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 July 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**

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

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 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 ☒

The registrant had 67,196,843 shares of common stock outstanding as of August 30, 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, business, and political conditions in both domestic as well as 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 import and 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)

	July 28, 2019	October 31, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	$ 197,243	$ 329,277
Accounts receivable, net of allowance of $1,382 in 2019 and $1,526 in 2018	134,369	120,515
Inventories	39,982	29,180
Prepaid expenses	10,439	6,901
Other current assets	38,434	16,858
Total current assets	420,467	502,731
Property, plant and equipment, net	636,743	571,781
Intangible assets, net	9,013	12,368
Deferred income taxes	17,498	18,109
Other assets	30,474	5,020
Total assets	$ 1,114,195	$ 1,110,009
LIABILITIES AND EQUITY		
Current liabilities:		
Short-term debt	$ 3,900	$ -
Current portion of long-term debt	2,200	57,453
Accounts payable	87,938	89,149
Accrued liabilities	65,236	44,474
Total current liabilities	159,274	191,076
Long-term debt	43,015	-
Deferred income taxes	518	643
Other liabilities	11,050	13,721
Total liabilities	213,857	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, 70,044 shares issued and 66,349 outstanding at July 28, 2019 and 69,700 shares issued and 67,142 outstanding at October 31, 2018	700	697
Additional paid-in capital	559,437	555,606
Retained earnings	251,491	231,445
Treasury stock, 3,695 shares at July 28, 2019 and 2,558 shares at October 31, 2018	(33,807)	(23,111)
Accumulated other comprehensive loss	(14,427)	(4,966)
Total Photronics, Inc. shareholders' equity	763,394	759,671
Noncontrolling interests	136,944	144,898
Total equity	900,338	904,569
Total liabilities and equity	$ 1,114,195	$ 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		Nine Months Ended	
	July 28, 2019	July 29, 2018	July 28, 2019	July 29, 2018
Revenue	$ 138,112	$ 136,391	$ 394,404	$ 390,616
Cost of goods sold	107,542	100,794	311,721	294,538
Gross profit	30,570	35,597	82,683	96,078
Operating expenses:				
Selling, general and administrative	13,124	12,504	40,186	37,891
Research and development	4,046	2,653	11,852	10,574
Total operating expenses	17,170	15,157	52,038	48,465
Operating income	13,400	20,440	30,645	47,613
Other income (expense):				
Interest income and other income (expense), net	29	1,968	5,955	2,319
Interest expense	(377)	(557)	(1,263)	(1,682)
Income before income taxes	13,052	21,851	35,337	48,250
Income tax provision	3,218	2,054	7,883	3,783
Net income	9,834	19,797	27,454	44,467
Net income attributable to noncontrolling interests	3,487	6,792	7,361	14,899
Net income attributable to Photronics, Inc. shareholders	$ 6,347	$ 13,005	$ 20,093	$ 29,568
Earnings per share:				
Basic	$ 0.10	$ 0.19	$ 0.30	$ 0.43
Diluted	$ 0.10	$ 0.18	$ 0.30	$ 0.41
Weighted-average number of common shares outstanding:				
Basic	66,313	69,374	66,386	69,141
Diluted	66,570	75,258	69,919	75,121

See accompanying notes to condensed consolidated financial statements.

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

	Three Months Ended		Nine Months Ended	
	July 28, 2019	July 29, 2018	July 28, 2019	July 29, 2018
Net income	$ 9,834	$ 19,797	$ 27,454	$ 44,467
Other comprehensive (loss) income, net of tax of $0:				
Foreign currency translation adjustments	(8,882)	(24,572)	(9,364)	(5,583)
Amortization of cash flow hedge	-	-	-	48
Other	28	65	72	86
Net other comprehensive loss	(8,854)	(24,507)	(9,292)	(5,449)
Comprehensive income (loss)	980	(4,710)	18,162	39,018
Less: comprehensive income attributable to noncontrolling interests	2,232	2,019	7,530	12,319
Comprehensive (loss) income attributable to Photronics, Inc. shareholders	$ (1,252)	$ (6,729)	$ 10,632	$ 26,699

See accompanying notes to condensed consolidated financial statements.

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

	Three Months Ended July 28, 2019							
	Photronics, Inc. Shareholders							
	Common Stock		Additional Paid-in Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Loss	Non-controlling Interests	Total Equity
	Shares	Amount						
Balance at April 29, 2019	69,984	$ 700	$ 558,359	$ 245,144	$ (33,807)	$ (6,828)	$ 134,760	$ 898,328
Net income	-	-	-	6,347	-	-	3,487	9,834
Other comprehensive loss	-	-	-	-	-	(7,599)	(1,255)	(8,854)
Sale of common stock through employee stock option and purchase plans	38	-	169	-	-	-	-	169
Restricted stock awards vesting and expense	22	-	636	-	-	-	-	636
Share-based compensation expense	-	-	273	-	-	-	-	273
Repurchase of common stock of subsidiary	-	-	-	-	-	-	(48)	(48)
Balance at July 28, 2019	70,044	$ 700	$ 559,437	$ 251,491	$ (33,807)	$ (14,427)	$ 136,944	$ 900,338

	Three Months Ended July 29, 2018							
	Photronics, Inc. Shareholders							
	Common Stock		Additional Paid-in Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Income	Non-controlling Interests	Total Equity
	Shares	Amount						
Balance at April 30, 2018	69,443	$ 694	$ 552,977	$ 205,953	$ -	$ 23,756	$ 134,686	$ 918,066
Net income	-	-	-	13,005	-	-	6,792	19,797
Other comprehensive loss	-	-	-	-	-	(19,734)	(4,773)	(24,507)
Sale of common stock through employee stock option and purchase plans	39	1	162	-	-	-	-	163
Restricted stock awards vesting and expense	23	-	449	-	-	-	-	449
Share-based compensation expense	-	-	334	-	-	-	-	334
Contribution from noncontrolling interest	-	-	-	-	-	-	5,998	5,998
Purchase of treasury stock	-	-	-	-	(6,787)	-	-	(6,787)
Balance at July 29, 2018	69,505	$ 695	$ 553,922	$ 218,958	$ (6,787)	$ 4,022	$ 142,703	$ 913,513

See accompanying notes to condensed consolidated financial statements.

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

Nine Months Ended July 28, 2019

	Photronics, Inc. Shareholders								
	Common Stock Shares	Common Stock 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	-	-	-	20,093	-	-	7,361	27,454
Other comprehensive (loss) income	-	-	-	-	-	(9,461)	169	(9,292)
Sale of common stock through employee stock option and purchase plans	174	2	961	-	-	-	-	963
Restricted stock awards vesting and expense	170	1	1,853	-	-	-	-	1,854
Share-based compensation expense	-	-	1,017	-	-	-	-	1,017
Contribution from noncontrolling interest	-	-	-	-	-	-	29,394	29,394
Dividends to noncontrolling interest	-	-	-	-	-	-	(44,939)	(44,939)
Repurchase of common stock of subsidiary	-	-	-	-	-	-	(57)	(57)
Purchase of treasury stock	-	-	-	-	(10,696)	-	-	(10,696)
Balance at July 28, 2019	70,044	$ 700	$ 559,437	$ 251,491	$ (33,807)	$ (14,427)	$ 136,944	$ 900,338

Nine Months Ended July 29, 2018

	Photronics, Inc. Shareholders								
	Common Stock Shares	Common Stock Amount	Additional Paid-in Capital	Retained Earnings	Treasury Stock	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	-	-	-	29,568	-	-	14,899	44,467
Other comprehensive loss	-	-	-	-	-	(2,869)	(2,580)	(5,449)
Sale of common stock through employee stock option and purchase plans	702	7	3,755	-	-	-	-	3,762
Restricted stock awards vesting and expense	137	1	1,291	-	-	-	-	1,292
Share-based compensation expense	-	-	1,132	-	-	-	-	1,132
Contribution from noncontrolling interest	-	-	148	-	-	-	17,849	17,997
Dividends to noncontrolling interest	-	-	-	-	-	-	(8,196)	(8,196)
Purchase of treasury stock	-	-	-	-	(6,787)	-	-	(6,787)
Balance at July 29, 2018	69,505	$ 695	$ 553,922	$ 218,958	$ (6,787)	$ 4,022	$ 142,703	$ 913,513

See accompanying notes to condensed consolidated financial statements.

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

	Nine Months Ended	
	July 28, 2019	July 29, 2018
Cash flows from operating activities:		
Net income	$ 27,454	$ 44,467
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation and amortization	60,387	64,485
Changes in assets and liabilities:		
Accounts receivable	(14,185)	(15,097)
Inventories	(15,083)	(8,386)
Other current assets	(9,406)	(9,330)
Accounts payable, accrued liabilities, and other	(25,663)	10,818
Net cash provided by operating activities	23,504	86,957
Cash flows from investing activities:		
Purchases of property, plant and equipment	(160,149)	(64,372)
Government incentives	17,694	-
Other	(24)	313*
Net cash used in investing activities	(142,479)	(64,059)*
Cash flows from financing activities:		
Proceeds from debt	53,227	-
Contribution from noncontrolling interest	29,394	17,997
Repayments of debt	(61,319)	(4,170)
Dividends paid to noncontrolling interest	(26,102)	(8,166)
Purchase of treasury stock	(10,696)	(6,787)
Proceeds from share-based arrangements	1,314	4,028
Other	(92)	(274)
Net cash (used in) provided by financing activities	(14,274)	2,628
Effect of exchange rate changes on cash, cash equivalents, and restricted cash	1,206	(975)*
Net (decrease) increase in cash, cash equivalents, and restricted cash	(132,043)	24,551*
Cash, cash equivalents, and restricted cash at beginning of period	331,989*	310,936*
Cash, cash equivalents, and restricted cash at end of period	$ 199,946	$ 335,487*
Supplemental disclosure information:		
Accrual for property, plant and equipment purchased during the period	$ 20,015	$ 6,958
Accrual for property, plant and equipment purchased with funds receivable from government incentives	$ 11,686	$ -
Subsidiary dividend payable	$ 18,760	$ -

* 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 Nine Months Ended July 28, 2019 and July 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 FPD 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 our fiscal 2019; our IC facility in Xiamen, China, commenced production in the third quarter of our fiscal 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:

	July 28, 2019	October 31, 2018
Raw materials	$ 38,500	$ 25,110
Work in process	1,343	3,402
Finished goods	139	668
	$ 39,982	$ 29,180

NOTE 3 - PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment consists of the following:

	July 28, 2019	October 31, 2018
Land	$ 11,686	$ 11,139
Buildings and improvements	173,234	124,771
Machinery and equipment	1,707,210	1,566,163
Leasehold improvements	19,513	19,577
Furniture, fixtures and office equipment	13,508	12,415
Construction in progress	40,052	128,649
	1,965,203	1,862,714
Accumulated depreciation and amortization	(1,328,460)	(1,290,933)
	$ 636,743	$ 571,781

Depreciation and amortization expense for property, plant and equipment was $20.7 million and $56.9 million in the three- and nine-month periods ended July 28, 2019, respectively, and $18.9 million and $60.8 million in the three- and nine-month periods ended July 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 nine-month period ended July 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, which commenced production in the third quarter of 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 provides to enable us to offer advanced-process technology to our customers. No gain or loss was recorded upon the formation of this joint venture.

The total investment per the PDMCX operating agreement (“the Agreement”) is $160 million. As of July 28, 2019, Photronics and DNP had each contributed cash of approximately $48 million, and PDMCX obtained local financing of $35 million. The remaining $29 million investment will be funded, over the next several quarters, with additional local financing of $15 million and approximately $14 million of cash contributions from Photronics and DNP.

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 twenty percent 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 $1.3 million, and $3.2 million during the three and nine-month periods ended July 28, 2019, respectively, and $0.2 million and $0.9 million in the three and nine-month periods ended July 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 July 28, 2019, was $42.5 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 were 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.

	July 28, 2019		October 31, 2018	
Classification	**Carrying Amount**	**Photronics Interest**	**Carrying Amount**	**Photronics Interest**
Current assets	$ 20,751	$ 10,378	$ 9,625	$ 4,813
Non-current assets	123,015	61,520	43,415	21,708
Total assets	143,766	71,898	53,040	26,521
Current liabilities	15,792	7,898	21,205	10,603
Non-current liabilities	43,015	21,512	20	10
Total liabilities	58,807	29,410	21,225	10,613
Net assets	$ 84,959	$ 42,488	$ 31,815	$ 15,908

NOTE 5 – DEBT

Debt consists of the following:

	July 28, 2019	October 31, 2018
Project Loans	$ 35,419	$ -
Working Capital Loans	13,696	-
3.25% convertible senior notes matured April 2019	-	57,453
	49,115	57,453
Current portion	(6,100)	(57,453)
	$ 43,015	$ -

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 initial approval, pursuant to which PDMCX has and will enter into separate loan agreements ("the Project Loans") for intermittent borrowings. The Project Loans, which are denominated in Chinese renminbi (RMB), are being used to finance certain capital expenditures in China. PDMCX granted liens on its land, building, and certain equipment as collateral for the Project Loans. As of July 28, 2019, PDMCX had borrowed 243.4 million RMB ($35.4 million) against this approval, which includes $9.6 million borrowed during the three-month period ended July 28, 2019. Payments on these borrowings are due semi-annually through December 2025; the initial payment is scheduled for June 2020. The table below presents, in U.S. dollars, the timing of future payments against the borrowings.

	Fiscal Year						
	2020 (all within one year of July 28, 2019)	2021	2022	2023	2024	2025	2026
Principal payments	$ 1,310	$ 6,548	$ 5,838	$ 3,533	$ 6,766	$ 6,476	$ 4,948

The interest rates on the Project Loans are based on the benchmark lending rate of the People's Bank of China (4.9% at July 28, 2019). Interest incurred on the loans will be reimbursed through incentives provided by the Xiamen Torch Hi-Tech Industrial Development Zone, which provide for such reimbursements up to a prescribed limit.

In November 2018, PDMCX received approval for unsecured credit of $25.0 million, pursuant to which PDMCX may enter into separate loan agreements. Under this credit agreement (the "Working Capital Loan"), PDMCX can borrow up to 140.0 million RMB, or approximately $20.4 million, to pay value-added taxes ("VAT") and up to 60.0 million RMB ($8.7 million) to fund operations; combined total borrowings are limited to $25.0 million. Through July 28, 2019, PDMCX borrowed 68.0 million RMB ($9.9 million) to pay VAT. Payments on these borrowings are due semiannually, at an increasing rate, through January 2022; PDMCX made installment payments totaling $0.1 million during the three-month period ended July 28, 2019. The table below presents, in U.S. dollars, the timing of future payments against these borrowings.

	Fiscal Year 2020 (all within one year of July 28, 2019)	Fiscal Year 2021	Fiscal Year 2022
Principal payments	$ 890	$ 1,979	$ 6,927

In addition, during the quarter ended July 28, 2019, PDMCX borrowed 11.4 million RMB ($3.9 million) against this approval to fund operations, with repayments due one year from the borrowing dates.

The interest rates on borrowings to fund operations is approximately 4.6% and interest rates on borrowings to pay VAT are approximately 5.0%; both rates 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 provide for such reimbursements up to a prescribed limit.

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. In April 2019, the entire $57.5 million principal amount was repaid upon maturity.

In September 2018, we entered into a five-year amended and restated credit agreement ("the credit agreement"), which has a $50 million borrowing limit, with an expansion capacity to $100 million. The credit agreement is secured by substantially all of our assets located in the United States and common stock we own in certain foreign subsidiaries. The credit agreement includes minimum interest coverage ratio, total leverage ratio, and minimum unrestricted cash balance covenants (all of which we were in compliance with at July 28, 2019), and limits the amount of dividends, distributions, and redemptions we can pay on our stock to an aggregate amount of $100 million. We had no outstanding borrowings against the credit agreement at July 28, 2019, and $50 million was available for borrowing. The interest rate on the credit agreement (2.5% at July 28, 2019) is based on our total leverage ratio at LIBOR plus a spread, as defined in the credit agreement.

Effective July 25, 2019, the Company entered into a Master Lease Agreement ("MLA") which enables us to request advance payments or other funds for equipment or enter into an equipment lease in the U.S. In connection with this MLA, we were approved for financing of $35 million for the purchase of equipment; as of July 28, 2019, we had no outstanding borrowings against this MLA. In the fourth quarter of fiscal 2019, the financing entity, upon our request, made an advance payment of $3.4 million to an equipment vendor on our behalf. Interest on this borrowing is payable monthly at thirty-day LIBOR plus 1%, and will continue to accrue until the borrowing is repaid or, as allowed under the MLA, we enter into a lease for the equipment. All borrowings under the MLA are secured by the equipment purchased or financed.

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 July 28, 2019, condensed consolidated balance sheet, and condensed consolidated statements of income for the three and nine months ended July 28, 2019, and cash flows for the nine-months ended July 28, 2019.

Condensed Consolidated Balance Sheet
July 28, 2019

	As Reported	Adjustments	Balance without Adoption of Topic 606
Assets			
Accounts receivable	$ 134,369	$ (363)	$ 134,006
Inventory	39,982	4,744	44,726
Other current assets	38,434	(6,209)	32,225
Deferred income taxes	17,498	103	17,601
Liabilities			
Accrued liabilities	$ 65,236	$ 743	$ 65,979
Deferred income taxes	518	(326)	192
Equity			
Photronics, Inc. shareholders’ equity	$ 763,394	$ (1,728)	$ 761,666
Noncontrolling interests	136,944	(414)	136,530

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

	As Reported	Adjustments	Balance without Adoption of Topic 606
Revenue	$ 138,112	$ 340	$ 138,452
Cost of goods sold	107,542	87	107,629
Gross profit	30,570	253	30,823
Provision for taxes	3,218	(15)	3,203
Net income	9,834	238	10,072
Noncontrolling interests	3,487	53	3,540
Income attributable to Photronics, Inc. shareholders	$ 6,347	$ 185	$ 6,532

Condensed Consolidated Statement of Income
Nine Months Ended July 28, 2019

	As Reported	Adjustments	Balance without Adoption of Topic 606
Revenue	$ 394,404	$ (2,180)	$ 392,224
Cost of goods sold	311,721	(987)	310,734
Gross profit	82,683	(1,193)	81,490
Provision for taxes	7,883	(149)	7,734
Net income	27,454	(1,044)	26,410
Noncontrolling interests	7,361	(300)	7,061
Income attributable to Photronics, Inc. shareholders	$ 20,093	$ (744)	$ 19,349

Condensed Consolidated Statement of Cash Flows
Nine Months Ended July 28, 2019

	As Reported	Adjustments	Balance without Adoption of Topic 606
Net Income	$ 27,454	$ (1,044)	$ 26,410
Changes in operating accounts:			
Accounts receivable	$ (14,185)	$ (223)	$ (14,408)
Inventories	(15,083)	(1,268)	(16,351)
Other current assets	(9,406)	1,926	(7,480)
Accounts payable, accrued liabilities, and other	(25,663)	609	(25,054)

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 primarily consist of a significant amount of our work-in-process inventory and fully manufactured photomasks which have not yet shipped, for which 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 $10.2 million are included in “Other” current liabilities in our July 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 nine-month period ended July 28, 2019, and, during the respective three and nine-month periods ended July 28, 2019, we recognized $0.8 million and $1.1 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 derecognize the related receivable. Credit losses incurred on our accounts receivable during the nine-month period ended July 28, 2019 were immaterial.

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 nine-month periods ended July 28, 2019, disaggregated by product type, geographic location, and timing of recognition.

Revenue by Product Type	**Three Months Ended July 28, 2019**	**Nine Months Ended July 28, 2019**
IC		
High-end	$ 38,460	$ 111,455
Mainstream	61,725	182,197
Total IC	$ 100,185	$ 293,652
FPD		
High-end	$ 25,939	$ 70,361
Mainstream	11,988	30,391
Total FPD	$ 37,927	$ 100,752
	$ 138,112	$ 394,404
Revenue by Geographic Location		
Taiwan	$ 61,273	$ 175,482
Korea	37,120	110,395
United States	25,364	74,579
Europe	7,937	24,725
China	5,963	7,693
Other	455	1,530
	$ 138,112	$ 394,404
Revenue by Timing of Recognition		
Over time	$ 122,938	$ 362,078
At a point in time	15,174	32,326
	$ 138,112	$ 394,404

Contract Costs

We pay commissions to third party sales agents for certain sales that they obtain for us. However, the bases of the commissions are 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 24 months. We warrant that our photomasks conform to customer specifications, and will typically repair, replace, or issue a refund, 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 we have reacquired (in the open-market or in private transactions), shares 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 nine-month periods ended July 28, 2019, were $0.9 million and $2.9 million, respectively, and $0.8 million and $2.4 million for the three and nine-month periods ended July 29, 2018, respectively. The Company received cash from option exercises of $0.2 million and $1.0 million for the three and nine-month periods ended July 28, 2019, respectively, and $0.2 million and $3.8 million for the three and nine-month periods ended July 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 an 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 period ended July 28, 2019, and there were 12,000 options granted during the three-month period ended July 29, 2018, with a weighted-average grant-date fair value of $2.84 per share. There were 132,000 share options granted during the nine-month period ended July 28, 2019, with a weighted-average grant-date fair value of $3.31 per share, and 264,000 share options granted during the nine-month period ended July 29, 2018, with a weighted-average grant-date fair value of $2.74 per share. As of July 28, 2019, the total unrecognized compensation cost related to unvested option awards was approximately $1.0 million. That cost is expected to be recognized over a weighted-average amortization period of 2.3 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 nine-month periods ended July 28, 2019 and July 29, 2018, are presented in the following table.

	Three Months Ended		Nine Months Ended	
	July 28, 2019	July 29, 2018	July 28, 2019	July 29, 2018
Volatility	N/A	32.3%	33.1%	31.7%
Risk free rate of return	N/A	2.8%	2.5%-2.9%	2.2%-2.8%
Dividend yield	N/A	0.0%	0.0%	0.0%
Expected term	N/A	5.1 years	5.1 years	5.0 years

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

Options	Shares	Weighted Average Exercise Price	Weighted Average Remaining Contractual Life	Aggregate Intrinsic Value
Outstanding at July 28, 2019	2,366,868	$ 8.95	5.6 years	$ 3,288
Exercisable at July 28, 2019	1,785,201	$ 8.57	4.7 years	$ 3,060

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 an award 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 nine-month period ended July 28, 2019, with a weighted-average grant-date fair value of $9.80 per share. There were no restricted stock awards granted during the three-month periods ended July 28,2019 and July 29, 2018; there were 290,000 restricted stock awards granted during the nine-month period ended July 29, 2018, with a weighted-average grant-date fair value of $8.62 per share. As of July 28, 2019, the total compensation cost not yet recognized related to unvested restricted stock awards was approximately $5.0 million. That cost is expected to be recognized over a weighted-average amortization period of 2.7 years. As of July 28, 2019, there were 676,863 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 24.7% in the three-month period ended July 28, 2019, differs from the U.S. statutory rate of 21.0%, 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 22.3% in the nine-month period ended July 28, 2019, differs from the U.S. statutory rate of 21.0%, 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 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 $1.2 million at July 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 July 28, 2019 and October 31, 2018. The year-to-date reduction in the amount primarily resulted from the settlement of a tax audit in Taiwan in the first quarter of 2019. 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 $0.4 million, and $1.5 million in the three and nine-month periods ended July 28, 2019, and $1.1 and $1.8 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 July 28, 2019, and one cent per share for the nine-month periods ended July 28, 2019 and July 29, 2018, and the three-month period ended July 29, 2018.

The effective tax rates of 9.4% and 7.8% in the three and nine-month periods ended July 29, 2018, differ from the post U.S. Tax Reform blended statutory rate of 23.4%, primarily due to benefits from U.S. and Taiwan Tax Reform (as discussed below), earnings being taxed at lower statutory rates in foreign jurisdictions, the benefits of various investment credits in a foreign jurisdiction, a tax holiday in Taiwan, and changes in unrecognized tax benefits related to an audit settlement and an assessment statute expiration.

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 its 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		Nine Months Ended	
	July 28, 2019	July 29, 2018	July 28, 2019	July 29 2018
Net income attributable to Photronics, Inc. shareholders	$ 6,347	$ 13,005	$ 20,093	$ 29,568
Effect of dilutive securities:				
Interest expense on convertible notes, net of tax	-	496	845	1,488
Earnings used for diluted earnings per share	$ 6,347	$ 13,501	$ 20,938	$ 31,056
Weighted-average common shares computations:				
Weighted-average common shares used for basic earnings per share	66,313	69,374	66,386	69,141
Effect of dilutive securities:				
Convertible notes	-	5,542	3,147	5,542
Share-based payment awards	257	342	386	438
Potentially dilutive common shares	257	5,884	3,533	5,980
Weighted-average common shares used for diluted earnings per share	66,570	75,258	69,919	75,121
Basic earnings per share	$ 0.10	$ 0.19	$ 0.30	$ 0.43
Diluted earnings per share	$ 0.10	$ 0.18	$ 0.30	$ 0.41

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		Nine Months Ended	
	July 28, 2019	July 29, 2018	July 28, 2019	July 29, 2018
Potentially dilutive shares excluded	1,979	1,873	1,415	1,826

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 nine-month periods ended July 28, 2019 and July 29, 2018.

	Three Months Ended July 28, 2019		
	Foreign Currency Translation Adjustments	Other	Total
Balance at April 29, 2019	$ (6,212)	$ (616)	$ (6,828)
Other comprehensive (loss) income	(8,882)	28	(8,854)
Less: other comprehensive (loss) income attributable to noncontrolling interests	(1,269)	14	(1,255)
Balance at July 28, 2019	$ (13,825)	$ (602)	$ (14,427)

	Three Months Ended July 29, 2018		
	Foreign Currency Translation Adjustments	Other	Total
Balance at April 30, 2018	$ 24,433	$ (677)	$ 23,756
Other comprehensive (loss) income	(24,572)	65	(24,507)
Less: other comprehensive (loss) income attributable to noncontrolling interests	(4,806)	33	(4,773)
Balance at July 29, 2018	$ 4,667	$ (645)	$ 4,022

	Nine Months Ended July 28, 2019		
	Foreign Currency Translation Adjustments	Other	Total
Balance at November 1, 2018	$ (4,328)	$ (638)	$ (4,966)
Other comprehensive (loss) income	(9,364)	72	(9,292)
Less: other comprehensive income attributable to noncontrolling interests	133	36	169
Balance at July 28, 2019	$ (13,825)	$ (602)	$ (14,427)

	Nine Months Ended July 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 (loss) income before Reclassifications	(5,583)	-	86	(5,497)
Amounts reclassified from accumulated other comprehensive income	-	48	-	48
Net current period other comprehensive (loss) income	(5,583)	48	86	(5,449)
Less: other comprehensive (loss) income attributable to noncontrolling interests	(2,623)	-	43	(2,580)
Balance at July 29, 2018	$ 4,667	$ -	$ (645)	$ 4,022

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 values due to their short-term maturities. The fair values of our variable rate debt instruments is a Level 2 measurement and approximates their carrying values due to the variable nature of the underlying interest rates. The fair values 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 July 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 April 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.

	Nine Months Ended July 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

In August 2019, the Company's board of directors authorized the repurchase of up to $100 million of its common stock, to be executed in accordance with a repurchase plan under rule 10b5-1 of the Securities Act of 1933 (as amended). The authorization does not obligate the Company to repurchase any dollar amount or number of shares of common stock, and the repurchase program may be suspended or discontinued at any time.

NOTE 13 - COMMITMENTS AND CONTINGENCIES

As of July 28, 2019, the Company had commitments outstanding for capital expenditures of approximately $100 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 Financial Accounting Standards Board ("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 model, found in current GAAP, with an expected credit loss model; the new model 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. 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)", 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 our lease portfolio, system process and policy change requirements. The Company has made progress in drafting new lease accounting policies, and is gathering the necessary data elements for the lease population.

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 was effective for us in our first quarter of fiscal year 2019 and applied on a modified retrospective transition basis. Please see Note 8 for a discussion of the effects of adopting this 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 of, and adjustments to, these items were 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 July 28, 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, microelectronic 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 microelectronic 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 after receipt of an order, sometimes within twenty-four 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 fourth quarter of fiscal 2019, the Company’s board of directors authorized the repurchase of up to $100 million of its common stock, to be executed in accordance with a repurchase plan under rule 10b5-1 of the Securities Act of 1933 (as amended). The authorization does not obligate the Company to repurchase any dollar amount or number of shares of common stock, and the repurchase program may be suspended or discontinued at any time.

Effective the third quarter of fiscal 2019, the Company entered into a Master Lease Agreement (“MLA”) which enables us to request advance payments or other funds for equipment or enter into an equipment lease in the U.S. In connection with this MLA, we were approved for financing of $35 million for the purchase of equipment; as of July 28, 2019, we had no outstanding borrowings against this MLA. In the fourth quarter of fiscal 2019, the financing entity, upon our request, made an advance payment of $3.4 million to an equipment vendor on our behalf. Interest on this borrowing is payable monthly at thirty-day LIBOR plus 1%, and will continue to accrue until the borrowing is repaid or, as allowed under the MLA, we enter into a lease for the equipment. All borrowings under the MLA are secured by the equipment purchased or financed.

In the second quarter of fiscal 2019, we repaid, upon maturity, the entire $57.5 million principal amount of the convertible senior notes we issued in April 2016.

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, will be paid to noncontrolling interests in the fourth quarter of fiscal 2019.

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 the first quarter of fiscal 2019, PDMCX was approved for credit of $50 million, subject to certain limitations related to PDMCX registered capital at the time of the initial approval, pursuant to which PDMCX has and will enter into separate loan agreements (“the Project Loans”) for intermittent borrowings. The Project Loans, which are denominated in Chinese renminbi (RMB), are being used to finance certain capital expenditures in China. PDMCX granted liens on its land, building, and certain equipment as collateral for the Project Loans. As of July 28, 2019, PDMCX had borrowed 243.4 million RMB ($35.4 million) against this approval, which includes $9.6 million borrowed during the three-month period ended July 28, 2019. See Note 5 of the condensed consolidated financial statements for additional information on these loans.

In the first quarter of fiscal 2019, PDMCX received approval for unsecured credit of $25.0 million, pursuant to which PDMCX may enter into separate loan agreements. Under this credit agreement (the “Working Capital Loan”), PDMCX can borrow up to 140.0 million RMB, or approximately $20.4 million, to pay value-added taxes (“VAT”) and up to 60.0 million RMB ($8.7 million) to fund operations; combined total borrowings are limited to $25.0 million. During the quarter ended July 28, 2019, PDMCX borrowed 11.4 million RMB ($3.9 million) to fund operations, with repayments due one year from their borrowing dates. Through July 28, 2019, PDMCX borrowed 68.0 million RMB ($9.9 million) to pay VAT, and repaid $0.1 million as of that date. Payments on these borrowings are due semiannually, at an increasing rate, through January 2022. See Note 5 of the condensed consolidated financial statements for additional information on these loans.

In the fourth quarter of fiscal 2018, we entered into a five year amended and restated credit agreement (“the credit agreement”), which has a $50 million borrowing limit, with an expansion capacity to $100 million. The credit agreement is secured by substantially all of our assets located in the United States and common stock we own in certain foreign subsidiaries. The credit agreement includes minimum interest coverage ratio, total leverage ratio, and minimum unrestricted cash balance covenants (all of which we were in compliance with at July 28, 2019), and limits the amount of dividends, distributions, and redemptions we can pay on our stock to an aggregate amount of $100 million. We had no outstanding borrowings against the credit agreement at July 28, 2019, and $50 million was available for borrowing. The interest rate on the credit agreement (2.5% at July 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 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, under rule 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 third quarter of fiscal 2018, the Company’s board of directors authorized the repurchase of up to $20 million of its common stock, which was effectuated 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 July 10, 2018, and ended in October 2018. In total, under this program, we repurchased 2.2 million shares at a cost of $20 million (an average of $8.97 per share).

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. 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 had met the minimum investment requirement and satisfied the terms of the agreement. Hefei State Hi-tech Industry Development Zone is providing certain investment incentives and support for this facility, which has the 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.

Material Changes in Results of Operations
Three and Nine Months ended July 28, 2019

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

	Three Months Ended			Nine Months Ended	
	July 28, 2019	April 28, 2019	July 29, 2018	July 28, 2019	July 29, 2018
Revenue	100.0%	100.0%	100.0%	100.0%	100.0%
Cost of goods sold	77.9	80.2	73.9	79.0	75.4
Gross profit	22.1	19.8	26.1	21.0	24.6
Selling, general and administrative expenses	9.5	10.1	9.2	10.2	9.7
Research and development expenses	2.9	2.7	1.9	3.0	2.7
Operating income	9.7	7.0	15.0	7.8	12.2
Other (expense) income, net	(0.2)	3.0	1.0	1.2	0.2
Income before income taxes	9.5	10.0	16.0	9.0	12.4
Income tax provision	2.4	2.5	1.5	2.0	1.0
Net income	7.1	7.5	14.5	7.0	11.4
Net income attributable to noncontrolling interests	2.5	1.1	5.0	1.9	3.8
Net income attributable to Photronics, Inc. shareholders	4.6%	6.4%	9.5%	5.1%	7.6%

Note: All of the following tabular comparisons, unless otherwise indicated, are for the three months ended July 28, 2019 (Q3 FY19), April 28, 2019 (Q2 FY19) and July 29, 2018 (Q3 FY18), and for the nine months ended July 28, 2019 (YTD FY19) and July 29, 2018 (YTD FY18), in millions of dollars.

Revenue

The following tables present revenue changes by product type and geographic areas. Columns may not total due to rounding.

	Q3 FY19 from Q2 FY19			Q3 FY19 from Q3 FY18		YTD FY19 from YTD FY18		
	Revenue in Q3 FY19	Increase (Decrease)	Percent Change	Increase (Decrease)	Percent Change	Revenue in YTD FY19	Increase (Decrease)	Percent Change
IC								
High-end	$ 38.5	$ 0.0	0.1%	$ (7.6)	(16.5)%	$ 111.5	$ (9.5)	(7.8)%
Mainstream	61.7	1.6	2.6%	0.6	0.9%	182.2	(2.1)	(1.1)%
Total IC	$ 100.2	$ 1.6	1.6%	$ (7.1)	(6.6)%	$ 293.7	$ (11.5)	(3.8)%
FPD								
High-end	$ 25.9	$ 3.0	13.0%	$ 8.9	52.0%	$ 70.4	$ 16.3	30.1%
Mainstream	12.0	2.0	19.4%	(0.1)	(0.7)%	30.4	(1.0)	(3.0)%
Total FPD	$ 37.9	$ 4.9	15.0%	$ 8.8	30.1%	$ 100.8	$ 15.3	17.9%
Total Revenue	$ 138.1	$ 6.5	5.0%	$ 1.7	1.3%	$ 394.4	$ 3.8	1.0%

	Q3 FY19 from Q2 FY19			Q3 FY19 from Q3 FY18		YTD FY19 from YTD FY18		
	Revenue in Q3 FY19	Increase (Decrease)	Percent Change	Increase (Decrease)	Percent Change	Revenue in YTD FY19	Increase (Decrease)	Percent Change
Taiwan	$ 61.3	$ 4.8	8.5%	$ (0.8)	(1.3)%	$ 175.5	$ 0.7	0.4%
Korea	37.1	(0.9)	(2.4)%	(0.1)	(0.3)%	110.4	4.1	3.8%
United States	25.4	(1.4)	(5.2)%	(2.4)	(8.5)%	74.6	(7.4)	(9.0)%
Europe	7.9	(0.5)	(5.9)%	(0.6)	(7.0)%	24.7	(1.0)	(4.0)%
China	6.0	4.5	306.4%	5.7	2,225.3%	7.7	7.2	1,363.0%
Other	0.5	0.0	6.2%	(0.1)	(17.4)%	1.5	0.2	14.5%
	$ 138.1	$ 6.5	5.0%	$ 1.7	1.3%	$ 394.4	$ 3.8	1.0%

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. 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 (ASPs) than mainstream products.

Revenue increased 5.0% in Q3 FY19, compared with Q2 FY19, as a result of overall FPD and IC growth. FPD revenue increased 15% due to increased demand for AMOLED products, as our customers in Korea and China continued to release new designs, and we benefited from an increase in capacity as we ramp production in China, including for G10.5+ photomasks. IC revenue increased 1.6% due to increased demand from Asian foundries for mainstream nodes.

Revenue increased 1.3% in Q3 FY19, compared with Q3 FY18, as increased FPD revenues offset a decline in IC. FPD revenues increased 30.1% primarily due to significantly increased demand for AMOLED products. We also ramped production of G10.5+ photomasks at our new facility in China. IC revenue decreased 6.6% from the prior year quarter, due in part to the geopolitical conditions in Asia tempering growth in that region.

Revenue increased 1.0% in YTD FY19, compared with YTD FY18, as increased demand for AMOLED products offset a moderate decline in IC demand and a more substantial decrease in demand for other high-end FPD products (excluding G10.5+ masks). Demand for IC was notably strong from both foundries and customers with captive mask shops in YTD FY18.

Looking forward, we expect demand for both AMOLED and large format FPD masks (i.e. G10.5+) to increase, as more panel fabrication facilities begin production and new design releases occur at both new and existing facilities. High-end IC is expected to be stable to improving, but growth may be temporarily forestalled in Asia due to the effects of the current state of U.S. – China trade relations, as well as rising tensions between Japan and Korea, which may present supply-chain challenges for some of our customers. Despite these issues, we believe that the IC and FPD markets in Asia represent long-term growth opportunities.

Gross Margin

	Three Months Ended					Nine Months Ended		
	Q3 FY19	Q2 FY19	Percent Change	Q3 FY18	Percent Change	YTD FY19	YTD FY18	Percent Change
Gross profit	$ 30.6	$ 26.0	17.5%	$ 35.6	(14.1)%	$ 82.7	$ 96.1	(13.9)%
Gross margin	22.1%	19.8%		26.1%		21.0%	24.6%	

Gross margin increased 2.3% from Q2 FY19, primarily as a result of the $6.5 million increase in revenue discussed above. Reduced compensation and related expenses of $0.3 million, and an increase of $0.6 million of overhead costs transferred to research and development expense, also favorably impacted gross margin. Somewhat offsetting these favorable impacts, depreciation expense increased $2.2 million in Q3 FY19, as we recognized a full quarter of depreciation for assets placed in service at our China FPD plant and commenced depreciation on a significant number of assets at our China IC plant. In addition, equipment costs, primarily related to tool relocations to our China facilities, increased $0.6 million from the prior quarter. On a consolidated basis, material costs, as a percentage of revenue, sequentially increased 1.7%, primarily due to changes in product mix.

Gross margin decreased 4.0% in Q3 FY19 from Q3 FY18, despite a 1.3% increase in revenue from the prior year quarter. The decrease was, in significant part, due to increased losses at our two China facilities of $6.3 million, both of which recently commenced manufacturing operations. The increased losses at the China facilities were, to a great degree, caused by increased depreciation expense of $2.8 million, as depreciation commenced on equipment when it achieved customer qualification, which precedes revenue generation. Compensation and related expenses at the China facilities increased by $0.9 million from the prior year quarter, reflecting the increased staffing required for qualification and production.

On a year-to-date basis, gross margin decreased 3.6%, with increased losses totaling $9.8 million at our two China-based facilities constituting the most significant causes; our FPD facility in China commenced production late in Q2 FY19, and our IC facility commenced production in Q3 FY19.

Selling, General and Administrative Expenses

Selling, general and administrative expenses decreased $0.1 million, or 1.1%, to $13.1 million in Q3 FY19, from $13.3 million in Q2 FY19, primarily due to decreased general and administrative expenses of $0.3 million, partially offset by increased selling expenses in China. Selling, general and administrative expenses increased in Q3 FY19 $0.6 million, or 5.0%, to $13.1 million from $12.5 million in Q3 FY18. Selling general and administrative expenses incurred in China increased $0.7 million from the prior year quarter, reflecting the completion of construction and commencement of operations at our two China facilities. On a year-to-date basis, selling, general and administrative expenses increased $2.3 million, or 6.1%, to $40.2 million from $37.9 million. Expenses related to our expansion into China accounted for $2.0 million of this increase; increased compensation and related expenses at other sites comprised an additional $0.2 million of the total increase.

Research and Development Expenses

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 expenses increased $0.5 million, or 14.2%, from Q2 FY19, reflecting an increase in IC related qualification activities somewhat offset by decreased qualification activities in FPD (except China). Research and development expenses increased $1.4 million in Q3 FY19, or 52.5% from Q3 FY18; increased IC related qualification activities accounted for the preponderance of the change, with most of the remainder being attributable to qualification activities at our China FPD facility. On a year-to-date basis, research and development expenses increased $1.3 million, or 12.1%, as qualification related expenses increased for both IC and FPD products.

Other Income (Expense), net

	Three Months Ended			Nine Months Ended	
	Q3 FY19	**Q2 FY19**	**Q3 FY18**	**YTD FY19**	**YTD FY18**
Interest income and other income (expense), net	$ -	$ 4.3	$ 2.0	$ 6.0	$ 2.3
Interest expense	(0.4)	(0.4)	(0.6)	(1.3)	(1.7)
Other income (expense), net	$ (0.4)	$ 3.9	$ 1.4	$ 4.7	$ 0.6

Interest income and other income (expense), net decreased from Q2 FY19 by $4.3 million, primarily due to a $4.0 million negative change in foreign currency exchange results. Interest income and other income (expense), net decreased from Q3 FY18 by $2.0 million, primarily because of a $1.2 million negative change in foreign currency exchange results and decreased interest income of $0.4 million, which was due to our lower average cash balance in the current year period. On a year-to-date basis, Interest income and other income (expense), net, increased $3.7 million, primarily because of the impact of $6.2 million from foreign currency exchange gains in YTD FY19, in contrast to losses incurred in YTD FY18. The effect of the foreign exchange gains was somewhat offset by government incentives of $0.8 million received, a $0.6 million gain on the sale of certain assets recognized in YTD FY18, and reduced interest income of $1.1 million, due to the lower average cash balance in the current year period.

Interest expense was $0.4 million in Q3 FY19, unchanged from Q2 FY19. Interest expense decreased $0.2 million in Q3 FY19 from Q3 FY18, and $0.4 million in YTD FY19 from YTD FY18, primarily due to the repayment of our $57.5 million convertible senior notes in April 2019; interest incurred on our loans in China partially offset these reductions.

Income Tax Provision

	Three Months Ended			Nine Months Ended	
	Q3 FY19	Q2 FY19	Q3 FY18	YTD FY19	YTD FY18
Income tax provision	$ 3.2	$ 3.3	$ 2.1	$ 7.9	$ 3.8
Effective income tax rate	24.7%	25.0%	9.4%	22.3%	7.8%

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 decreased in Q3 FY19, compared with Q2 FY19, primarily due to changes in the jurisdictional mix of earnings. The effective income tax rate increased in Q3 FY19, compared with Q3 FY18, due to changes in the jurisdictional mix of earnings and nonrecurring tax benefits related to a settlement with a taxing authority and a statute of limitations expiration in Q3 FY18.

The effective income tax rate increased in YTD FY19, compared with YTD FY18, primarily due to our recognition in YTD FY18 of nonrecurring tax benefits related to tax reform in the U.S. and Taiwan of $4.2 million, and a one-time audit settlement benefit of $1.9 million. The year-over-year increase in the effective tax rate was somewhat tempered by a one-time audit settlement benefit of $0.9 million in YTD FY19, as well as changes in the jurisdictional mix of earnings.

Net Income Attributable to Noncontrolling Interests

Net income attributable to noncontrolling interests was $3.5 million in Q3 FY19, which represented an increase of $2.1 million and a decrease $3.3 million from Q2 FY19 and Q3 FY18, respectively. Year-to-date, noncontrolling interests' share decreased $7.5 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 Q3 FY19 was $261.2 million, compared with $311.7 million at the end of fiscal 2018. The $50.5 million net decrease is primarily attributable to:

- Decreased cash and cash equivalents of $74.5 million (net of $57.5 million used to repay our convertible senior notes, which had no impact on working capital);
- Increased inventories of $10.8 million, the predominance of which was to supply our China FPD facility and,
- Receivables for investment subsidies in China of $11.9 million at the end of Q3 FY19.

We had cash and cash equivalents of $197.2 million at the end of Q3 FY19, compared with $329.3 million at the end of fiscal 2018. The net decrease is primarily attributable to:

- $57.5 million used to repay our convertible notes;
- $160.1 million used to purchase capital assets (the preponderance of which related to equipping our China-based facilities);
- $10.7 million used to repurchase our common stock;
- $53.2 million received from borrowings in China;
- $17.7 million received from investment incentives in China and,
- $23.5 million provided by operating activities.

The net cash provided by operating activities of $23.5 million in YTD FY19 decreased $63.5 million, from $87.0 million provided in YTD FY18. The net decrease was due primarily to:

- Lower net income of $17.0 million in YTD FY19;
- A greater increase in the change in inventories balances of $6.7 million in YTD FY19 (primarily attributable to the stocking of our FPD facility in China) and,
- A comparative increase in value added tax prepayments related to our China facilities of $24.3 million in YTD FY19. These prepayments are recoverable through future sales transactions of the facilities.

The favorable effects of foreign currency exchange rates contributed $1.2 million to our reported cash balance at July 28, 2019.

Net cash used in investing activities was $142.5 million in YTD FY19, an increase of $78.4 million from the $64.1 million used in YTD FY18. The net increase was primarily attributable to increased capital expenditures of $95.8 million, the predominance of which related to the building and equipping of our China facilities. Partially offsetting the increased capital expenditures was $17.7 million received in China from investment incentives.

Net cash flows from financing activities decreased from funds provided of $2.6 million in YTD FY18 to $14.3 million of funds used in YTD FY19. Significant components of the net decrease were:

- $57.5 million used to repay (upon their maturity) our convertible senior notes;
- $26.1 million used to pay dividends to DNP (related to their 49.99% interest in our IC facility in Taiwan);
- $10.7 million used to acquire our common stock under a share repurchase program;
- $53.2 million received from borrowings in China and,
- $29.4 million contributed by DNP for their investment in our recently established IC joint venture in China.

As of July 28, 2019, and October 31, 2018, our total cash and cash equivalents included $153.9 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. Furthermore, 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 July 28, 2019, we had capital commitments outstanding of approximately $100 million, much 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 entered into a joint venture that constructed an IC facility in China with an estimated total joint investment of $160 million. Our remaining funding commitment for the joint venture is approximately $7 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 July 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 requirements exceed our existing cash, cash generated by operations, and cash available under our credit agreement.

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 agreements.

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 July 28, 2019, Photronics and DNP each had net investments in PDMCX of approximately $42.5 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 commenced at this facility in Q3 FY19. 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. These ongoing assessments could result in future facility closures, asset redeployments, 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 transact in a number of different 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 engage in transactions and have exposures to the 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. In addition, to the extent practicable, we attempt to reduce our exposure to foreign currency exchange fluctuations by converting cash and cash equivalents into the functional currency of the subsidiary which holds the cash. We may also enter into derivative contracts to mitigate our exposure to foreign currency fluctuations when we have a significant purchase obligation or significant receivable denominated in a currency that differs from the transacting subsidiaries’ functional currencies. We do not enter into derivatives for speculative purposes. There can be no assurance that our attempts to minimize our foreign currency exchange rate risks 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 July 28, 2019, a 10% adverse movement in the value of currencies different than the functional currencies of the Company or its subsidiaries would have resulted in a net unrealized pre-tax loss of $34.0 million, which represents an increase of $20.8 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 July 28, 2019, condensed consolidated financial statements.

Interest Rate Risk

A 10% adverse movement in the interest rates on our variable rate borrowings would not have had a material effect on our July 28, 2019, condensed consolidated financial statements.

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 third quarter of fiscal year 2019 that has materially affected, or is reasonably likely to materially effect, 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 on February 1, 2019.

	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)
Period				
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 5. OTHER INFORMATION

Effective July 25, 2019, the Company entered into a Master Lease Agreement ("MLA") with Banc of America Leasing and Capital LLC (the Company received the MLA fully executed by the counter party on September 3, 2019) which enables us to request advance payments or other funds for equipment or enter into an equipment lease in the U.S. In connection with this MLA, we were approved for financing of $35 million for the purchase of equipment; as of July 28, 2019, we had no outstanding borrowings against this MLA. In the fourth quarter of fiscal 2019, the financing entity, upon our request, made an advance payment of $3.4 million to an equipment vendor on our behalf. Interest on this borrowing is payable monthly at thirty-day LIBOR plus 1%, and will continue to accrue until the borrowing is repaid or, as allowed under the MLA, we enter into a lease for the equipment. All borrowings under the MLA are secured by the equipment purchased or financed.

Item 6. EXHIBITS

Exhibit Number	Description	Incorporated by Reference: Form	File Number	Exhibit	Filing Date	Filed or Furnished Herewith
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.					X
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.					X
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.					X
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.					X
10.28	Master Lease Agreement Number: 48869-90000 between the Company and Banc of America Leasing & Capital, LLC dated July 25, 2019					X
101.INS	XBRL Instance Document					X
101.SCH	XBRL Taxonomy Extension Schema Document					X
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document					X
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document					X
101.LAB	XBRL Taxonomy Extension Label Linkbase Document					X
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document					X

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: September 4, 2019

Banc of America Leasing & Capital, LLC

Master Lease Agreement Number: 48869-90000

This Master Lease Agreement, dated as of July 25, 2019 (this "**Agreement**"), is by and between **Banc of America Leasing & Capital, LLC**, a Delaware limited liability company having an office at 3400 Pawtucket Avenue, Riverside, RI 02915 (together with its successors and assigns, "**Lessor**"), and **Photronics, Inc.** as "**Lessee**", a corporation existing under the laws of the state of Connecticut, and having its chief executive office and any organizational identification number as specified with its execution of this Agreement below. **Certain defined terms used herein are identified in bold face and quotation marks throughout this Agreement and in Section 15 below.** This Agreement sets forth the terms and conditions for the lease of Equipment between Lessor and Lessee pursuant to one or more "**Schedules**" incorporating by reference the terms of this Agreement, together with all exhibits, addenda, schedules, certificates, riders and other documents and instruments executed and delivered in connection with such Schedule (as amended from time to time, a "**Lease**"). Each Lease constitutes a separate, distinct and independent lease of Equipment and contractual obligation of Lessee. This Agreement is not an agreement or commitment by Lessor or Lessee to enter into any future Leases or other agreements, or for Lessor to provide any financial accommodations to Lessee. Lessor shall not be obligated under any circumstances to advance any progress payments or other funds for any Equipment or to enter into any Lease if there shall have occurred a material adverse change in the operations, business, properties or condition, financial or otherwise, of Lessee or any Guarantor. This Agreement and each Lease shall become effective only upon Lessor's acceptance and execution thereof at its corporate offices set forth above.

1. **Lease; Term; Non-Interference.** Lessor and Lessee agree to lease Equipment described in Schedules entered into from time to time, together with all other documentation from Lessee required by Lessor with respect to such Lease. Upon receipt of any item or group of Equipment intended for Lease hereunder, Lessee shall execute a Schedule, with all information fully completed and irrevocably accepting such Equipment for Lease, and deliver such Schedule to Lessor for its review and acceptance. Provided no Event of Default has occurred, Lessee shall be entitled to use and possess the Equipment during the original Lease Term provided in the Schedule (together with any extensions or renewals thereof in accordance with terms of the Lease, the "**Lease Term**") free from interference by any person claiming by, through or under Lessor.

2. **Rent.** "**Rent**" shall be payable to Lessor during the Lease Term in the amounts and at the times provided in the Schedule. If any Rent or other amount payable hereunder is not paid within 10 days of its due date, Lessee shall pay an administrative late charge of 5% of the amount not timely paid. All Rent and other amounts payable under a Lease shall be made in immediately available funds at Lessor's address above or such other place as Lessor shall specify in writing. Unless otherwise provided herein, payments received under any Lease will be applied to all interest, fees and amounts owing thereunder (other than Rent), and then to Rent payable thereunder.

3. **Net Lease; Disclaimer Of Warranties.** Each Lease is a net lease and a "finance lease" under Article 2A of the UCC, and Lessee waives all rights and remedies Lessee may have under sections 2A-508 – 2A-522 thereof, including any right to cancel or repudiate any Lease or to reject or revoke acceptance of any Equipment. Upon the "**Acceptance Date**" provided in the Schedule for each Lease, Lessee's Obligations thereunder (i) shall be non-cancelable, absolute and unconditional under all circumstances for the entire Lease Term, (ii) shall be unaffected by the loss or destruction of any Equipment, and (iii) shall not be subject to any abatement, deferment, reduction, set-off, counterclaim, recoupment or defense for any reason whatsoever. LESSOR IS NOT A VENDOR OR AGENT OF THE EQUIPMENT VENDOR, AND HAS NOT ENGAGED IN THE SALE OR DISTRIBUTION OF ANY EQUIPMENT. LESSOR MAKES NO EXPRESS OR IMPLIED REPRESENTATIONS OR WARRANTIES AS TO TITLE, MERCHANTABILITY, PERFORMANCE, CONDITION, EXISTENCE, FITNESS OR SUITABILITY FOR LESSEE'S PURPOSES OF ANY EQUIPMENT, PATENT, TRADEMARK OR COPYRIGHT INFRINGEMENTS, THE CONFORMITY OF THE EQUIPMENT TO THE DESCRIPTION THEREOF IN ANY LEASE, OR ANY OTHER REPRESENTATION OR WARRANTY OF ANY KIND WITH RESPECT TO THE EQUIPMENT. If Equipment is not delivered or properly installed, does not operate as warranted, becomes obsolete, or is unsatisfactory for any reason, Lessee shall make all claims on account thereof solely against Vendor and not against Lessor. Lessee is solely responsible for the selection, shipment, delivery and installation of the Equipment and its Vendors, expressly disclaims any reliance upon any statements or representations made by Lessor in connection therewith, and has received and approved the terms of any purchase orders, warranties, licenses or agreements with respect to the Equipment. During the Lease Term, Lessee shall be entitled, on a non-exclusive basis, to enforce any applicable Vendor warranties, to the extent permitted thereby and by applicable law. Lessor assigns such warranties to Lessee, to the extent permitted thereby, and agrees to cooperate with Lessee, at Lessee's sole cost and expense, in making any reasonable claim against such Vendor arising from any defect in the Equipment.

4. **Use; Maintenance; Location; Inspection.** Lessee shall: (i) use, operate, protect and maintain the Equipment (a) in good operating order, repair, condition and appearance, in the same condition as when received, ordinary wear and tear excepted, (b) consistent with prudent industry practice (but in no event less than the extent to which Lessee maintains other similar equipment in the prudent management of its assets and properties), and (c) in compliance with all applicable insurance policies, laws, ordinances, rules, regulations and manufacturer's recommended maintenance and repair procedures, and (ii) maintain comprehensive books and records regarding the use, operation, maintenance and repair of the Equipment. The Equipment shall be used only within the 48 contiguous United States, solely for business purposes (and not for any consumer, personal, home, or family purpose), and shall not be abandoned or used for any unlawful purpose. Lessee shall not discontinue use of any Equipment except for normal maintenance nor, through modifications, alterations or otherwise, impair the current or residual value, useful life, utility or originally intended function of any Equipment without Lessor's prior consent. Any replacement or substitution of parts, improvements, upgrades, or additions to the Equipment during the Lease Term shall be the property of Lessor and subject to the Lease, except that if no Event of Default exists, Lessee may at its expense remove improvements or additions provided by Lessee that can be readily removed without impairing the value, function or remaining useful life of the Equipment. If requested by Lessor, Lessee shall cause Equipment to be plainly marked to disclose Lessor's ownership, as specified by Lessor. Lessee shall not change the location or, in the case of over-the-road vehicles, the base of any Equipment specified in its Schedule without Lessor's prior written consent. Lessor shall have the right to enter any premises where Equipment is located and inspect it (together with related books and records) at any reasonable time.

5. **Loss and Damage.** Lessee assumes all risk of (and shall promptly notify Lessor in writing of any occurrence of) any damage to or loss, theft, confiscation or destruction of any Equipment from any cause whatsoever (a "**Casualty**") from the date shipped or otherwise made available to Lessee and continuing until it is returned to and accepted by Lessor in the condition required by the Lease, including Section 8 of this Agreement. If any Equipment suffers a Casualty which Lessee determines is reparable, Lessee shall at its expense promptly place the same in good repair, condition or working order. If any Equipment suffers a Casualty which Lessee determines is beyond repair or materially impairs its residual value (a "**Total Loss**"), Lessee shall at Lessee's option (unless an Event of Default has occurred and is then continuing, in which case it shall be at Lessor's option) either (a) promptly replace such Equipment with a similar item reasonably acceptable to Lessor having an equivalent value, utility and remaining useful life of such Equipment, whereupon such replacement items shall constitute Equipment for all purposes the Lease, or (b) on the Rent payment date following such Casualty (or, if none, within 30 days) pay Lessor the Stipulated Loss Value for such Equipment, together with all Rent scheduled for payment on such date, and all accrued interest, late charges and other amounts then due and owing under the Lease. Upon such payment following a Total Loss, the Lease with respect to the Equipment suffering a Total Loss shall terminate, and Lessor shall transfer all of its right, title and interest in such Equipment, free from all liens and encumbrances created by Lessor, but otherwise on an "AS-IS, WHERE-IS," quitclaim basis. If less than all Equipment under a Schedule suffers a Total Loss, (i) the Stipulated Loss Value with respect to any such item of Equipment shall be calculated by reference to the allocable portion of "**Lessor's Cost**" provided in the applicable Schedule, Rent or other amount related to such item, as reasonably determined by Lessor, and (ii) the remaining Rent under the Schedule shall be proportionately reduced as reasonably calculated by Lessor upon Lessor's receipt of the payments described above.

6. **Insurance.** Lessee, at its own expense, shall keep each item of Equipment insured against all risks for its replacement value, and in no event less than its Stipulated Loss Value, and shall maintain public liability and, with respect to Equipment that is over-the-road vehicles, automotive liability insurance against such risks and for such amounts as Lessor may require. All such insurance shall (a) be with companies rated "A-" or better by A.M. Best Company, in such form as Lessor shall approve, (b) specify Lessor and Lessee as insureds and provide that it may not be canceled or altered in any way that would affect the interest of Lessor without at least 30 days' prior written notice to Lessor (10 days' in the case of nonpayment of premium), (c) be primary, without right of contribution from any other insurance carried by Lessor and contain waiver of subrogation and "breach of warranty" provisions satisfactory to Lessor, (d) provide that all amounts payable by reason of loss or damage to Equipment shall be payable solely to Lessor, unless Lessor otherwise agrees (provided, however, that absent the existence of an Event of Default, Lessor agrees to promptly remit to Lessee any such insurance proceeds that are to be used by Lessee to repair or replace the applicable Equipment), and (e) contain such other endorsements as Lessor may reasonably require. Lessee shall provide Lessor with evidence satisfactory to Lessor of the required insurance upon the execution of any Schedule and promptly upon any renewal of any required policy.

7. **Indemnities; Taxes.** Lessee's indemnity and reimbursement obligations set forth below shall survive the cancellation, termination or expiration of any Lease or this Agreement.

(a) General Indemnity. Lessee shall indemnify, on an after-tax basis, defend and hold harmless Lessor and its respective officers, directors, employees, agents and Affiliates ("**Indemnified Persons**") against all claims, liabilities, losses and expenses whatsoever (except those determined by final decision of a court of competent jurisdiction to have been directly and primarily caused by the Indemnified Person's gross negligence or willful misconduct), including court costs and reasonable attorneys' fees and expenses (together, "**Attorneys' Fees**"), in any way relating to or arising out of the Equipment or any Lease at any time, or the ordering, acquisition, rejection, installation, possession, maintenance, use, ownership, condition, destruction or return of the Equipment, including any claims based in negligence, strict liability in tort, environmental liability or infringement.

(b) General Tax Indemnity. Lessee shall pay or reimburse Lessor, and indemnify, defend and hold Lessor harmless from, on an after-tax basis, all taxes, assessments, fees and other governmental charges paid or required to be paid by Lessor or Lessee in any way arising out of or related to the Equipment or any Lease before or during the Lease Term or after the Lease Term following an Event of Default, including foreign, Federal, state, county and municipal fees, taxes and assessments, and property, value-added, sales, use, gross receipts, excise, stamp and documentary taxes, and all related penalties, fines, additions to tax and interest charges ("**Impositions**"), excluding only Federal and state taxes based on Lessor's net income unless such taxes are in lieu of any Imposition Lessee would otherwise be required to pay hereunder. Lessee shall timely pay any Imposition for which Lessee is primarily responsible under law and any other Imposition not payable or not paid by Lessor, but Lessee shall have no obligation to pay any Imposition being contested in good faith and by appropriate legal proceedings, the nonpayment of which does not, in the opinion of Lessor, result in a material risk of adverse effect on the title, property, use, disposition or other rights of Lessor with respect to the Equipment. Upon Lessor's request, Lessee shall furnish proof of its payment of any Imposition.

(c) Income Tax Indemnity. Lessor shall be treated for federal and state income tax purposes as the owner of the Equipment and shall be entitled to take into account certain Tax Benefits in computing its income tax liabilities in connection with any Lease. If Lessor suffers a Tax Loss by reason of any act or failure to act by Lessee, or Lessee's breach of any representation, warranty or agreement in any Lease then, upon Lessor's demand and at Lessor's option, either: (i) all further Rent under the Lease, if any, shall be increased by an amount, or (ii) Lessee shall pay Lessor a lump sum amount, which in either case shall maintain the net economic after-tax yield, cash-flow and rate of return Lessor originally anticipated, based on Lessor's federal and state corporate income tax rate in effect on the Acceptance Date of the applicable Schedule and other assumptions originally used by Lessor in evaluating the transaction and setting the Rent therefor and other terms thereof. Lessee shall also pay Lessor on demand all interest, costs (including Attorneys' Fees), penalties and additions to tax associated with the Tax Loss. Lessor shall have no obligation to contest any Tax Loss. All references to "**Lessor**" in this Section 7(c) shall include (A) Lessor's successors and Assignees, and (B) each member of the affiliated group of corporations, as defined in Section 1504(a) of the Code, of which Lessor or such successor or Assignee is at any time a member. As used herein: "**Tax Benefits**" means all items of income, deduction (including depreciation consistent with Lessee's representation in the applicable Schedule), credit, gain or loss relating to ownership of the Equipment as are provided to owners of similar equipment under the Code and applicable state tax laws in effect on the Acceptance Date of such Schedule; and "**Tax Loss**" means and will be deemed to be suffered if Lessor loses, is delayed in claiming, is required to recapture, is not allowed or may not claim all or any portion of any Tax Benefits, provided, however, that Lessee shall be under no obligation to make any payments with respect to a Tax Loss to the extent that it (1) is caused by Lessor's failure to have sufficient taxable income to benefit from any Tax Benefits, or (2) results from any disposition of Equipment by Lessor other than a disposition of Equipment following an Event of Default.

8. **Return.** Upon any cancellation, termination or expiration of any Lease (after the occurrence of an Event of Default or otherwise), Lessee shall, at its expense, cause the Equipment to be prepared and adequately protected for shipment by an authorized manufacturer's representative and either surrender it to Lessor in place or, if instructed by Lessor, ship the Equipment to Lessor, freight and insurance pre-paid, to a place designated by Lessor within the 48

contiguous United States, in the condition required under Section 4 hereof and under the applicable Schedule, able to be put into immediate service and to perform at manufacturer's rated levels (if any), together with all related manuals, documents and records, and, if applicable, reassembled by an authorized manufacturer's representative and immediately qualified for the manufacturer's (or its authorized servicing representative's) then available service contract or warranty. If requested by Lessor, Lessee shall, at its expense: (i) cause the Equipment to qualify for all applicable licenses or permits necessary for its operation and for its intended purpose, and to comply with all specifications and requirements of applicable federal, state and local laws, regulations and ordinances; (ii) provide safe, suitable storage, acceptable to Lessor, for the Equipment for a period not to exceed 90 days from the date of return; and (iii) cooperate with Lessor in attempting to remarket the Equipment, including display and demonstration to prospective parties, and allowing Lessor to conduct a private sale on Lessee's premises. If Lessee does not surrender or return any item of Equipment to Lessor on the date or in the condition required under a Lease, in addition to all other available rights and remedies, at Lessor's election, such Equipment shall continue to be subject to all the terms and conditions of the Lease, with Rent and other charges continuing to accrue and be payable under the Lease with respect to such Equipment until it is so surrendered or returned to Lessor.

9. Lessee Representations and Agreements. Lessee represents, warrants and agrees that: (a) Lessee has had for the previous 5 years (except as previously disclosed to Lessor in writing) the legal name and form of business organization in the state described above; (b) Lessee's chief executive office and notice address, taxpayer identification number and any organizational identification number is as described with its execution of this Agreement below; (c) Lessee shall notify Lessor in writing at least 30 days before changing its legal name, state of organization, chief executive office location or organizational identification number; (d) Lessee is duly organized and existing in good standing under the laws of the state described above and all other jurisdictions where legally required in order to carry on its business, shall maintain its good standing in all such jurisdictions, and shall conduct its businesses and manage its properties (and cause each of its Affiliates to conduct its businesses and manage its properties) in compliance with all applicable laws, rules or regulations binding, in any jurisdiction, on Lessee and its Affiliates including, without limitation, all anti-money laundering laws and regulations; (e) the execution, delivery and performance of this Agreement, each Lease and Related Agreement to which it is a party has been duly authorized by Lessee, each of which are and will be binding on and enforceable against Lessee in accordance with their terms, and do not and will not contravene any other instrument or agreement binding on Lessee; and (f) there is no pending litigation, tax or environmental claim, proceeding, dispute or regulatory or enforcement action (and Lessee shall promptly notify Lessor of any of the same that may hereafter arise) that may adversely affect any Equipment or Lessee's financial condition or impair its ability to perform its Obligations.

All covenants of Lessee that are based upon a specified level or ratio relating to assets, liabilities, indebtedness, rentals, net worth, cash flow, earnings, profitability, or any other accounting-based measurement or test, now or hereafter existing (collectively, the "Additional Covenants"), in that certain Fourth Amended and Restated Credit Agreement dated September 27, 2018, by and between Lessee and Bank of America, N.A., as Syndication Agent, and JPMorgan Chase Bank, N.A., as Administrative Agent and Collateral Agent or in any replacement credit facility accepted in writing by Lessor between Lessee and a United States national banking association or other financial institution (a "Bank Facility"), are hereby incorporated into and made a part of this Agreement (with such adjustments to defined terms as may be necessary to assure consistency) without modification or amendment unless specifically accepted and approved in writing by Lessor. Lessee acknowledges and agrees that (i) the Additional Covenants in the form included in the existing Bank Facility shall be deemed to be permanently incorporated into this Agreement, and shall remain in effect for all purposes of this Agreement notwithstanding the cancellation or termination of a Bank Facility due to voluntary prepayment, payment at maturity, default or otherwise, unless a replacement credit facility with Additional Covenants has been accepted in writing by Lessor in its sole discretion prior to the effective date of such cancellation or termination of such Bank Facility, and (ii) any waiver of any breach (or anticipated breach) of any Additional Covenant under the Bank Facility (by reason of amendment, forbearance or otherwise) shall not constitute a waiver of the corresponding default (or anticipated default) under this Agreement unless specifically agreed to in writing by Lessor. Lessee hereby certifies that Lessor has been furnished a true, correct and complete copy of all documentation concerning the existing Bank Facility, and further covenants and agrees to promptly provide Lessor: (a) certified copies of true, correct and complete documentation of any other Bank Facility in effect from time to time, and any all proposed amendments and modifications to any Bank Facility; (b) notices of any event of default or other condition of non-compliance issued to Lessee in connection with a Bank Facility; (c) all financial statements and reports required pursuant to a Bank Facility and any certificates of compliance in the form required thereunder as they pertain to the Additional Covenants, and shall continue to provide the same to Lessor notwithstanding the cancellation or other termination of such Bank Facility for so long as any Obligations owing to Lessor remain outstanding in connection with this Agreement; and (d) prior written notice of the cancellation or termination of a Bank Facility for any reason. Lessee further acknowledges and agrees that any event of default under a Bank Facility shall constitute an Event of Default under this Agreement

10. Title; Property; Additional Security. (a) Title; Personal Property. Each Lease is and is intended to be a lease of personal property for all purposes. Lessee does not acquire any right, title or interest in or to any Equipment, except the right to use and possess the same under the terms of the applicable Lease. Except as specifically provided in the applicable Schedule, Lessee has no right or option to extend the Lease Term of a Lease or purchase any Equipment. Lessee assigns all of its rights (but none of its obligations) to Lessor under any purchase orders, invoices or other contracts of sale with respect to the Equipment, and conveys whatever right, title and interest it may now or hereafter have in any Equipment to Lessor. Lessor shall be the sole owner of Equipment free and clear of all liens or encumbrances, other than Lessee's rights under the Lease. Lessee will not create or permit to exist any lien, security interest, charge or encumbrance on any Equipment except those created by Lessor. The Equipment shall remain personal property at all times, notwithstanding the manner in which it may be affixed to realty. Lessee shall obtain and record such instruments and take such steps as may be necessary to (i) prevent any creditor, landlord, mortgagee or other entity (other than Lessor) from having any lien, charge, security interest or encumbrance on any Equipment, and (ii) ensure Lessor's right of access to and removal of Equipment in accordance with the Lease.

(b) Additional Security. To secure the punctual payment and performance of Lessee's Obligations under each Lease and, as a separate grant of security, to secure the payment and performance of all other Obligations owing to Lessor, Lessee grants to Lessor a continuing security interest in the Collateral, provided, however, that if there then exists no Event of Default, Lessor's security interest in Collateral subject to a Lease shall terminate upon the payment and performance of all Obligations of Lessee under the applicable Lease. Notwithstanding the grant of a security interest in any Collateral, Lessee shall have no right to sell, lease, rent, dispose or surrender possession, use or operation of any Equipment to any third parties without the prior written consent of Lessor. The foregoing grant of a security interest shall not of itself be a factor in determining whether any Lease creates a lease or security interest in the Equipment under applicable provisions of the UCC.

11. Default. Each of the following (a "**Default**") shall, with the giving of any notice or passage of any time period specified, constitute an "**Event of Default**" hereunder and under all Leases: (1) Lessee fails to pay any Rent or other amount owing under any Lease within 10 days of its due date; (2) Lessee fails to maintain insurance as required herein, or sells, leases, subleases, assigns, conveys, or suffers to exist any lien, charge, security interest or encumbrance on, any Equipment without Lessor's prior consent, or any Equipment is subjected to levy, seizure or attachment; (3) Lessee fails to perform or comply with any other covenant or obligation under any Lease or Related Agreement and, if curable, such failure continues for 30 days after written notice thereof by Lessor to Lessee; (4) any representation, warranty or other written statement made to Lessor by Lessee in connection with this Agreement, any Lease, Related Agreement or other Obligation, or by any Guarantor pursuant to any Guaranty (including financial statements) proves to have been incorrect in any material respect when made; (5) Lessee (w) enters into any merger or consolidation with, or sells or transfers all or any substantial portion of its assets to, or enters into any partnership or joint venture other than in the ordinary course of business with, any entity, (x) dies (if a natural person), dissolves, liquidates or ceases or suspends the conduct of business, or ceases to maintain its existence, (y) if Lessee is a privately held entity, enters into or suffers any transaction or series of transactions as a result of which Lessee is directly or indirectly controlled by persons or entities not directly or indirectly controlling Lessee as of the date hereof, or (z) if Lessee is a publicly held entity, there shall be a change in the ownership of Lessee's stock or other equivalent ownership interest such that Lessee is no longer subject to the reporting requirements of, or no longer has a class of equity securities registered under, the Securities Act of 1933 or the Securities Exchange Act of 1934; (6) Lessee undertakes any general assignment for the benefit of creditors or commences any voluntary case or proceeding for relief under the federal bankruptcy code, or any other law for the relief of debtors, or takes any action to authorize or implement any of the foregoing; (7) the filing of any petition or application against Lessee under any law for the relief of debtors, including proceedings under the federal bankruptcy code, or for the subjection of property of Lessee to the control of any court, receiver or agency for the benefit of creditors if such petition or application is consented to by Lessee or is otherwise not dismissed within 60 days from the date of filing; (8) any default occurs under any other lease, credit or other agreement or instrument to which Lessee and Lessor or any Affiliate of Lessor are now or hereafter party; (9) any default occurs under any other agreement or instrument to which Lessee is a party and under which there is outstanding, owing or committed an aggregate amount greater than $5,000,000; (10) any attempted repudiation, breach or default of any Guaranty; or (11) the occurrence of any event described in clauses (4) through (9) above with reference to any Guarantor or any controlling shareholder, general partner or member of Lessee. Lessee shall promptly notify Lessor in writing of any Default or Event of Default.

12. Remedies. (a) Upon the occurrence of an Event of Default, Lessor may, in its discretion, exercise any one or more of the following remedies with respect to any or all Leases or Equipment: (1) cause Lessee to promptly discontinue use of or disable any Equipment, or to assemble and return any Equipment or other Collateral in accordance with the terms of the applicable Lease; (2) remedy such Event of Default or proceed by court action, either at law or in equity, to enforce performance of the applicable provisions of any Lease; (3) with or without court order, enter upon the premises where Equipment is located and repossess and remove the same, all without liability for damage to such premises or by reason such entry or repossession, except for Lessor's gross negligence or willful misconduct; (4) dispose of any Equipment in a public or private transaction, or hold, use, operate or keep idle the Equipment, free and clear of any rights or interests of Lessee therein; (5) recover direct, incidental, consequential and other damages for the breach of any Lease, including the payment of all Rent and other amounts payable thereunder (discounted at the Discount Rate with respect to any accelerated future amounts), and all costs and expenses incurred by Lessor in exercising its remedies or enforcing its rights thereunder (including all Attorneys' Fees); (6) by written notice to Lessee, cancel any Lease and, as liquidated damages for the loss of Lessor's bargain and not as a penalty, declare immediately due and payable an amount equal to the Stipulated Loss Value applicable to such Leases which Lessee acknowledges to be reasonable liquidated damages in light of the anticipated harm to Lessor that might be caused by an Event of Default and the facts and circumstances existing as of the Acceptance Date of each Lease; (7) without notice to Lessee, apply or set-off against any Obligations all security deposits, advance payments, proceeds of letters of credit, certificates of deposit (whether or not matured), securities or other additional collateral held by Lessor or otherwise credited by or due from Lessor to Lessee; or (8) pursue all other remedies provided under the UCC or other applicable law. Upon the commencement of any voluntary case under the federal bankruptcy code concerning the Lessee, the remedy provided in clause (6) above shall be automatically exercised without the requirement of prior written notice to Lessee or of any other act or declaration by Lessor, and the liquidated damages described therein shall be immediately due and payable. Lessee shall pay interest equal to the lesser of (a) 12% per annum, or (b) the highest rate permitted by applicable law (**"Default Rate"**) on (i) any amount other than Rent owing under any Lease and not paid when due, (ii) Rent not paid within 30 days of its due date, and (iii) any amount required to be paid upon cancellation of any Lease under this Section 12. Any payments received by Lessor after an Event of Default, including proceeds of any disposition of Equipment, shall be applied in the following order: (A) to all of Lessor's costs (including Attorneys' Fees), charges and expenses incurred in taking, removing, holding, repairing and selling or leasing the Equipment or other Collateral or enforcing the provisions hereof; (B) to the extent not previously paid by Lessee, to pay Lessor for any damages then remaining unpaid hereunder; (C) to reimburse Lessee for any sums previously paid by Lessee as damages hereunder; and (D) the balance, if any, shall be retained by Lessor.

(b) No remedy referred to in this Section 12 shall be exclusive, each shall be cumulative (but not duplicative of recovery of any Obligation) and in addition to any other remedy referred to above or otherwise available to Lessor at law or in equity, and all such remedies shall survive the cancellation of any Lease. Lessor's exercise or partial exercise of, or failure to exercise, any remedy shall not restrict Lessor from further exercise of that remedy or any other available remedy. No extension of time for payment or performance of any Obligation shall operate to release, discharge, modify, change or affect the original liability of Lessee for any Obligations, either in whole or in part. Lessor may proceed against any Collateral or Guarantor, or may proceed contemporaneously or in the first instance against Lessee, in such order and at such times following an Event of Default as Lessor determines in its sole discretion. In any action to repossess any Equipment or other Collateral, Lessee waives any bonds and any surety or security required by any applicable laws as an incident to such repossession. Notices of Lessor's intention to accelerate, acceleration, nonpayment, presentment, protest, dishonor, or any other notice whatsoever (other than notices of Default specifically required of Lessor pursuant to Section 11 above) are waived by Lessee and any Guarantor. Any notice given by Lessor of any disposition of Collateral or other intended action of Lessor which is given in accordance with this Agreement at least 5 business days prior to such action, shall constitute fair and reasonable notice of such action.

13. Assignment. Lessor and any Assignee may assign or transfer any of Lessor's interests in any Lease or Equipment without notice to Lessee, subject, however, to the rights of Lessee to use and possess the Equipment under such Lease for so long as no Event of Default has occurred and is continuing. Lessee agrees that: (i) the rights of any Assignee shall not be affected by any breach or default of Lessor or any prior Assignee, and Lessee shall not assert any defense, rights of set-off or counterclaim against any Assignee, nor hold or attempt to hold such Assignee liable for any such breach or default; (ii) no Assignee shall be required to assume any obligations of Lessor under any Lease except the obligation of non-interference in Section 1 above, (iii) any Assignee expressly assuming the obligations of Lessor shall thereupon be responsible for Lessor's duties under the applicable Lease accruing after assignment and Lessor shall be released from such duties, and (iv) Lessee shall execute and deliver upon request such additional documents, instruments and assurances as Lessor deems necessary in order to (y) acknowledge and confirm all of the terms and conditions of any Lease and Lessor's or such Assignee's rights with respect thereto, and Lessee's compliance with all of the terms and provisions thereof, and (z) preserve, protect and perfect Lessor's or Assignee's right, title or interest hereunder and in any Equipment, including, without limitation, such UCC financing statements or amendments, control agreements, corporate or member resolutions, votes, notices of assignment of interests, and confirmations of Lessee's obligations and representations and warranties with respect thereto as of the dates requested. Lessor may disclose to any potential Assignee any information regarding Lessee, any Guarantor and their Affiliates. **Lessee shall not assign, pledge, hypothecate or in any way dispose of any of its rights or obligations under any Lease, or enter into any sublease of any Equipment, without Lessor's prior written consent. Any purported assignment, pledge, hypothecation, disposal or sublease by Lessee made without Lessor's prior written consent shall be null and void.**

14. Financial and Other Data. (a) During any Lease Term, Lessee shall (i) maintain books and records in accordance with generally accepted accounting principles consistently applied ("**GAAP**") and prudent business practice; (ii) promptly provide Lessor, within 120 days after the close of each fiscal year, and, upon Lessor's request, within 45 days of the end of each quarter of Lessee's fiscal year, a copy of financial statements for Lessee requested by Lessor, in each case prepared in accordance with GAAP and (in the case of annual statements) audited by independent certified public accountants and (in the case of quarterly statements) certified by the chief financial officer of Lessee; provided, however, that for so long as Lessee is legally and timely filing annual and quarterly financial reports on Forms 10-K and 10-Q with the Securities and Exchange Commission which are readily available to the public, the filing of such reports shall satisfy the foregoing financial statement reporting requirements for such entity; and (iii) furnish Lessor all other financial information and reports and such other information as Lessor may reasonably request concerning Lessee, its affairs, or the Equipment or its condition, location, use or operation.

(b) Lessee represents and warrants that all information and financial statements at any time furnished by or on behalf of Lessee are accurate and reasonably reflect as of their respective dates, results of operations and the financial condition of Lessee or such other entity they purport to cover. Credit and other information regarding Lessee, its Affiliates, any Lease or Equipment may be disclosed by Lessor to its Affiliates, agents and potential Assignees, notwithstanding anything contained in any agreement that may purport to limit or prohibit such disclosure.

15. Definitions

As used herein, the following terms shall have the meanings assigned or referred to them below:

"**Affiliate**" means any entity controlling, controlled by or under common control with the referent entity; "**control**" includes (i) the ownership of 25% or more of the voting stock or other ownership interest of any entity and (ii) the status of a general partner of a partnership or managing member of a limited liability company.

"**Assignee**" means any assignee or transferee of all or any of Lessor's right, title and interest in any Lease or any Equipment.

"**Code**" means the Internal Revenue Code of 1986, as amended.

"**Collateral**" means and includes all of Lessee's right, title and interest in and to all Equipment, together with: (i) all parts, attachments, accessories and accessions to, substitutions and replacements for, each item of Equipment; (ii) all accounts, chattel paper, and general intangibles arising from or related to any sale, lease, rental or other disposition of any Equipment to third parties, or otherwise resulting from the possession, use or operation of any Equipment by third parties, including instruments, investment property, deposit accounts, letter of credit rights, and supporting obligations arising thereunder or in connection therewith; (iii) all insurance, warranty and other claims against third parties with respect to any Equipment; (iv) all software and other intellectual property rights used in connection therewith; (v) proceeds of all of the foregoing, including insurance proceeds and any proceeds in the form of goods, accounts, chattel paper, documents, instruments, general intangibles, investment property, deposit accounts, letter of credit rights and supporting obligations; and (vi) all books and records regarding the foregoing, in each case, now existing or hereafter arising.

"**Discount Rate**" means the 1-year Treasury Constant Maturity rate as published in the Selected Interest Rates table of the Federal Reserve statistical release H.15(519) for the week ending immediately prior to the original Acceptance Date of a Lease (or if such rate is no longer determined or published, a successor or alternate rate selected by Lessor).

"**Equipment**" means the items, units and groups of personal property, licensed materials and fixtures described in each Schedule, together with all replacements, parts, additions, accessories and substitutions therefor; and "**item of Equipment**" means a "commercial unit" as defined and described in Article 2A of the UCC, and includes each functionally integrated and separately marketable group or unit of Equipment.

"**Guarantor**" means any guarantor, surety, endorser, general partner or co-lessee of Lessee, or other party liable in any capacity, or providing additional collateral security for, the payment or performance of any Obligations of Lessee.

"**Guaranty**" means any guaranty, surety instrument, security, indemnity, "keep-well" agreement or other instrument or arrangement from or with any Guarantor.

"**Obligations**" means and includes all obligations of Lessee owing to Lessor under this Agreement, any Lease or Related Agreement, or of any Guarantor owing to Lessor under any Guaranty, together with all other obligations, indebtedness and liabilities of Lessee to Lessor under any other financings, leases, loans, notes, progress payment agreements, guaranties or other agreements, of every kind and description, now existing or hereafter arising, direct or indirect, joint or several, absolute or contingent, whether for payment or performance, regardless of how the same may arise or by what instrument, agreement or book account they may be evidenced, including without limitation, any such obligations, indebtedness and liabilities of Lessee to others which may be obtained by Lessor through purchase, negotiation, discount, transfer, assignment or otherwise.

"**Related Agreement**" means and includes any Guaranty and any approval letter or progress payment, assignment, security or other agreement or addendum related to this Agreement, any Lease or any Collateral to which Lessee or any Guarantor is a party.

"**Stipulated Loss Value**" means, as of any particular date, the product obtained by multiplying the "**Lessor's Cost**" specified in the Schedule by the percentage set forth in the "**Schedule of Stipulated Loss Values**" attached to the Schedule, specified opposite the Rent installment number (or date) becoming due immediately after the Casualty, Event of Default or other event requiring the calculation of Stipulated Loss Value. If there is no Schedule of Stipulated Loss Values attached to a Schedule, or if the Schedule of Stipulated Loss Values does not otherwise cover a Rent installment number (or date), Stipulated Loss Value on any Rent payment date shall equal the net present value of: (a) all unpaid Rent for the remainder of the Lease Term, plus (b) the amount of any purchase obligation, fixed price purchase option, or TRAC amount payment or, if there is no such obligation, option or payment, then the fair market value of the Equipment as of the end of the Lease Term, as estimated by Lessor in its sole discretion, all discounted to present value at the Discount Rate.

"**UCC**" means the Uniform Commercial Code in effect in the state specified in Section 16(f) of this Agreement.

"**Vendor**" means the manufacturer, distributor, supplier or other seller (whether or not a merchant or dealer) of the Equipment and any sales representative or agent thereof.

16. Miscellaneous. (a) At Lessor's request, Lessee shall execute, deliver, file and record such financing statements and other documents as Lessor deems necessary to protect Lessor's interest in the Equipment and to effectuate the purposes of any Lease or Related Agreement, and Lessee authorizes, and irrevocably appoints Lessor as its agent and attorney-in-fact, with right of substitution and coupled with an interest, to (i) execute, deliver, file, and record any such item, and to take such action for Lessee and in Lessee's name, place and stead, (ii) make minor corrections to manifest errors in factual data in any Schedule and any addenda, attachments, exhibits and riders thereto, and (iii) after the occurrence of an Event of Default, enforce claims relating to the Equipment against insurers, Vendors or other persons, and to make, adjust, compromise, settle and receive payment under such claims; but without any obligation to do so.

(b) Federal law requires all financial institutions to obtain, verify and record information that identifies each entity that obtains a loan or other financial accommodation. The first time Lessee requests a financial accommodation from Lessor, the Lessor may ask for Lessee's (or any Guarantor's) legal name, address, tax ID number and other identifying information. Lessee shall promptly provide copies of business licenses or other documents evidencing the existence and good standing of Lessee or any Guarantor requested by Lessor.

(c) Time is of the essence in the payment and performance of all of Lessee's Obligations under any Lease or Related Agreement. This Agreement, and each Lease or Related Agreement may be executed in one or more counterparts, each of which shall constitute one and the same agreement. All demands, notices, requests, consents, waivers and other communications concerning this Agreement and any Lease or Related Agreement shall be in writing and shall be deemed to have been duly given when received, personally delivered or three business days after being deposited in the mail, first class postage prepaid, or the business day after delivery to an express carrier, charges prepaid, addressed to each party at the address provided herein, or at such other address as may hereafter be furnished in writing by such party to the other.

(d) Except as otherwise agreed between Lessee and Lessor in writing, Lessee shall reimburse Lessor upon demand for costs and expenses incurred by Lessor in connection with the execution and delivery of this Agreement, any Lease or Related Agreement. Lessee shall reimburse Lessor on demand for all costs (including Attorneys' Fees) incurred by Lessor in connection with Lessee's exercise of any purchase or extension option under any Lease, or any amendment or waiver of the terms of this Agreement or any Lease or Related Agreement requested by Lessee.

(e) Any provisions of this Agreement or any Lease or Related Agreement which are unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such unenforceability without invalidating the remaining provisions thereof, and any such unenforceability shall not render unenforceable such provisions in any other jurisdiction. Any requirement for the execution and delivery of any document, instrument or notice may be satisfied, in Lessor's discretion, by authentication as a record within the meaning of, and to the extent permitted by, Article 9 of the UCC.

(f) THIS AGREEMENT AND ANY LEASE OR RELATED AGREEMENT, AND THE LEGAL RELATIONS OF THE PARTIES THERETO, SHALL IN ALL RESPECTS BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF RHODE ISLAND, WITHOUT REGARD TO CHOICE OF LAW PRINCIPLES; THE PARTIES CONSENT AND SUBMIT TO THE JURISDICTION OF THE STATE AND FEDERAL COURTS OF SUCH STATE FOR THE PURPOSES OF ANY SUIT, ACTION OR OTHER PROCEEDING ARISING THEREFROM, AND EXPRESSLY WAIVE ANY OBJECTIONS THAT IT MAY HAVE TO THE VENUE OF SUCH COURTS. THE PARTIES EXPRESSLY WAIVE ANY RIGHT TO TRIAL BY JURY IN ANY ACTION BROUGHT ON OR WITH RESPECT THERETO. IN NO EVENT SHALL LESSOR HAVE ANY LIABILITY TO LESSEE FOR INCIDENTAL, GENERAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES. Any cause of action by Lessee against Lessor relating to this Agreement or any Lease or Related Agreement shall be brought within one year after any such cause of action first arises, and Lessee hereby waives the benefit of any longer period provided by statute.

(g) EACH LEASE, TOGETHER WITH THIS AGREEMENT AND ANY RELATED AGREEMENTS, (i) CONSTITUTES THE FINAL AND ENTIRE AGREEMENT BETWEEN THE PARTIES SUPERSEDING ALL CONFLICTING TERMS OR PROVISIONS OF ANY PRIOR PROPOSALS, APPROVAL LETTERS, TERM SHEETS OR OTHER AGREEMENTS OR UNDERSTANDINGS BETWEEN THE PARTIES, (ii) MAY NOT BE CONTRADICTED BY EVIDENCE OF (y) ANY PRIOR WRITTEN OR ORAL AGREEMENTS OR UNDERSTANDINGS, OR (z) ANY CONTEMPORANEOUS OR SUBSEQUENT ORAL AGREEMENTS OR UNDERSTANDINGS BETWEEN THE PARTIES; and (iii) MAY NOT BE AMENDED, NOR MAY ANY RIGHTS THEREUNDER BE WAIVED, EXCEPT BY AN INSTRUMENT IN WRITING SIGNED BY THE PARTY CHARGED WITH SUCH AMENDMENT OR WAIVER.

In Witness Whereof, Lessor and Lessee have executed this Agreement as of the date first above written.

BANC OF AMERICA LEASING & CAPITAL, LLC (Lessor)

By: /s/ Denise C. Simpson
Print Name: Denise C. Simpson
Title: Vice President

PHOTRONICS, INC. (Lessee)

By: /s/ John P. Jordan
Print Name: John P. Jordan
Title: Sr. Vice President, CFO & Treasurer

Taxpayer ID #: 06-0854886
Org. ID # (if any)
Chief Executive Office:
15 Secor Road
Brookfield, CT 06804

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
September 4, 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
September 4, 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 July 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
September 4, 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 July 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
September 4, 2019