inventory	34,696	4,807	39,503
Other current assets	38,304	(6,237)	32,067
Deferred income taxes	15,121	105	15,226
Liabilities			
Accrued liabilities	$ 58,659	$ 686	$ 59,345
Deferred income taxes	829	(367)	462
Equity			
Photronics, Inc. shareholders' equity	$ 763,568	$ (1,963)	$ 761,605
Noncontrolling interests	134,760	(475)	134,285

Condensed Consolidated Statement of Income
Three Months Ended April 28, 2019

	As Reported	Adjustments	Balance without Adoption of Topic 606
Revenue	$ 131,580	$ (242)	$ 131,338
Cost of goods sold	105,570	(162)	105,408
Gross profit	26,010	(80)	25,930
Provision for taxes	3,278	(48)	3,230
Net income	9,852	(128)	9,724
Noncontrolling interests	1,373	78	1,451
Income attributable to Photronics, Inc. shareholders	$ 8,479	$ (206)	$ 8,273

Condensed Consolidated Statement of Income
Six Months Ended April 28, 2019

	As Reported	Adjustments	Balance without Adoption of Topic 606
Revenue	$ 256,291	$ (2,524)	$ 253,767
Cost of goods sold	204,179	(1,041)	203,138
Gross profit	52,112	(1,483)	50,629
Provision for taxes	4,665	(178)	4,487
Net income	17,620	(1,305)	16,315
Noncontrolling interests	3,874	(353)	3,521
Income attributable to Photronics, Inc. shareholders	$ 13,746	$ (952)	$ 12,794

Condensed Consolidated Statement of Cash Flows
Six Months Ended April 28, 2019

	As Reported	Adjustments	Balance without Adoption of Topic 606
Net Income	$ 17,620	$ (1,305)	$ 16,315
Changes in operating accounts:			
Accounts receivable	$ (2,295)	$ 211	$ (2,084)
Inventories	(9,447)	(1,204)	(10,651)
Other current assets	(6,114)	1,799	(4,315)
Accounts payable, accrued liabilities, and other	(40,566)	499	(40,067)

We account for an arrangement as a revenue contract when each party has approved and is committed to perform under the contract, the rights of the contracting parties regarding the goods or services to be transferred and the payment terms are identifiable, the arrangement has commercial substance, and collection of consideration is probable. Substantially all of our revenue comes from the sales of photomasks. We typically contract with our customers to sell sets of photomasks (referred to as "mask sets"), which are comprised of multiple layers, the predominance of which we invoice as they ship to customers. As the photomasks are manufactured to customer specifications, they have no alternative use to us and, as our contracts generally provide us with the right to payment for work completed to date, we recognize revenue as we perform, or "over time" on most of our contracts. We measure our performance to date using an input method, which is based on our estimated costs to complete the various manufacturing phases of a photomask. At the end of a reporting period, there will be a number of revenue contracts on which we have performed; for any such contracts that we are entitled to be compensated for our costs incurred plus a reasonable profit, we recognize revenue and a corresponding contract asset for such performance. We account for shipping and handling activities that we perform after a customer obtains control of a good as being activities to fulfill our promise to transfer the good to the customer, rather than as promised services, or performance obligations, under the contract.

As stated above, photomasks are manufactured in accordance with proprietary designs provided by our customers; thus, they are individually unique. Due to their uniqueness and other factors, their transaction prices are individually established through negotiations with customers; consequently, our photomasks do not have standard or "list" prices. The transaction prices of the vast majority of our revenue contracts include only fixed amounts of consideration. In certain instances, such as when we offer a customer an early payment discount, an estimate of variable consideration would be included in the transaction price, but only to the extent that a significant reversal of revenue would not occur when the uncertainty related to the variability is resolved.

Contract Assets, Contract Liabilities and Accounts Receivable

We recognize a contract asset when our performance under a contract precedes our receipt of consideration from a customer, or before payment is due, and our receipt of consideration is conditional upon factors other than the passage of time. Contract assets reflect our transfer of control to customers of photomasks that are in-process or completed but not yet shipped. A receivable is recognized when we have an unconditional right to payment for our performance, which generally occurs when we ship the photomasks. Our contract assets account primarily consists of a significant amount of our work-in-process inventory and fully-manufactured photomasks which have not yet shipped, if we have an enforceable right to collect consideration (including a reasonable profit), in the event the in-process orders are cancelled by customers. On an individual contract basis, we net contract assets with contract liabilities (deferred revenue) for financial reporting purposes. Our contract assets and liabilities are typically classified as current, as our production cycle and our lead times are both under one year. Contract assets of $6.2 million are included in "Other" current assets, and contract liabilities of $7.9 million are included in "Other" current liabilities in our April 28, 2019 condensed consolidated balance sheet. At November 1, 2018, our date of adoption of Topic 606, we had contract assets of $4.6 million and contract liabilities of $7.8 million. We did not impair any contract assets during the six-month period ended April 28, 2019, and, during the respective three- and six-month periods ended April 28, 2019, we recognized $0.5 million and $1.2 million of revenue from the settlement of contract liabilities that existed at the beginning of those periods.

We generally record our accounts receivable at their billed amounts. All outstanding past due customer invoices are reviewed during, and at the end of, every period for collectibility. To the extent we believe a loss on the collection of a customer invoice is probable, we record the loss and credit the allowance for doubtful accounts. In the event that an amount is determined to be uncollectible, we charge the allowance for doubtful accounts and eliminate the related receivable. We did not incur any credit losses on our accounts receivable during the six-month period ended April 28, 2019.

Our invoice terms generally range from net thirty to ninety days, depending on both the geographic market in which the transaction occurs and our payment agreements with specific customers. In the event that our evaluation of a customer's business prospects and financial condition indicate that the customer presents a collectibility risk, we require payment in advance of performance. We have elected the practical expedient allowed under Topic 606 that permits us not to adjust a contract's promised amount of consideration to reflect a financing component when the period between when we transfer control of goods or services to customers and when we are paid is one year or less.

In instances when we are paid in advance of our performance, we record a contract liability and, as allowed under the practical expedient in Topic 606, recognize interest expense only if the period between when we receive payment from the customer and the date when we expect to be entitled to the payment is greater than one year. Historically, advance payments we've received from customers have not preceded the completion of our performance obligations by more than one year.

Disaggregation of Revenue

The following tables present our revenue for the three and six-month periods ended April 28, 2019, disaggregated by product type, geographic location, and timing of recognition.

Revenue by Product Type	**Three Months Ended April 28, 2019**	**Six Months Ended April 28, 2019**
IC		
High-end	$ 38,429	$ 72,995
Mainstream	60,158	120,471
Total IC	$ 98,587	$ 193,466
FPD		
High-end	$ 22,956	$ 44,422
Mainstream	10,037	18,403
Total FPD	$ 32,993	$ 62,825
	$ 131,580	$ 256,291
Revenue by Geographic Location		
Taiwan	$ 56,469	$ 114,209
Korea	38,038	73,275
United States	26,742	49,215
Europe	8,435	16,788
China	1,467	1,730
Other	429	1,074
	$ 131,580	$ 256,291
Revenue by Timing of Recognition		
Over time	$ 123,853	$ 244,699
At a point in time	7,727	11,592
	$ 131,580	$ 256,291

Contract Costs

We pay commissions to third party sales agents for certain sales that they obtain for us. However, the basis of the commissions is the transaction prices of the sales, which are completed in less than one year; thus, no relationship is established with a customer that will result in future business. Therefore, we would not recognize any portion of these sales commissions as costs of obtaining a contract, nor do we currently foresee other circumstances under which we would recognize such assets.

Remaining Performance Obligations

As we are typically required to fulfill customer orders within a short time period, our backlog of orders is generally not in excess of one to two weeks for IC photomasks and two to three weeks for FPD photomasks. As allowed under Topic 606, we have elected not to disclose our remaining performance obligations, which represent the costs associated with the completion of the manufacturing process of in-process photomasks related to contracts that have an original duration of one year or less.

Sales and Similar Taxes

We report our revenue net of any sales or similar taxes we collect on behalf of governmental entities.

Product Warranty

Our photomasks are sold under warranties that generally range from 1 to 12 months. We warrant that our photomasks conform to customer specifications, and that we will repair or replace, at our option, any photomasks that fail to do so. The warranties do not represent separate performance obligations in our revenue contracts. Historically, customer claims under warranty have been immaterial.

NOTE 7 - SHARE-BASED COMPENSATION

In March 2016, shareholders approved a new equity incentive compensation plan (the “Plan”), under which incentive stock options, non-qualified stock options, stock grants, stock-based awards, restricted stock, restricted stock units, stock appreciation rights, performance units, performance stock, and other stock or cash awards may be granted. Shares to be issued under the Plan may be authorized and unissued shares, issued shares that have been reacquired by us (in the open-market or in private transactions), shares that are being held in the treasury, or a combination thereof. The maximum number of shares of common stock approved that may be issued under the Plan is four million shares. Awards may be granted to officers, employees, directors, consultants, advisors, and independent contractors of Photronics or its subsidiaries. In the event of a change in control (as defined in the Plan), the vesting of awards may be accelerated. The Plan, aspects of which are more fully described below, prohibits further awards from being issued under prior plans. Total share-based compensation costs for the three and six-month periods ended April 28, 2019, were $0.9 million and $2.0 million, respectively, and $0.8 million and $1.6 million for the three and six-month periods ended April 29, 2018, respectively. The Company received cash from option exercises of $0.3 million and $0.8 million for the three and six-month periods ended April 28, 2019, respectively, and $2.9 million and $3.6 million for the three and six-month periods ended April 29, 2018, respectively. No share-based compensation cost was capitalized as part of an asset and no related income tax benefits were recorded during the periods presented.

Stock Options

Option awards generally vest in one-to-four years, and have a ten-year contractual term. All incentive and non-qualified stock option grants have an exercise price no less than the market value of the underlying common stock on the date of grant. The grant date fair values of options are based on closing prices of our common stock on the dates of grant and are calculated using the Black-Scholes option pricing model. Expected volatility is based on the historical volatility of our common stock. We use historical option exercise behavior and employee termination data to estimate expected term, which represents the period of time that options are expected to remain outstanding. The risk-free rate of return for the estimated term of the option is based on the U.S. Treasury yield curve in effect at the date of grant.

There were no share options granted during the three-month periods ended April 28, 2019 and April 29, 2018. There were 132,000 share options granted during the six-month period ended April 28, 2019, with a weighted-average grant-date fair value of $3.31 per share, and 252,000 share options granted during the six-month period ended April 29, 2018, with a weighted-average grant-date fair value of $2.74 per share. As of April 28, 2019, the total unrecognized compensation cost related to unvested option awards was approximately $1.2 million. That cost is expected to be recognized over a weighted-average amortization period of 2.4 years.

The weighted-average inputs and risk-free rate of return ranges used to calculate the grant-date fair value of options issued during the three and six-month periods ended April 28, 2019 and April 29, 2018, are presented in the following table.

	Three Months Ended		Six Months Ended	
	April 28, 2019	April 29, 2018	April 28, 2019	April 29, 2018
Volatility	N/A	N/A	33.1%	31.6%
Risk free rate of return	N/A	N/A	2.5-2.9%	2.2%
Dividend yield	N/A	N/A	0.0%	0.0%
Expected term	N/A	N/A	5.1 years	5.0 years

Information on outstanding and exercisable option awards as of April 28, 2019, is presented below.

Options	Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life	Aggregate Intrinsic Value
Outstanding at April 28, 2019	2,405,318	$ 8.88	5.7 years	$ 2,968
Exercisable at April 28, 2019	1,795,651	$ 8.47	4.9 years	$ 2,797

Restricted Stock

We periodically grant restricted stock awards, the restrictions on which typically lapse over a service period of one-to-four years. The fair value of the awards is determined on the date of grant, based on the closing price of our common stock. There were 435,000 restricted stock awards granted during the six-month period ended April 28, 2019, with a grant date fair value of $9.80 per share. There were 10,000 restricted stock awards granted during the three-month period ended April 29, 2018, with a grant-date fair value of $8.40 per share, and 290,000 restricted stock awards granted during the six-month period ended April 29, 2018, with a weighted-average fair value of $8.62 per share. As of April 28, 2019, the total compensation cost not yet recognized related to unvested restricted stock awards was approximately $5.7 million. That cost is expected to be recognized over a weighted-average amortization period of 2.9 years. As of April 28, 2019, there were 698,613 shares of restricted stock outstanding.

NOTE 8 - INCOME TAXES

We calculate our provision for income taxes at the end of each interim reporting period on the basis of an estimated annual effective tax rate adjusted for tax items that are discrete to each period.

The effective tax rate of 25.0% differs from the U.S. statutory rate of 21.0% in the three-month period ended April 28, 2019, primarily due to the elimination of tax benefits in jurisdictions, including the U.S, in which it is not more likely than not that the benefit will be realized; the effects of these eliminations were partially offset by the benefits of tax holidays and investment credits in certain foreign jurisdictions.

The effective tax rate of 20.9% differs from the U.S. statutory rate of 21.0% in the six-month period ended April 28, 2019, primarily due to the elimination of the tax benefits in jurisdictions, including the U.S, in which it is not more likely than not that the benefit will be realized; the effects of these eliminations were partially offset by the benefits of the settlement of a tax audit, as well as a tax holiday and investment credits in certain foreign jurisdictions.

Unrecognized tax benefits related to uncertain tax positions were $0.8 million at April 28, 2019, and $1.9 million at October 31, 2018, all of which, if recognized, would favorably impact the Company's effective tax rate. Accrued interest and penalties related to unrecognized tax benefits was $0.1 million at April 28, 2019 and October 31, 2018. The year to date reduction in the amount primarily resulted from settlement of a tax audit in Taiwan in Q1 FY19. Although the timing of the expirations of statutes of limitations may be uncertain, as they can be dependent upon the settlement of tax audits, the Company believes that it is reasonably possible that an immaterial amount of its uncertain tax positions (including accrued interest and penalties, net of tax benefits) may be resolved over the next twelve months. The resolution of these uncertain tax positions may result from either or both the lapses of statutes of limitations and tax settlements.

We were granted a five-year tax holiday in Taiwan which expires at the end of calendar year 2019. This tax holiday reduced foreign taxes by $0.3 million, and $1.1 million in the three and six-month periods ended April 28, 2019, and $0.7 and $0.8 million in the respective prior year periods. The per share impact of the tax holiday was a deminimus amount for the three-month period ended April 28, 2019, and one cent per share for the six-month periods ended April 28, 2019 and April 29, 2018, and the three-month period ended April 29, 2018.

The effective tax rates of 18.8% and 6.5% differ from the post U.S. Tax Reform blended statutory rate of 23.4% in the three and six-month periods ended April 29, 2018, primarily due to benefits from U.S. and Taiwan Tax Reform (as discussed below), earnings being taxed at lower statutory rates in foreign jurisdictions, and the benefits of various investment credits in a foreign jurisdiction.

On December 22, 2017, the U.S. Tax Cuts and Jobs Act (the "Act"), was signed into law, enacting significant changes to the United States Internal Revenue Code of 1986, as amended. Based on the enactment date, we accounted for the Act in our interim period ended January 28, 2018. In December 2017, the Securities and Exchange Commission released Staff Accounting Bulletin No. 118 ("SAB 118") to address situations in which the accounting under Accounting Standards Codification Topic 740 – "Income Taxes" is incomplete for certain income tax effects of the Act. We adopted SAB 118 in our first quarter of fiscal year 2018, and finalized the effects in our fourth quarter of fiscal 2018. In the period ended January 28, 2018, we recognized the following effects in our provision for income taxes:

- The Act repealed the corporate alternative minimum tax ("AMT") for tax years beginning after December 31, 2017, and provided that existing AMT credit carryforwards are fully refundable. We recognized a $3.9 million benefit on AMT credit carryforwards that we previously determined were not more likely than not going to be realized and reversed the previously-recorded valuation allowance.
- As of January 1, 2018, the Act reduced the corporate income tax rate from a maximum 35% to a flat 21%, requiring us to revalue our deferred tax assets and liabilities utilizing the rate applicable to the period when a temporary difference will reverse. Our net deferred tax asset is fully offset by a valuation allowance, and the revaluation of the deferred tax assets and liabilities resulted in a net zero impact for the period.
- The Act imposed a transition tax for a one-time deemed repatriation of the accumulated earnings of foreign subsidiaries. The entire amount of transition tax was fully offset by tax credits (including carryforwards) that resulted in a provisional net zero impact on the period.

On January 18, 2018, the Taiwan Legislature Yuan approved amendments to the Income Tax Act, enacting an increase in the corporate tax rate from 17% to 20%, which required us to revalue our deferred tax assets and liabilities utilizing the rate applicable to the period when a temporary difference will reverse. Accordingly, a net benefit of $0.2 million is reflected in our tax provision for the period.

Adoption of New Accounting Standard

In the first quarter of 2019, the Company adopted Accounting Standards Update No. 2016-16 – "Intra-Entity Transfers Other Than Inventory", which requires an entity to recognize the income tax consequences of an intra-entity transfer of an asset other than inventory when the transfer occurs. In connection therewith, we recorded a transition adjustment of $1.1 million that reduced prepaid income taxes (included in Other current assets on the condensed consolidated balance sheets) against beginning retained earnings.

NOTE 9 - EARNINGS PER SHARE

The calculations of basic and diluted earnings per share is presented below.

	Three Months Ended		Six Months Ended	
	April 28, 2019	**April 29, 2018**	**April 28, 2019**	**April 29, 2018**
Net income attributable to Photronics, Inc. shareholders	$ 8,479	$ 10,665	$ 13,746	$ 16,563
Effect of dilutive securities:				
Interest expense on convertible notes, net of tax	349	496	845	992
Earnings used for diluted earnings per share	$ 8,828	$ 11,161	$ 14,591	$ 17,555
Weighted-average common shares computations:				
Weighted-average common shares used for basic earnings per share	66,261	69,293	66,422	69,024
Effect of dilutive securities:				
Convertible notes	3,898	5,542	4,720	5,542
Share-based payment awards	438	355	451	486
Potentially dilutive common shares	4,336	5,897	5,171	6,028
Weighted-average common shares used for diluted earnings per share	70,597	75,190	71,593	75,052
Basic earnings per share	$ 0.13	$ 0.15	$ 0.21	$ 0.24
Diluted earnings per share	$ 0.13	$ 0.15	$ 0.20	$ 0.23

The table below shows the outstanding weighted-average share-based payment awards that were excluded from the calculation of diluted earnings per share because their exercise prices exceeded the average market value of the common shares for the period or, under application of the treasury stock method, they were otherwise determined to be anti-dilutive.

	Three Months Ended		Six Months Ended	
	April 28, 2019	**April 29, 2018**	**April 28, 2019**	**April 29, 2018**
Share-based payment awards	1,204	2,022	1,134	1,803
Total potentially dilutive shares excluded	1,204	2,022	1,134	1,803

NOTE 10 - CHANGES IN ACCUMULATED OTHER COMPREHENSIVE INCOME BY COMPONENT

The following tables set forth the changes in our accumulated other comprehensive income by component (net of tax of $0) for the three and six-month periods ended April 28, 2019 and April 29, 2018.

	Three Months Ended April 28, 2019		
	Foreign Currency Translation Adjustments	Other	Total
Balance at January 28, 2019	$ 971	$ (628)	$ 343
Other comprehensive (loss) income	(7,054)	25	(7,029)
Less: other comprehensive income attributable to noncontrolling interests	129	13	142
Balance at April 28, 2019	$ (6,212)	$ (616)	$ (6,828)

	Three Months Ended April 29, 2018			
	Foreign Currency Translation Adjustments	Amortization of Cash Flow Hedge	Other	Total
Balance at January 29, 2018	$ 32,848	$ (16)	$ (704)	$ 32,128
Other comprehensive (loss) income before Reclassifications	(11,098)	-	54	(11,044)
Amounts reclassified from accumulated other comprehensive income	-	16	-	16
Net current period other comprehensive (loss) income	(11,098)	16	54	(11,028)
Less: other comprehensive (loss) income attributable to noncontrolling interests	(2,683)	-	27	(2,656)
Balance at April 29, 2018	$ 24,433	$ -	$ (677)	$ 23,756

	Six Months Ended April 28, 2019		
	Foreign Currency Translation Adjustments	Other	Total
Balance at November 1, 2018	$ (4,328)	$ (638)	$ (4,966)
Other comprehensive (loss) income	(482)	44	(438)
Less: other comprehensive income attributable to noncontrolling interests	1,402	22	1,424
Balance at April 28, 2019	$ (6,212)	$ (616)	$ (6,828)

	Six Months Ended April 29, 2018			
	Foreign Currency Translation Adjustments	Amortization of Cash Flow Hedge	Other	Total
Balance at October 30, 2017	$ 7,627	$ (48)	$ (688)	$ 6,891
Other comprehensive income before Reclassifications	18,989	-	22	19,011
Amounts reclassified from accumulated other comprehensive income	-	48	-	48
Net current period other comprehensive income	18,989	48	22	19,059
Less: other comprehensive income attributable to noncontrolling interests	2,183	-	11	2,194
Balance at April 29, 2018	$ 24,433	$ -	$ (677)	$ 23,756

The amortization of the cash flow hedge is included in cost of sales in the condensed consolidated statements of income for all periods presented.

NOTE 11 - FAIR VALUE MEASUREMENTS

The accounting framework for determining fair value includes a hierarchy for ranking the quality and reliability of the information used to measure fair value, which enables the reader of the financial statements to assess the inputs used to develop those measurements. The fair value hierarchy consists of three tiers as follows: Level 1, defined as quoted market prices (unadjusted) in active markets for identical securities; Level 2, defined as inputs other than Level 1 that are observable, either directly or indirectly; and Level 3, defined as unobservable inputs that are not corroborated by market data.

The fair values of our cash and cash equivalents (Level 1 measurements), accounts receivable, accounts payable, and certain other current assets and current liabilities (Level 2 measurements) approximate their carrying value due to their short-term maturities. The fair value of our convertible senior notes is a Level 2 measurement, as it was determined using inputs that were either observable market data, or could be derived from, or corroborated with, observable market data. These inputs included our stock price and interest rates offered on debt issued by entities with credit ratings similar to ours. We did not have any assets or liabilities measured at fair value, on a recurring or a nonrecurring basis, at April 28, 2019 or October 31, 2018.

Fair Value of Financial Instruments Not Measured at Fair Value

The fair value of our convertible senior notes was a Level 2 measurement, as it was determined using inputs that were either observable market data or could be derived from or corroborated with observable market data. These inputs included our stock price and interest rates offered on debt issued by entities with credit ratings similar to ours. The table below presents the fair and carrying values of our convertible senior notes at October 31, 2018.

	October 31, 2018	
	Fair Value	Carrying Value
3.25% convertible senior notes matured 2019	$ 62,094	$ 57,453

NOTE 12 – SHARE REPURCHASE PROGRAM

In October 2018, the Company's Board of Directors authorized the repurchase of up to $25 million of its common stock, to have been executed in open-market transactions or in accordance with a repurchase plan under rule 10b5-1 of the Securities Act of 1933 (as amended). The share repurchase program commenced on October 22, 2018, and was terminated on February 1, 2019.

	Six Months Ended April 28, 2019	From Inception Date of October 22, 2018
Number of shares repurchased	1,137	1,467
Cost of shares repurchased	$ 10,694	$ 13,807
Average price paid per share	$ 9.40	$ 9.41

NOTE 13 - COMMITMENTS AND CONTINGENCIES

As of April 28, 2019, the Company had commitments outstanding for capital equipment expenditures of approximately $37 million, nearly all of which related to building and equipping our China facilities.

We are subject to various claims that arise in the ordinary course of business. We believe that such claims, individually or in the aggregate, will not have a material effect on the consolidated financial statements.

NOTE 14 - RECENT ACCOUNTING PRONOUNCEMENTS

Accounting Standards Updates to be Implemented

In June 2016, the FASB issued ASU 2016-13 "Measurement of Credit Losses", the main objective of which is to provide more useful information about expected credit losses on financial instruments and other commitments of an entity to extend credit. In support of this objective, the ASU replaces the incurred loss impairment methodology, found in current GAAP, with a methodology that reflects expected credit losses and requires consideration of a broader range of reasonable and supportable information to inform credit loss estimates. This ASU requires a cumulative-effect adjustment as of the beginning of the first reporting period in which the guidance is adopted. ASU 2016-13 is effective for Photronics, Inc. in its first quarter of fiscal year 2021, with early adoption permitted beginning in the first quarter of fiscal year 2019. We are currently evaluating the effect that this ASU will have on our consolidated financial statements.

In February 2016, the FASB issued ASU 2016-02 "Leases (Topic 842)" (ASU 2016-02"), which requires lessees to recognize right-of-use assets and corresponding liabilities for all leases with an initial term in excess of twelve months. ASU 2016-02 was to be adopted using a modified retrospective approach, that requires leases to be measured and recognized under the new guidance at the beginning of the earliest period presented. In July 2018, the FASB issued ASU 2018-11 "Leases (Topic 842) – Targeted Improvements" ("ASU 2018-11"), which provided entities with an additional (and optional) transition method to adopt the new leases standard. Under this optional transition method, an entity initially applies the new leases standard at its adoption date and recognizes the effects of adoption through cumulative-effect adjustments to its beginning balance sheet. We will utilize this optional method when we transition to the new leases guidance and, as a result, expect to recognize significant amounts of right of use assets and lease liabilities in our fiscal year 2020 beginning balance sheet. ASU 2016-02 included a number of practical expedients, which we are currently in the process of evaluating, that entities can elect to use as they transition to the new guidance. To date, an implementation team has been established to evaluate the lease portfolio, system process and policy change requirements. The Company has made progress in drafting new lease accounting policies, gathering the necessary data elements for the lease population, and selected a system provider, with system configuration and implementation underway.

Accounting Standards Updates Implemented

In November 2016, the FASB issued ASU 2016-18 "Restricted Cash", which requires that a statement of cash flows explain the change during the period in the total of cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. Therefore, amounts generally described as restricted cash and restricted cash equivalents should be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. ASU 2016-18 was effective for Photronics, Inc. in its first quarter of fiscal year 2019 and was applied on a retrospective transition basis. Our adoption of this Update did not materially impact our cash flows statement.

In October 2016, the FASB issued ASU 2016-16 “Intra-Entity Transfers of Assets Other Than Inventory”, which eliminates the exception of recognizing, at the time of transfer, current and deferred income taxes for intra-entity asset transfers other than inventory. ASU 2016-16 is effective for us in our first quarter of fiscal year 2019 and should be applied on a modified retrospective transition basis. Early adoption is permitted as of the beginning of an annual reporting period for which interim or annual financial statements have not been issued or made available for issuance. Please see Note 8 for a discussion of the effects of adopting the guidance.

In May 2014, the FASB issued ASU 2014-09 “Revenue from Contracts with Customers”, which superseded nearly all then existing revenue recognition guidance under accounting principles generally accepted in the United States. The core principle of this ASU is that revenue should be recognized for the amount of consideration expected to be received for promised goods or services transferred to customers. This ASU also requires additional disclosure about the nature, amount, timing, and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments, and assets recognized for costs incurred to obtain or fulfill a contract. In August 2015, the FASB issued ASU 2015-14 which deferred the effective date of ASU 2014-09 by one year and allowed entities to early adopt, but no earlier than the original effective date. This update allowed for either full retrospective or modified retrospective adoption. In April 2016, the FASB issued ASU 2016-10 “Identifying Performance Obligations and Licensing” which amended guidance previously issued on these matters in ASU 2014-09. The effective date and transition requirements of ASU 2016-10 were the same as those for ASU 2014-09.

We adopted the new revenue and related guidance on November 1, 2018, using the modified retrospective approach, under which we increased our accounts receivable by $0.6 million, recognized contract assets of $4.6 million, reduced our inventories balance by $3.7 million, and recorded an accrual for income taxes of $0.3 million. The recognition and adjustments to these items was reflected in increases to our retained earnings and noncontrolling interest balances of $1.1 million and $0.1 million, respectively. The most significant impact of the new guidance on our financial statements is its requirement for us to recognize revenue as we manufacture products for which, in the event that the customer cancels the contract, we are entitled to reasonable compensation for work we have completed prior to cancellation. Prior to our adoption of Topic 606, we recognized revenue when we shipped to customers or, under some arrangements, when the customers received the goods. The impact of the adoption of this guidance on our January 27, 2019, financial statements is presented in Note 6.

The guidance allows for a number of accounting policy elections and practical expedients. In addition to our above-mentioned election to use the modified retrospective application method for adopting the guidance, those we have employed that are most significant to us are summarized below.

Shipping and handling activities performed after control of a good is transferred to a customer

We have elected to treat shipping and handling activities that occur after control of a good is transferred to a customer as activities to fulfill our promise to transfer goods to the customer. Thus, such activities will not be considered to be separate performance obligations under contracts with our customers.

Non-recognition of financing component when we transfer goods to a customer and the period between when we transfer and when we are paid will be less than one year

We have elected the practical expedient that allows for the non-recognition, as a component of a customer contract, of a financing component when the period between when we transfer a good and when we are paid will be less than one year.

Exclusion of sales and similar taxes collected from customers in the transaction price

Consistent with our practice before adoption of the new guidance, we will not recognize sales and similar taxes we collect from customers as revenue.

Use of an “input method” to measure our progress towards the transfer of control of performance obligations to customers

As, in our judgment, an input method based on our efforts to satisfy our performance obligations will best serve to depict the transfer of control of our performance obligations to our customers, we have adopted an accounting policy to employ such a method. Our decision was based primarily on the facts that our photomasks are not physically transferred to customers until they are complete, and that we can employ our input-based cost accumulation systems and methods to measure our progress towards the transfer of control of our performance obligations to customers.

Non-disclosure of the transaction prices of unsatisfied or partially satisfied performance obligations

For contracts that have an original expected duration of one year or less, we have elected the practical expedient that allows us not to disclose the aggregate transaction prices of unsatisfied or partially-satisfied performance obligations that exist at the end of a reporting period.

Item 2. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Overview

Management's discussion and analysis ("MD&A") of the Company's financial condition, results of operations and outlook should be read in conjunction with its condensed consolidated financial statements and related notes. Various segments of this MD&A contain forward-looking statements, all of which are presented based on current expectations, which may be adversely affected by uncertainties and risk factors (presented throughout this filing and in the Company's Annual Report on Form 10-K for the fiscal 2018 year), that may cause actual results to materially differ from these expectations.

We sell substantially all of our photomasks to semiconductor and FPD designers and manufacturers. Photomask technology is also being applied to the fabrication of other higher performance electronic products such as photonics, micro-electronic mechanical systems and certain nanotechnology applications. Our selling cycle is tightly interwoven with the development and release of new semiconductor and FPD designs and applications, particularly as they relate to the micro-electronic industry's migration to more advanced product innovation, design methodologies and fabrication processes. We believe that the demand for photomasks primarily depends on design activity rather than sales volumes from products manufactured using photomask technologies. Consequently, an increase in semiconductor or FPD sales does not necessarily result in a corresponding increase in photomask sales. However, the reduced use of customized ICs, reductions in design complexity, other changes in the technology or methods of manufacturing or designing semiconductors, or a slowdown in the introduction of new semiconductor or FPD designs could reduce demand for photomasks – even if the demand for semiconductors and FPDs increases. Advances in semiconductor, FPD and photomask design and semiconductor and FPD production methods that shift the burden of achieving device performance away from lithography could also reduce the demand for photomasks. Historically, the microelectronic industry has been volatile, experiencing periodic downturns and slowdowns in design activity. These downturns have been characterized by, among other things, diminished product demand, excess production capacity, and accelerated erosion of selling prices, with a concomitant effect on revenue and profitability.

We are typically required to fulfill customer orders within a short period of time, sometimes within 24 hours. This results in a minimal level of backlog orders, typically one to two weeks of backlog for IC photomasks and two to three weeks of backlog for FPD photomasks.

The global semiconductor and FPD industries are driven by end markets which have been closely tied to consumer-driven applications of high-performance devices, including, but not limited to, mobile display devices, mobile communications, and computing solutions. While we cannot predict the timing of the industry's transition to volume production of next-generation technology nodes, or the timing of up and down cycles with precise accuracy, we believe that such transitions and cycles will continue into the future, beneficially and adversely affecting our business, financial condition, and operating results as they occur. We believe our ability to remain successful in these environments is dependent upon the achievement of our goals of being a service and technology leader and efficient solutions supplier, which we believe should enable us to continually reinvest in our global infrastructure.

In the second quarter of fiscal 2019, PDMC, the Company's majority owned IC subsidiary in Taiwan, declared a dividend of which 49.99%, or approximately $18.8 million, is payable to noncontrolling interests.

In the first quarter of fiscal 2019, PDMC paid a dividend, of which 49.99%, or approximately $26.1 million, was paid to noncontrolling interests.

In November 2018, PDMCX was approved for credit of $50 million, subject to certain limitations related to PDMCX registered capital at the time of the borrowing, pursuant to which PDMCX will enter into separate loan agreements ("the Project Loans") for each borrowing. The Project Loans, which are denominated in renminbi, are being used to finance certain capital expenditures in China. PDMCX has agreed to grant a lien on the land, building and certain equipment owned by PDMCX as collateral for the Project Loans. As of April 28, 2019, PDMCX had borrowed $26.3 million against this approval, which includes $11.4 million that was borrowed during the three-month period ended April 28, 2019. Subsequent to April 28, 2019, PDMCX borrowed an additional $9.7 million. Repayments on the amounts borrowed before the three-month period ended April 28, 2019, will be made semiannually, commencing in June 2020 and ending in December 2022. Repayments on the amount borrowed after the three-month period ended January 27, 2019, will be made semiannually, commencing in June 2023 and ending in December 2025. The interest rates on the Project Loans are based on the benchmark lending rate of the People's Bank of China (4.9% at April 28, 2019). Interest incurred on these loans will be reimbursed through incentives afforded to us by the Xiamen Torch Hi-Tech Industrial Development Zone which, to a prescribed limit, provide for such reimbursements.

In the first quarter of 2019, PDMCX was approved for credit of $25.0 million, pursuant to which PDMCX may enter into separate loan agreements. No guarantees were required as part of this approval. As of April 28, 2019, PDMCX had borrowed $13.8 million against this approval of which $3.7 million were 90-day loans. The remaining $10.1 million borrowed (the "Working Capital Loans") is to be repaid semiannually from the dates of the individual borrowings; repayments commenced in May 2019 and end in January 2022. In May 2019, we borrowed an additional $1.9 million against this approval, and repaid $0.1 million. The 90-day loans were repaid in our second quarter of 2019. The Working Capital Loans, which are denominated in renminbi, are being used for general financing purposes, including payments of import and value added taxes. The interest rates on the 90-day loans were the market rate on the date of issuance (4.9%), and interest rates on the Working Capital Loans are approximately 5%, and are based on the RMB Loan Prime Rate of the National Interbank Funding Center, plus a spread of 67.75 basis points. Interest incurred on the loans will be reimbursed through incentives provided by the Xiamen Torch Hi-Tech Industrial Development Zone which, to a prescribed limit, provide for such reimbursements.

In the fourth quarter of fiscal 2018, we entered into an amended and restated credit agreement ("the new agreement") that expires in September 2023. The new agreement, which replaced our prior credit agreement, has a $50 million borrowing limit, and a $50 million expansion capacity, which represents a $25 million increase over the previous credit agreement. The new agreement is secured by substantially all of our assets located in the United States and common stock we own in certain of our foreign subsidiaries, and limits the amount we can pay in cash dividends on Photronics, Inc. stock. The new agreement contains the following financial covenants: minimum interest coverage ratio, total leverage ratio and minimum unrestricted cash balance, all of which we were in compliance with at April 28, 2019. We had no outstanding borrowings against the new agreement at April 28, 2019, and $50 million was available for borrowing. The interest rate on the new agreement (2.5% at April 28, 2019) is based on our total leverage ratio at LIBOR plus a spread, as defined in the credit agreement.

In the fourth quarter of fiscal 2018, the Company's Board of Directors authorized the repurchase of up to $25 million of its common stock, to be executed in open-market transactions or in accordance with a repurchase plan under rule 10b5-1 of the Securities Act of 1933 (as amended). The share repurchase program commenced, under 10b5-1, on October 22, 2018, and expired on February 1, 2019. In total, we repurchased 1.5 million shares at a cost of $13.8 million (an average of $9.41 per share) under this program.

In the first quarter of fiscal 2018, we announced the successful closing of the China joint venture agreement with Dai Nippon Printing Co., Ltd. ("DNP"), which we had agreed to enter into and announced in the third quarter of fiscal 2017 (see discussion below). Under the agreement, our wholly-owned Singapore subsidiary owns 50.01% of the joint venture, which is named Xiamen American Japan Photronics Mask Co., Ltd. (PDMCX), and a subsidiary of DNP owns the remaining 49.99%. The financial results of the joint venture are included in the Photronics, Inc. consolidated financial statements. See Note 4 of the condensed consolidated financial statements for additional information on the joint venture.

In the fourth quarter of fiscal 2017, we announced that Photronics UK, Ltd., a wholly-owned subsidiary of ours, signed an investment agreement with Hefei State Hi-tech Industry Development Zone to establish a manufacturing facility in Hefei, China. Under the terms of the agreement, through our subsidiary, we agreed to invest a minimum of $160 million to build and operate a research and development and manufacturing facility for high-end and mainstream FPD photomasks. As of April 28, 2019, we have met the minimum investment requirement and satisfied the terms of the agreement. Hefei State Hi-tech Industry Development Zone will provide certain investment incentives and support for this facility, which will have initial capability to produce up to G10.5+ large area masks and AMOLED products. Construction of this facility was completed in late 2018, and production commenced in the second quarter of 2019. We expect depreciation expense to increase accordingly as production activities continue to ramp up.

In the fourth quarter of 2016, Photronics Singapore Pte, Ltd., a wholly-owned subsidiary, signed an investment agreement with the Administrative Committee of Xiamen Torch Hi-Tech Industrial Development Zone (Xiamen Torch) to establish an IC manufacturing facility in Xiamen, China. Under the terms of the agreement, we will build and operate an IC facility to engage in research and development, manufacture and sale of photomasks, in return for which Xiamen Torch will provide certain investment incentives and support. This expansion is also substantially supported by customer commitments for its output. As discussed above, in the first quarter of fiscal 2018, we entered into a joint venture agreement with DNP, under which they hold a 49.99% ownership interest in this investment. The total investment per the agreement is $160 million, of which approximately $13 million remained for Photronics as of April 28, 2019, and will be funded over the next several quarters with cash and local borrowings. Construction began in 2017 and production is anticipated to commence later in 2019. We expect depreciation expense will increase accordingly as production activities ramp up.

Material Changes in Results of Operations
Three Months ended April 28, 2019, January 27, 2019 and April 29, 2018, and Six Months ended April 28, 2019 and April 29, 2018

The following table presents selected operating information expressed as a percentage of revenue.

	Three Months Ended			Six Months Ended	
	April 28, 2019	January 27, 2019	April 29, 2018	April 28, 2019	April 29, 2018
Revenue	100.0%	100.0%	100.0%	100.0%	100.0%
Cost of goods sold	80.2	79.1	74.9	79.7	76.2
Gross profit	19.8	20.9	25.1	20.3	23.8
Selling, general and administrative expenses	10.1	11.0	10.4	10.6	10.0
Research and development expenses	2.7	3.4	2.9	3.0	3.1
Operating income	7.0	6.5	11.8	6.7	10.7
Other income (expense), net	3.0	0.8	2.5	2.0	(0.3)
Income before income taxes	10.0	7.3	14.3	8.7	10.4
Income tax provision	2.5	1.1	2.7	1.8	0.7
Net income	7.5	6.2	11.6	6.9	9.7
Net income attributable to noncontrolling interests	1.1	2.0	3.4	1.5	3.2
Net income attributable to Photronics, Inc. shareholders	6.4%	4.2%	8.2%	5.4%	6.5%

Note: All of the following tabular comparisons, unless otherwise indicated, are for the three months ended April 28, 2019 (Q2 FY19), January 27, 2019 (Q1 FY19) and April 29, 2018 (Q2 FY18), and for the six months ended April 28, 2019 (YTD FY19) and April 29, 2018 (YTD FY18), in millions of dollars.

Revenue

	Q2 FY19 from Q1 FY19			Q2 FY19 from Q2 FY18		YTD FY19 from YTD FY18		
	Revenue in Q2 FY19	Percent Change	Increase (Decrease)	Percent Change	Increase (Decrease)	Revenue in YTD FY19	Percent Change	Increase (Decrease)
IC								
High-end	$ 38.4	11.2%	$ 3.8	(7.3)%	$ (3.1)	$ 73.0	(2.5)%	$ (1.8)
Mainstream	60.2	(0.3)%	(0.1)	(1.1)%	(0.6)	120.5	(2.1)%	(2.6)
Total IC	$ 98.6	3.9%	$ 3.7	(3.6)%	$ (3.7)	$ 193.5	(2.3)%	$ (4.4)
FPD								
High-end	$ 23.0	6.9%	$ 1.5	25.9%	$ 4.8	$ 44.4	20.0%	$ 7.4
Mainstream	10.0	20.0%	1.7	(2.4)%	(0.3)	18.4	(4.5)%	(0.9)
Total FPD	$ 33.0	10.6%	$ 3.2	15.7%	$ 4.5	$ 62.8	11.6%	$ 6.5
Total Revenue	$ 131.6	5.5%	$ 6.9	0.6%	$ 0.8	$ 256.3	0.8%	$ 2.1

The following tables present revenue changes by geographic area:

	Q2 FY19 from Q1 FY19			Q2 FY19 from Q2 FY18		YTD FY19 from YTD FY18		
	Revenue in Q2 FY19	**Percent Change**	**Increase (Decrease)**	**Percent Change**	**Increase (Decrease)**	**Revenue in YTD FY19**	**Percent Change**	**Increase (Decrease)**
Taiwan	$ 56.6	(2.0)%	$ (1.1)	0.9%	$ 0.5	$ 114.2	1.4%	$ 1.6
Korea	38.0	7.9%	2.8	5.4%	1.9	73.3	6.0%	4.2
United States	26.7	19.0%	4.2	(8.4)%	(2.5)	49.2	(9.2)%	(5.0)
Europe	8.4	1.0%	0.0	(3.6)%	(0.3)	16.8	(2.6)%	(0.4)
China	1.5	457.8%	1.2	505.6%	1.3	1.7	542.2%	1.4
Other	0.4	(33.6)%	(0.2)	(2.4)%	(0.1)	1.1	36.9%	0.3
	$ 131.6	5.5%	$ 6.9	0.6%	$ 0.8	$ 256.3	0.8%	$ 2.1

Our quarterly revenues can be affected by the seasonal purchasing tendencies of our customers. As a result, demand for our products is typically negatively impacted during the first, and sometimes the second, quarters of our fiscal year by the North American, European, and Asian holiday periods, as some of our customers reduce their development and, consequently, their buying activities during those periods.

Revenue increased 5.5% in Q2 FY19, compared with Q1 FY19, as a result of high-end IC and overall FPD growth. High-end IC revenues increased $3.8 million due to increased demand for NAND and foundry DRAM masks in Asia. FPD revenue increased $3.2 million (high-end $1.5 million and mainstream $1.7 million) as demand increased for AMOLED (high-end) and LTPS LCD (mainstream) mobile displays. IC mainstream revenue decreased 0.3%, as demand was slightly softer. High-end photomask applications include mask sets for 28 nanometer and smaller products for IC, and G8 and above and active matrix organic light-emitting diode (AMOLED) display technologies for FPD products. High-end photomasks typically have higher selling prices than mainstream products.

Revenue increased 0.6% in Q2 FY19, compared with Q2 FY18, primarily as a result of high-end FPD growth, which increased 25.9% from Q2 FY18, due to increase demand for AMOLED products. IC revenue decreased 3.6% as demand moderated from the prior year quarter.

Revenue increased 0.8% in YTD Q2 2019, compared with YTD Q2 2018, as high-end FPD revenue, led by an increase in demand for AMOLED display masks, grew 20.0%. Demand for IC masks for both memory and logic applications fell from YTD Q218, as did demand for mainstream FPD masks.

Looking ahead, we expect demand for mobile applications to remain strong, and anticipate that our shipments of high-end large area FPD masks will increase. We recently entered into purchase agreements with a large China-based IC customer (our second such agreement) and two FPD customers, also based in China. Hence, we are optimistic that overall demand for our photomasks will be stable to improving. Our optimism is somewhat tempered by the current uncertainty surrounding China – U.S. trade relations.

Gross Margin

	Three Months Ended					Six Months Ended		
	Q2 FY19	**Q1 FY19**	**Percent Change**	**Q2 FY18**	**Percent Change**	**YTD FY19**	**YTD FY18**	**Percent Change**
Gross profit	$ 26.0	$ 26.1	(0.4)%	$ 32.8	(20.7)%	$ 52.1	$ 60.5	(13.8)%
Gross margin	19.8%	20.9%		25.1%		20.3%	23.8%	

Gross margin decreased 1.1% from Q1 FY19, as the increase in revenue discussed above was offset by increased compensation expense of $0.6 million, primarily the result of Q2 FY19 having three more days than Q1 FY19. Depreciation expense increased $0.9 million from the prior quarter due both to the additional days in Q2 FY19 and the commencement of depreciation of equipment in our China FPD plant, which began production in April 2019. In addition, inbound freight expense increased $0.5 million sequentially, with much of the increase related to the ramp-up of our China FPD plant, as did service contract expenses of $0.4 million, primarily caused by additional equipment being placed under service contracts at our Korea-based facility. Transfers of manufacturing overhead costs to research and development decreased by $1.0 million from last quarter, reflecting a reduction of qualification activity. These increases were somewhat offset by decreased equipment relocation costs of $1.7 million at our IC facility in China, since the relocated equipment is now in place. Material costs were consistent, as a percentage of revenue, in both periods.

Gross margin decreased 5.3% in Q2 FY19 from Q2 FY18, despite a modest 0.6% increase in revenue from the prior year quarter. The decrease was, in significant part, due to increased losses at our two China facilities of $2.3 million, one of which commenced manufacturing operations in April 2019; the other facility is anticipated to commence operations later in the year. Transfers of manufacturing overhead costs to research and development decreased by $0.6 million from the prior year quarter, reflecting a reduction of qualification activity. Depreciation expense decreased $2.3 million from the prior year quarter (the placement of equipment into service at one of our China-based facilities, notwithstanding), as certain equipment in the U.S. and Korea reached the end of their depreciable lives during the period between the two comparative quarters. Service contract expense increased $0.9 million from Q2 FY18 in response to additional equipment placed under service contracts in the U.S. and Korea. Material costs were consistent, as a percentage of revenue, in both periods.

On a year-to-date basis, gross margin decreased 3.5%, with increased losses totaling $5.6 million at our two China-based facilities the most significant cause. Service contract expense increased $1.4 million from Q2 FY18, primarily in response to additional equipment placed under service contracts. These and other individually less-significant increases were marginally offset by a reduction in depreciation expense of $5.2 million, excluding China, as certain tools reached the end of their depreciable lives during the time between the two periods. Material costs were consistent, as a percentage of revenue, in both periods.

Selling, General and Administrative Expenses

Selling, general and administrative expenses decreased $0.5 million, or 3.8%, to $13.3 million in Q2 FY19, from $13.8 million in Q1 FY19, primarily due to decreased non-China compensation related expenses of $0.9 million, which were the result of reduced health insurance costs, share-based compensation expense, and other savings. Smaller increases in other categories somewhat offset these reductions. Selling, general and administrative expenses decreased in Q2 FY19 $0.4 million, or 2.7%, to $13.3 million from $13.6 million in Q2 FY18; the decrease was primarily a result of lower compensation-related expenses of $0.8 million, somewhat offset by costs associated with the opening of our China-based facilities and smaller increases in other categories. On a year-to-date basis, selling, general and administrative expenses increased $1.7 million, or 6.6%, to $27.1 million from $25.4 million. Expenses related to our expansion into China accounted for $1.3 million of this increase, with compensation related expenses of $0.4 million being the largest single component.

Research and Development

Research and development expenses consist of development efforts related to high-end process technologies for 28nm and smaller IC nodes. In Asia, in addition to the focus on high-end IC process technology nodes, G8 and above FPDs and AMOLED applications are also under development.

Research and development expense decreased $0.7 million, or 16.9%, from Q1 FY19, reflecting a decline in IC qualification activities, which was somewhat offset by an increase in FPD qualifications, including initial qualification activities at our China-based FPD facility. Research and development expense was down $0.3 million in Q2 FY19, or 7.2%, lower than Q2 FY18, and $0.1 million or 1.5% in YTD FY19 lower than YTD FY18, as decreased IC-related activity was somewhat offset by initial qualification activity at our China-based FPD facility.

Other Income (Expense), net

	Three Months Ended			Six Months Ended	
	Q2 FY19	**Q1 FY19**	**Q2 FY18**	**YTD FY19**	**YTD FY18**
Interest income and other income (expense), net	$ 4.3	$ 1.6	$ 3.9	$ 5.9	$ 0.3
Interest expense	0.4	0.5	0.6	0.9	1.1
Other income (expense), net	$ 3.9	$ 1.1	$ 3.3	$ 5.0	$ (0.8)

Interest income and other income (expense), net increased from Q1 FY19 by $2.6 million primarily due to a $2.9 million increase in foreign currency exchange gains in Q2 FY19. Interest income and other income (expense), net increased from Q2 FY18 by $0.4 million as a result of increased foreign currency exchange gains of $1.7 million, the effects of which were partially offset by gains on the sale of certain assets in Q2 FY18 of $0.6 million that did not repeat in Q2 FY19, and reduced interest income of $0.4 million, reflecting lower average cash balance in the current year quarter. On a year-to-date basis, Interest income and other income (expense), net increased $5.6 million primarily as a result of the impact of $7.5 million from foreign currency exchange gains in YTD FY19, in contrast to losses incurred in YTD FY18, somewhat offset by the previously-mentioned $0.6 million gain on the sale of certain assets in YTD FY18, and reduced interest income of $0.6 million, due to the lower average cash balance in the current year period.

Interest expense decreased $0.2 million in Q2 FY19 from both Q1 FY19 and Q2 FY18, primarily as a result of the repayment of the $57.5 million convertible senior notes in April 2019. On a year-to-date basis, Interest expense also decreased $0.2 million, which was also principally the result of the repayment of the senior convertible notes.

Income Tax Provision

	Three Months Ended			Six Months Ended	
	Q2 FY19	**Q1 FY19**	**Q2 FY18**	**YTD FY19**	**YTD FY18**
Income tax provision	$ 3.3	$ 1.4	$ 3.5	$ 4.7	$ 1.7
Effective income tax rate	25.0%	15.2%	18.8%	20.9%	6.5%

The effective income tax rate is sensitive to the jurisdictional mix of earnings, due, in part, to the non-recognition of tax benefits on losses in jurisdictions with valuation allowances.

The effective income tax rate increased in Q2 FY19, compared with Q1 FY19, primarily due to the non-recurring impact of an audit settlement accounted for discretely in Q1 FY19 and changes in the jurisdictional mix of earnings. The effective income tax rate increased in Q2 FY19, compared with Q2 FY18 due to changes in the jurisdictional mix of earnings.

The effective income tax rate increased in YTD FY19, compared with YTD FY18, primarily due to Q1 FY18 nonrecurring tax benefits ($4.2 million) related to tax reform in the US and Taiwan, that were partially offset by a one-time audit settlement benefit in Q1 FY19, as well as changes in jurisdictional mix of earnings.

Net (Income) Loss Attributable to Noncontrolling Interests

Net income attributable to noncontrolling interests was $1.4 million in Q2 FY19, which represented a decrease of $1.1 million and $3.2 million from Q1 FY19 and Q2 FY18, respectively. Year-to-date, noncontrolling interests' share decreased $4.2 million from YTD FY18. The changes for all comparative periods were due to changes in net income at our IC manufacturing facilities in Taiwan and China, in which noncontrolling interests hold 49.99% ownership interests.

Liquidity and Capital Resources

Our working capital at the end of Q2 FY19 was $232.7 million, compared with $311.7 million at the end of Q4 FY18. The $79.0 million decrease is primarily attributable to a decrease in our cash and cash equivalents of $104.8 million (net of $57.5 million used to repay our senior convertible notes, which did not impact working capital). Significant factors contributing to the decrease in our cash balance were $114.9 million used to purchase capital assets (the preponderance of which related to equipping our China-based facilities), and $10.7 million to repurchase our common stock. Our working capital increased due to incentives received and receivable from Chinese government authorities of $19.1 million, and reduced accounts payable of $9.0 million, which was predominantly the result of an $8.6 million decrease from Q4 FY18 of amounts we owed for capital equipment purchases. Cash and cash equivalents decreased in fiscal year 2019 by $162.2 million to $167.1 million from $329.3 million at October 31, 2018. Net cash used in operating activities was $2.3 million in YTD FY19, compared with $37.9 million provided in YTD FY18. The unfavorable movement in operating cash flows was largely the result of a $37.3 million increase in prepaid value-added taxes at our two China facilities. These prepayments are recoverable through future sales transactions of the facilities. The favorable effects of foreign currency exchange rates contributed $2.8 million to our reported cash balance at April 28, 2019.

Net cash used in investing activities was $134.8 million in YTD FY19, an increase of $90.9 million from the $43.8 million used in YTD FY18. The increase was primarily attributable to increased capital expenditures of $96.3 million, in excess of ninety percent of which related to the building and equipping of our China facilities. Cash flows from financing activities decreased from funds provided of $12.7 million in YTD FY18 to $28.0 million of funds used in YTD FY19. In YTD FY19, significant uses of cash in finance activities included the $57.5 million repayment (upon their maturity), of our senior convertible notes, dividends of $26.1 million paid to DNP (related to their 49.99% interest in our IC facility in Taiwan), and $10.7 million to acquire our common stock under a share repurchase program. We received cash in YTD FY19 in the forms of a $29.4 million contribution from DNP for their investment in our recently established IC joint venture in China, and loans of $39.6 million to equip and provide working capital for that same facility.

As of April 28, 2019, and October 31, 2018, our total cash and cash equivalents included $134.5 million and $244.5 million, respectively, held by our foreign subsidiaries. The majority of earnings of our foreign subsidiaries are considered to be indefinitely reinvested. Repatriation of these funds to the U.S. may subject them to U.S. state income taxes and local country withholding taxes in certain jurisdictions. Our foreign subsidiaries continue to grow through the reinvestment of earnings in additional manufacturing capacity and capability, particularly in the high-end IC and FPD areas.

As of April 28, 2019, we had capital commitments outstanding of approximately $37 million, nearly all of which related to building and equipping our China facilities (discussed below). We intend to finance our capital expenditures with our working capital, cash generated from operations and, if necessary, additional borrowings. We have entered into a joint venture that is constructing an IC facility in China with an estimated total joint investment of $160 million. Our remaining funding commitment for the joint venture is approximately $13 million which we will fulfill over the next several quarters. In Q2 FY19, we commenced production at our newly constructed FPD facility in China in which, as of April 28, 2019, we had invested $160 million. We believe that our cash on hand, cash generated from operations and amounts available to borrow will be sufficient to meet our cash requirements for the next twelve months. We regularly review the availability and terms at which we might issue additional equity or debt securities in the public or private markets. However, we cannot assure that additional sources of financing would be available to us on commercially favorable terms, should our capital requirements exceed our existing cash, cash generated by operations, and cash available under our credit facilities.

Our liquidity, as we operate in a high fixed cost environment, is highly dependent on our revenue, cash conversion cycle, and the timing of our capital expenditures (which can vary significantly from period to period). Depending on conditions in the semiconductor and FPD markets, our cash flows from operations and current holdings of cash may not be adequate to meet our current and long-term needs for capital expenditures, operations and debt repayments. Historically, in certain years, we have used external financing to fund these needs. Due to conditions in the credit markets and covenant restrictions on our existing debt, some financing instruments we have used in the past may not be available to us when required. Consequently, we cannot assure that additional sources of financing would be available to us on commercially favorable terms, should our long-term cash requirements exceed our existing cash and cash available under our credit facility.

Off-Balance Sheet Arrangements

In January 2018, Photronics, through its wholly-owned Singapore subsidiary, and DNP, through its wholly-owned subsidiary “DNP Asia Pacific PTE, Ltd.” entered into a joint venture under which DNP obtained a 49.99% interest in our IC business in Xiamen, China. The joint venture, known as “Photronics DNP Mask Corporation Xiamen” (“PDMCX”), was established to develop and manufacture photomasks for leading edge and advanced generation semiconductors. Under the Joint Venture Operating Agreement of PDMCX (“the Agreement”), DNP is afforded, under certain circumstances, the right to put its interest in PDMCX to Photronics. These circumstances include disputes regarding the strategic direction of PDMCX that may arise after the initial two-year term of the Agreement that cannot be resolved between the two parties. In addition, both Photronics and DNP have the option to purchase, or put, their interest from, or to, the other party, should their ownership interest fall below 20% for a period of more than six consecutive months. Under all such circumstances, the sales of ownership interests would be at the exiting party’s ownership percentage of the joint venture’s net book value, with closing to take place within three business days of obtaining required approvals and clearance. Should DNP exercise an option to put their, or purchase our, interest in PDMCX we may, depending on the relationship of the fair and book value of PDMCX’s net assets, incur a loss. As of April 28, 2019, Photronics and DNP each had net investments in PDMCX of approximately $44.7 million.

We lease certain office facilities and equipment under operating leases that may require us to pay taxes, insurance and maintenance expenses related to the properties. Certain of these leases contain renewal or purchase options exercisable at the end of the lease terms.

Business Outlook

A majority of our revenue growth is expected to continue to come from the Asia region, predominantly China. In response to this expectation, we have entered into a joint venture that completed the construction of an IC research and development and manufacturing facility in Xiamen, China, in late 2018. Production is anticipated to begin at this facility in the second half of 2019. In addition, in August 2017, we entered into an investment agreement to construct an FPD manufacturing facility in Hefei, China. Construction of this facility was completed in late 2018, and production commenced in the second quarter of 2019.

We make continual assessments of our global manufacturing strategy and monitor our revenue and related cash flows from operations. This ongoing assessment could result in future facility closures, asset redeployments, additional impairments of intangible or long-lived assets, workforce reductions, or the addition of increased manufacturing facilities, all of which would be based on market conditions and customer requirements.

Our future results of operations and the other forward-looking statements contained in this filing involve a number of risks and uncertainties. While various risks and uncertainties were discussed in Part1, Item 1A in our Annual Report on Form 10-K for the year ended October 31, 2018, a number of other unforeseen factors could cause actual results to differ materially from our expectations.

Effect of Recent Accounting Pronouncements

See “Item 1. Condensed Consolidated Financial Statements – Notes to Condensed Consolidated Financial Statements – Note 14 – Recent Accounting Pronouncements” for recent accounting pronouncements that may affect the Company’s financial reporting.

Item 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Foreign Currency Exchange Rate Risk

We conduct business in several major international currencies throughout our worldwide operations, and our financial performance may be affected by fluctuations in the exchange rates of these currencies. Changes in exchange rates can positively or negatively affect our reported revenue, operating income, assets, liabilities, and equity. The functional currencies of our Asian subsidiaries are the South Korean won, the New Taiwan dollar, the Chinese renminbi and the Singapore dollar. The functional currencies of our European subsidiaries are the British pound and the euro. In addition, we have transactions and balances in Japanese yen.

We attempt to minimize our risk of foreign currency transaction losses by producing products in the same country in which the products are sold (thereby generating revenues and incurring expenses in the same currency), and by managing our working capital. However, in some instances, we sell and collect for products in a currency other than the functional currency of the country where it was produced, or purchase products in a currency that differs from the functional currency of the purchasing entity. There can be no assurance that this approach will protect us from the need to recognize significant foreign currency transaction gains and losses, especially in the event of a significant adverse movement in the value of any foreign currency in which we conduct business against any of our functional currencies, including the U.S. dollar.

As of April 28, 2019, a 10% adverse movement in the value of currencies different than the functional currencies of our subsidiaries would have resulted in a net unrealized pre-tax loss of $34.1 million, which represents an increase of $20.9 million from our exposure at October 31, 2018. The increase in foreign currency rate change risk is primarily the result of increased exposures of the Chinese renminbi, South Korean won and New Taiwan dollar against the U.S. dollar. We do not believe that a 10% change in the exchange rates of non-US dollar currencies, other than the aforementioned currencies and the Japanese Yen, would have had a material effect on our April 28, 2019, condensed consolidated financial statements.

Interest Rate Risk

As the Company will be reimbursed for interest incurred on our outstanding variable rate borrowings through incentives afforded to us by government authorities under agreements currently in place, we did not have any interest rate risk as of April 28, 2019.

Item 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

We have established and currently maintain disclosure controls and procedures, as such term is defined in Rules 13a-15(e) and 15d-15(e) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), designed to provide reasonable assurance that information required to be disclosed in reports filed under the Exchange Act, is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission’s rules and forms, and that such information is accumulated and communicated to management, including our chief executive officer and chief financial officer, as appropriate, to allow for timely decisions regarding required disclosure. In designing and evaluating disclosure controls and procedures, management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

Our management, under the supervision and with the participation of our chief executive officer and chief financial officer, evaluated the effectiveness of the design and operation of our disclosure controls and procedures as of the end of the period covered by this report. Based upon that evaluation, our chief executive officer and chief financial officer concluded that our disclosure controls and procedures were effective at a reasonable assurance level as of the end of the period covered by this report.

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting during the second quarter of fiscal year 2019 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1A. RISK FACTORS

There have been no material changes to risks relating to our business as disclosed in Part 1, Item 1A of our Form 10-K for the year ended October 31, 2018**.**

Item 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

Issuer Purchases of Equity Securities

In October 2018, the Company's Board of Directors authorized the repurchase of up to $25 million of its common stock, to have been executed in open-market transactions or in accordance with a repurchase plan under rule 10b5-1 of the Securities Act of 1933 (as amended). The repurchase program was terminated February 1, 2019.

Period	Total Number of Shares Purchased (in millions)	Average Price Paid Per share	Total Number of Shares Purchased as Part of Publicly Announced Program (in millions)	Dollar Value of Shares That May Yet Be Purchased (in millions)
October 12, 2018 – October 31, 2018	0.3	$ 9.45	0.3	$ 21.9
November 1, 2018 – November 25, 2018	0.2	$ 9.49	0.2	$ 20.1
November 26, 2018 – December 23, 2018	0.7	$ 9.38	0.7	$ 13.4
December 24, 2018 – January 27, 2019	0.2	$ 9.41	0.2	$ 11.2*
Total	1.4		1.4	

* The share repurchase program was terminated on February 1, 2019, with no additional shares being purchased subsequent to January 27, 2019.

Item 6. EXHIBITS

(a) Exhibits

Exhibit Number	Description
31.1	Certification of Chief Executive Officer pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of Chief Financial Officer pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1	Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2	Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Photronics, Inc.
(Registrant)

By: /s/ JOHN P. JORDAN

JOHN P. JORDAN
Senior Vice President
Chief Financial Officer
(Principal Accounting Officer/
Principal Financial Officer)

Date: June 5, 2019

EXHIBIT 31.1

I, Peter S. Kirlin, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Photronics, Inc.

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report.

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report.

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ PETER S. KIRLIN

Peter S. Kirlin
Chief Executive Officer
June 5, 2019

EXHIBIT 31.2

I, John P. Jordan, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Photronics, Inc.

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report.

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report.

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

    a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ JOHN P. JORDAN

John P. Jordan
Chief Financial Officer
June 5, 2019

EXHIBIT 32.1

Section 1350 Certification of the Chief Executive Officer

I, Peter S. Kirlin, Chief Executive Officer of Photronics, Inc. (the “Company”), certify, to my knowledge, pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, 18 U.S.C. Section 1350, that:

(1) The Quarterly Report on Form 10-Q of the Company for the quarter ended April 28, 2019 (the “Report”) fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

The foregoing certification is being furnished pursuant to 18 U.S.C. § 1350 and will not be deemed “filed” for purposes of Section 18 of the Exchange Act, or otherwise subject to the liability of that section. Such certification will not be deemed to be incorporated by reference into any filing under the Securities Act or the Exchange Act, except to the extent that the registrant specifically incorporates it by reference.

/s/ PETER S. KIRLIN

Peter S. Kirlin
Chief Executive Officer
June 5, 2019

EXHIBIT 32.2

Section 1350 Certification of the Chief Financial Officer

I, John P. Jordan, Chief Financial Officer of Photronics, Inc. (the "Company"), certify, to my knowledge, pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, 18 U.S.C. Section 1350, that:

(1) The Quarterly Report on Form 10-Q of the Company for the quarter ended April 28, 2019 (the "Report") fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

The foregoing certification is being furnished pursuant to 18 U.S.C. § 1350 and will not be deemed "filed" for purposes of Section 18 of the Exchange Act, or otherwise subject to the liability of that section. Such certification will not be deemed to be incorporated by reference into any filing under the Securities Act or the Exchange Act, except to the extent that the registrant specifically incorporates it by reference.

/s/ JOHN P. JORDAN

John P. Jordan
Chief Financial Officer
June 5, 2019