UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-Q

(Mark One)

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended October 31, 2022

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: 001-35667

AMBARELLA, INC.

(Exact name of registrant as specified in its charter)

Cayman Islands **(State or other jurisdiction of incorporation or organization)**	**98-0459628** **(I.R.S. Employer Identification No.)**
3101 Jay Street **Santa Clara, California** **(Address of principal executive offices)**	**95054** **(Zip Code)**

(408) 734-8888
(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol	Name of each exchange on which registered
Ordinary Shares, $0.00045 Par Value Per Share	AMBA	The Nasdaq Global 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 period 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 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.

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 number of ordinary shares of the Registrant outstanding as of November 30, 2022 was 38,756,861 shares.

AMBARELLA, INC.
QUARTERLY REPORT ON FORM 10-Q
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PART I – FINANCIAL INFORMATION

ITEM 1. Financial Statements

AMBARELLA, INC.
CONDENSED CONSOLIDATED BALANCE SHEETS
(in thousands, except share and per share data)
(unaudited)

	As of	
	October 31, 2022	January 31, 2022
ASSETS		
Current assets:		
Cash and cash equivalents	$ 112,837	$ 171,043
Marketable debt securities	86,197	—
Accounts receivable, net	48,556	44,307
Inventories	45,395	45,219
Restricted cash	7	10
Prepaid expenses and other current assets	5,338	6,169
Total current assets	298,330	266,748
Property and equipment, net	10,753	10,134
Deferred tax assets, non-current	14,585	15,340
Intangible assets, net	47,550	46,302
Operating lease right-of-use assets, net	9,186	11,127
Goodwill	303,625	303,625
Other non-current assets	3,428	4,269
Total assets	$ 687,457	$ 657,545
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	29,130	31,170
Accrued and other current liabilities	43,561	52,064
Operating lease liabilities, current	3,425	3,391
Income taxes payable	3,782	1,245
Deferred revenue, current	1,036	1,414
Total current liabilities	80,934	89,284
Operating lease liabilities, non-current	5,897	8,322
Other long-term liabilities	12,228	12,763
Total liabilities	99,059	110,369
Commitments and contingencies (Note 13)		
Shareholders' equity:		
Preference shares, $0.00045 par value per share, 20,000,000 shares authorized and no shares issued and outstanding at October 31, 2022 and January 31, 2022, respectively	—	—
Ordinary shares, $0.00045 par value per share, 200,000,000 shares authorized; 38,746,179 and 37,302,818 shares issued and outstanding at October 31, 2022 and January 31, 2022, respectively	17	17
Additional paid-in capital	543,833	447,287
Accumulated other comprehensive loss	(1,043)	—
Retained earnings	45,591	99,872
Total shareholders’ equity	588,398	547,176
Total liabilities and shareholders' equity	$ 687,457	$ 657,545

See accompanying notes to condensed consolidated financial statements.

AMBARELLA, INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except share and per share data)
(unaudited)

	Three Months Ended October 31,		Nine Months Ended October 31,	
	2022	2021	2022	2021
Revenue	$ 83,096	$ 92,167	$ 254,285	$ 241,627
Cost of revenue	31,418	34,541	94,996	90,817
Gross profit	51,678	57,626	159,289	150,810
Operating expenses:				
Research and development	52,864	41,362	151,892	118,794
Selling, general and administrative	18,944	17,475	58,213	49,323
Total operating expenses	71,808	58,837	210,105	168,117
Loss from operations	(20,130)	(1,211)	(50,816)	(17,307)
Other income, net	1,433	407	1,493	1,218
Loss before income taxes	(18,697)	(804)	(49,323)	(16,089)
Provision (benefit) for income taxes	1,112	(1,560)	4,958	1,129
Net income (loss)	$ (19,809)	$ 756	$ (54,281)	$ (17,218)
Net income (loss) per share attributable to ordinary shareholders:				
Basic	$ (0.51)	$ 0.02	$ (1.42)	$ (0.47)
Diluted	$ (0.51)	$ 0.02	$ (1.42)	$ (0.47)
Weighted-average shares used to compute net income (loss) per share attributable to ordinary shareholders:				
Basic	38,582,584	36,792,187	38,185,421	36,391,676
Diluted	38,582,584	39,046,274	38,185,421	36,391,676

See accompanying notes to condensed consolidated financial statements.

AMBARELLA, INC.
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(unaudited, in thousands)

	Three Months Ended October 31,		Nine Months Ended October 31,	
	2022	2021	2022	2021
Net income (loss)	$ (19,809)	$ 756	$ (54,281)	$ (17,218)
Other comprehensive loss, net of tax:				
Net change and reclassification of unrealized losses on investments	(1,041)	(608)	(1,043)	(1,219)
Other comprehensive loss, net of tax	(1,041)	(608)	(1,043)	(1,219)
Comprehensive income (loss)	$ (20,850)	$ 148	$ (55,324)	$ (18,437)

See accompanying notes to condensed consolidated financial statements.

AMBARELLA, INC.
CONDENSED CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY
(in thousands, except share data)
(unaudited)

	Outstanding Ordinary Shares		Additional Paid-in	Accumulated Other Comprehensive	Retained	
	Shares	Amount	Capital	Income (Loss)	Earnings	Total
Balance--January 31, 2022	37,302,818	$ 17	$ 447,287	$ —	$ 99,872	$ 547,176
Issuance of shares through employee equity plans	736,516	—	8,589	—	—	8,589
Issuance of shares through employee stock purchase plan	43,545	—	3,250	—	—	3,250
Stock-based compensation expense	—	—	26,155	—	—	26,155
Net loss	—	—	—	—	(10,822)	(10,822)
Balance--April 30, 2022	38,082,879	17	485,281	—	89,050	574,348
Issuance of shares through employee equity plans	323,572	—	1,204	—	—	1,204
Stock-based compensation expense	—	—	26,211	—	—	26,211
Other comprehensive loss - net of tax	—	—	—	(2)	—	(2)
Net loss	—	—	—	—	(23,650)	(23,650)
Balance--July 31, 2022	38,406,451	17	512,696	(2)	65,400	578,111
Issuance of shares through employee equity plans	278,687	—	386	—	—	386
Issuance of shares through employee stock purchase plan	61,041	—	3,386	—	—	3,386
Stock-based compensation expense	—	—	27,365	—	—	27,365
Other comprehensive loss - net of tax	—	—	—	(1,041)	—	(1,041)
Net loss	—	—	—	—	(19,809)	(19,809)
Balance--October 31, 2022	38,746,179	$ 17	$ 543,833	$ (1,043)	$ 45,591	$ 588,398

	Outstanding Ordinary Shares		Additional Paid-in	Accumulated Other Comprehensive	Retained	
	Shares	Amount	Capital	Income (Loss)	Earnings	Total
Balance--January 31, 2021	35,547,440	$ 16	$ 347,458	$ 1,219	$ 126,283	$ 474,976
Issuance of shares through employee equity plans	643,120	—	6,741	—	—	6,741
Issuance of shares through employee stock purchase plan	82,783	—	3,694	—	—	3,694
Stock-based compensation expense	—	—	17,128	—	—	17,128
Other comprehensive loss - net of tax	—	—	—	(427)	—	(427)
Net loss	—	—	—	—	(10,818)	(10,818)
Balance--April 30, 2021	36,273,343	16	375,021	792	115,465	491,294
Issuance of shares through employee equity plans	371,293	—	1,461	—	—	1,461
Stock-based compensation expense	—	—	17,639	—	—	17,639
Other comprehensive loss - net of tax	—	—	—	(184)	—	(184)
Net loss	—	—	—	—	(7,156)	(7,156)
Balance--July 31, 2021	36,644,636	16	394,121	608	108,309	503,054
Issuance of shares through employee equity plans	244,507	1	2,200	—	—	2,201
Issuance of shares through employee stock purchase plan	35,999	—	3,513	—	—	3,513
Stock-based compensation expense	—	—	20,319	—	—	20,319
Other comprehensive loss - net of tax	—	—	—	(608)	—	(608)
Net income	—	—	—	—	756	756
Balance--October 31, 2021	36,925,142	$ 17	$ 420,153	$ —	$ 109,065	$ 529,235

See accompanying notes to condensed consolidated financial statements.

AMBARELLA, INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(unaudited, in thousands)

	Nine Months Ended October 31, 2022	Nine Months Ended October 31, 2021
Cash flows from operating activities:		
Net loss	$ (54,281)	$ (17,218)
Adjustments to reconcile net loss to net cash provided by operating activities:		
Depreciation and amortization	14,426	9,139
Amortization (accretion) of premium (discount) on marketable debt securities, net	(281)	1,034
Stock-based compensation	82,051	60,267
Deferred income taxes	755	(553)
Other non-cash items, net	28	(517)
Changes in operating assets and liabilities:		
Accounts receivable	(4,249)	(19,802)
Inventories	(176)	(20,958)
Prepaid expenses and other current assets	80	(275)
Other non-current assets	841	878
Accounts payable	(2,044)	5,947
Accrued and other current liabilities	2,813	2,359
Income taxes payable	2,537	396
Deferred revenue	(378)	(57)
Operating lease liabilities	(3,254)	(2,681)
Other long-term liabilities	135	265
Net cash provided by operating activities	39,003	18,224
Cash flows from investing activities:		
Purchase of investments	(87,641)	(118,726)
Sales of investments	756	208,132
Maturities of investments	—	107,760
Purchase of tangible and intangible assets	(13,023)	(6,235)
Escrow claim associated with business acquisition	749	—
Net cash provided by (used in) investing activities	(99,159)	190,931
Cash flows from financing activities:		
Proceeds from exercise of stock options and employee stock purchase plan	6,834	11,127
Long-term financing payment for intangible assets	(4,887)	(3,796)
Net cash provided by financing activities	1,947	7,331
Net increase (decrease) in cash, cash equivalents and restricted cash	(58,209)	216,486
Cash, cash equivalents and restricted cash at beginning of period	171,053	241,284
Cash, cash equivalents and restricted cash at end of period	$ 112,844	$ 457,770
Supplemental disclosure of cash flow information:		
Cash paid for income taxes	$ 1,340	$ 1,294
Supplemental disclosure of noncash investing and financing activities:		
Unpaid liabilities related to tangible and intangible assets purchases	$ 1,239	$ 1,346

See accompanying notes to condensed consolidated financial statements.

Notes to Condensed Consolidated Financial Statements
(Unaudited)

1. Organization and Summary of Significant Accounting Policies

Organization

Ambarella, Inc. (the "Company") was incorporated in the Cayman Islands on January 15, 2004. The Company is a leading developer of low-power semiconductor solutions offering high-definition (HD) and Ultra HD compression, image processing, and powerful deep neural network processing. The Company combines its processor design capabilities with its expertise in video and image processing, algorithms and software to provide a technology platform that is designed to be easily scalable across multiple applications and enable rapid and efficient product development. The Company's system-on-a-chip, or SoC, designs fully integrate high-definition video processing, image processing, artificial intelligence (AI) computer vision algorithms, audio processing and system functions onto a single chip. These low power SoCs deliver exceptional video and image quality and can extract valuable data from high-resolution video and radar streams. The Company is currently addressing a broad range of human and computer vision applications, including video security, advanced driver assistance systems (ADAS), electronic mirrors, drive recorders, driver/cabin monitoring systems, autonomous driving, and industrial and robotic applications.

The Company sells its solutions to leading original equipment manufacturers, or OEMs, who include the Company's SoCs in their products, and original design manufacturers, or ODMs, who include the Company's SoCs in the products that they supply to OEMs, globally.

Basis of Presentation

The accompanying unaudited condensed consolidated financial statements have been prepared by the Company in accordance with the instructions to Form 10-Q pursuant to the rules and regulations of the Securities and Exchange Commission ("SEC") and, therefore, do not include all information and notes normally provided in audited financial statements. The accounting policies are described in the "Notes to Consolidated Financial Statements" in the Annual Report on Form 10-K for the 2022 fiscal year filed with the SEC on April 1, 2022 (the "Form 10-K") and updated, as necessary, in this Form 10-Q. The year-end condensed consolidated balance sheet data presented for comparative purposes was derived from audited financial statements, but does not include all disclosures required by generally accepted accounting principles in the United States ("U.S. GAAP"). In the opinion of management, all adjustments (consisting of normal recurring accruals and adjustments) considered necessary for a fair statement have been included. The results of operations for any interim period are not necessarily indicative of, nor comparable to, the results of operations for any other interim period or for a full fiscal year. These unaudited condensed consolidated financial statements should be read in conjunction with the consolidated financial statements and related notes contained in the Form 10-K.

Basis of Consolidation

The Company's fiscal year ends on January 31. The condensed consolidated financial statements of the Company and its subsidiaries have been prepared in conformity with U.S. GAAP. All intercompany transactions and balances have been eliminated upon consolidation.

Significant Accounting Policies

There have been no material changes to the Company's significant accounting policies described in Note 1 - Organization and Summary of Significant Accounting Policies, of the Notes to Consolidated Financial Statements included in the Company's Annual Report on Form 10-K for the fiscal year ended January 31, 2022.

Concentration of Risk

The Company's products are manufactured, assembled and tested by third-party contractors located primarily in Asia. The Company does not have long-term agreements with these contractors. A significant disruption in the operations of one or more of these contractors would impact the production of the Company's products which could have a material adverse effect on its business, financial condition and results of operations.

A substantial portion of the Company's revenue is derived from sales through one of its distributors, WT Microelectronics Co., Ltd., formerly Wintech Microelectronics Co., Ltd., or WT, which serves as its non-exclusive sales representative in Asia other than Japan, and directly to one ODM customer, Chicony Electronics Co., Ltd., or Chicony. Termination of the relationships with these customers could result in a temporary or permanent loss of revenue. Furthermore, any credit issues from these customers could impair their abilities to make timely payment to the Company. See Note 14 for additional information regarding revenue and credit concentration with these customers.

Financial instruments that potentially subject the Company to concentrations of credit risk consist primarily of cash, cash equivalents, marketable debt securities and accounts receivable. The Company maintains its cash primarily in checking accounts with reputable financial institutions. Cash deposits held with these financial institutions may exceed the amount of insurance provided on such deposits. The Company has not experienced any losses on deposits of its cash. In order to limit the exposure of each investment, the cash equivalents and marketable debt securities consist of money market funds, commercial paper, debt securities of corporations or corporate bonds, asset-backed securities and U.S. government securities which management assesses to be highly liquid. The Company does not hold or issue financial instruments for trading purposes.

The Company performs ongoing credit evaluation of its customers and adjusts credit limits based upon payment history and customers' credit worthiness. The Company regularly monitors collections and payments from its customers.

Restricted Cash

Amounts included in restricted cash represent those required to be set aside to secure certain transactions in a foreign entity. As of October 31, 2022 and January 31, 2022, restricted cash was immaterial, respectively. The following table presents cash, cash equivalents and restricted cash reported on the condensed consolidated balance sheets, and the totals are presented on the condensed consolidated statements of cash flows:

	As of			
	October 31, 2022	January 31, 2022	October 31, 2021	January 31, 2021
	(in thousands)			
Cash and cash equivalents	$ 112,837	$ 171,043	$ 457,760	$ 241,274
Restricted cash	7	10	10	10
Total as presented in the condensed consolidated statements of cash flows	$ 112,844	$ 171,053	$ 457,770	$ 241,284

Recent Accounting Pronouncements

None.

2. Financial Instruments and Fair Value

In the second quarter of fiscal year 2023, the Company resumed its investments in money market funds and debt securities after a full liquidation of its investments in fiscal year 2022 to finance the acquisition of Oculii Corporation, or Oculii. The debt security investment portfolio consists of commercial paper, debt securities of corporations or corporate bonds, asset-backed securities and U.S. government securities. All of the investments are denominated in United States dollars and reported at fair value as available-for-sale securities in the condensed consolidated balance sheets as follows:

	As of October 31, 2022			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
	(in thousands)			
Money market funds	$ 13,525	$ —	$ —	$ 13,525
Commercial paper	18,161	—	—	18,161
Corporate bonds	21,390	1	(425)	20,966
Asset-backed securities	16,287	—	(260)	16,027
U.S. government securities	31,402	—	(359)	31,043
Total cash equivalents and marketable debt securities	$ 100,765	$ 1	$ (1,044)	$ 99,722

	As of January 31, 2022			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Fair Value
	(in thousands)			
Money market funds	$ 20	$ —	$ —	$ 20
Total cash equivalents and marketable debt securities	$ 20	$ —	$ —	$ 20

As of October 31, 2022, there were no debt securities with unrealized losses for more than twelve months.

	As of	
	October 31, 2022	January 31, 2022
	(in thousands)	
Included in cash equivalents	$ 13,525	$ 20
Included in marketable debt securities	86,197	—
Total cash equivalents and marketable debt securities	$ 99,722	$ 20

The contractual maturities of the investments at October 31, 2022 and January 31, 2022 were as follows:

	As of	
	October 31, 2022	January 31, 2022
	(in thousands)	
Less than one year	$ 54,829	$ 20
Due in 1 - 5 years	44,893	—
Total cash equivalents and marketable debt securities	$ 99,722	$ 20

The unrealized gains and losses on the available-for-sale securities were primarily caused by fluctuations in market value and interest rates as a result of the economic environment. In accordance with ASU No. 2016-13, Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments, the Company estimates the expected losses at an individual security level whenever a security's fair value is below its amortized cost basis using the discounted cash flow method. The credit-related portion of the loss is recognized in other income, net in the condensed consolidated statements of operations but is limited to the difference between the fair value and the amortized cost basis of the security, adjusted for accrued interest. The non-credit-related portion of the loss is recognized in accumulated other comprehensive loss in the condensed consolidated balance sheets. The credit-related losses were not material for the three and nine months ended October 31, 2022, and 2021, respectively.

Interest income, including amortization of premiums and accretion of discounts related to the investments, as well as realized gains and losses from sales of the investments are recorded in other income, net, in the condensed consolidated statements of operations. For the three months ended October 31, 2022 and 2021, interest income and realized gains, net, was approximately $0.7 million and $0.7 million, respectively. For the nine months ended October 31, 2022 and 2021, interest income and realized gains, net, were approximately $0.8 million and $1.7 million, respectively.

The following fair value hierarchy is applied for disclosure of the inputs used to measure fair value. This hierarchy prioritizes the inputs into three broad levels as follows:

Level 1—Inputs are unadjusted quoted prices in active markets for identical assets or liabilities.

Level 2—Inputs are quoted prices for similar assets and liabilities in active markets or inputs that are observable for the assets or liabilities, either directly or indirectly through market corroboration, for substantially the full term of the financial instruments.

Level 3—Unobservable inputs based on the Company's own assumptions used to measure assets and liabilities at fair value. The inputs require significant management judgment or estimation.

The Company measures the fair value of money market funds using quoted prices in active markets for identical assets and classifies them within Level 1. The fair value of the Company's investments in other debt securities are obtained based on quoted prices for similar assets in active markets and are classified within Level 2.

The following tables present the fair value of the financial instruments measured on a recurring basis as of October 31, 2022 and January 31, 2022, respectively:

	As of October 31, 2022			
	Total	Level 1	Level 2	Level 3
	(in thousands)			
Money market funds	$ 13,525	$ 13,525	$ —	$ —
Commercial paper	18,161	—	18,161	—
Corporate bonds	20,966	—	20,966	—
Asset-backed securities	16,027	—	16,027	—
U.S. government securities	31,043	—	31,043	—
Total cash equivalents and marketable debt securities	$ 99,722	$ 13,525	$ 86,197	$ —

	As of January 31, 2022			
	Total	Level 1	Level 2	Level 3
	(in thousands)			
Money market funds	$ 20	$ 20	$ —	$ —
Total cash equivalents and marketable debt securities	$ 20	$ 20	$ —	$ —

3. Inventories

Inventories at October 31, 2022 and January 31, 2022 consisted of the following:

	As of	
	October 31, 2022	January 31, 2022
	(in thousands)	
Work-in-progress	$ 33,128	$ 25,844
Finished goods	12,267	19,375
Total	$ 45,395	$ 45,219

4. Property and Equipment, Net

Depreciation expense was approximately $1.0 million and $0.7 million for the three months ended October 31, 2022 and 2021, respectively, and was approximately $2.8 million and $1.9 million for the nine months ended October 31, 2022 and 2021, respectively. Property and equipment at October 31, 2022 and January 31, 2022 consisted of the following:

	As of	
	October 31, 2022	January 31, 2022
	(in thousands)	
Computer hardware and software	$ 19,038	$ 16,488
Tools and equipment	7,769	7,532
Furniture and fixtures	1,310	1,243
Leasehold improvements	3,178	2,942
Construction in progress	1,166	1,060
	32,461	29,265
Less: accumulated depreciation and amortization	(21,708)	(19,131)
Total property and equipment, net	$ 10,753	$ 10,134

5. Intangible Assets, Net

As of October 31, 2022, intangible assets primarily consist of software licenses as well as developed technology, customer relationships and trade name that were acquired from business combinations.

The Company enters into certain software license agreements with third parties from time-to-time. The software licenses consist of noncancelable on-premise internal-use software and software with alternative use that is to be sold, leased or otherwise marketed as part of a product. The licenses have been capitalized as intangible assets, and the corresponding future payments have been recorded as liabilities at net present value. As of October 31, 2022, $2.3 million was recorded in accrued and other current liabilities and $1.0 million was recorded in other long-term liabilities in the condensed consolidated balance sheets.

The components of intangible assets as of October 31, 2022 and January 31, 2022 were as follows:

	As of October 31, 2022			As of January 31, 2022		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
	(in thousands)					
Software licenses	$ 31,220	$ (15,571)	$ 15,649	$ 22,093	$ (11,331)	$ 10,762
Developed technology	21,200	(3,175)	18,025	21,200	(904)	20,296
Customer relationships	13,200	(1,467)	11,733	13,200	(367)	12,833
Trade name	2,500	(357)	2,143	2,500	(89)	2,411
Total intangible assets, net	$ 68,120	$ (20,570)	$ 47,550	$ 58,993	$ (12,691)	$ 46,302

During the nine months ended October 31, 2022, there were approximately $10.0 million of software licenses purchased and approximately $0.9 million of software licenses retired. The amortization expense associated with software licenses was approximately $2.0 million and $1.6 million for the three months ended October 31, 2022 and 2021, respectively, and was approximately $5.2 million and $4.6 million for the nine months ended October 31, 2022 and 2021, respectively. The amortization expense associated with acquisition-related intangible assets, including developed technology, customer relationships and trade name, was approximately $1.2 million and $0.1 million for the three months ended October 31, 2022 and 2021, respectively, and was $3.6 million and $0.1 million for the nine months ended October 31, 2022 and 2021, respectively. The expected future amortization expense related to these intangible assets as of October 31, 2022 is as follows:

Fiscal Year	As of October 31, 2022 (in thousands)
2023 (3 months remaining)	$ 2,448
2024	8,932
2025	7,437
2026	5,930
2027	5,711
Thereafter	17,092
Total future amortization expenses:	$ 47,550

Intangible assets are tested for impairment at least annually, in the fourth fiscal quarter, or more frequently if events or changes in circumstances indicate that the assets may be impaired. There were no intangible asset impairments for the three and nine months ended October 31, 2022 and 2021, respectively.

6. Accrued and Other Current Liabilities

Accrued and other current liabilities at October 31, 2022 and January 31, 2022 consisted of the following:

	As of	
	October 31, 2022	January 31, 2022
	(in thousands)	
Accrued employee compensation	$ 20,195	$ 30,044
Accrued product development costs	13,533	10,523
Software license liabilities, current	2,332	6,001
Other accrued liabilities	7,501	5,496
Total accrued and other current liabilities	$ 43,561	$ 52,064

The timing of SoC development and payments to outside foundries resulted in the fluctuation of accrued product development costs. Approximately $10.9 million of annual bonus was paid in the first quarter of fiscal year 2023, of which $3.2 million was paid in cash and $7.7 million was settled with restricted stock units.

7. Leases

The Company enters into various operating leases for its worldwide facilities. In the second quarter of fiscal year 2023, the Company extended leases for its Shenzhen office and one of its facilities in Santa Clara, California for an additional two years beginning October 1, 2022 to September 30, 2024. For the lease extensions, the Company recorded an increase to the operating lease right-of-use (ROU) assets and corresponding operating lease liabilities of approximately $0.8 million in the condensed consolidated balance sheets. For the three months ended October 31, 2022, the Company modified a lease liability for its Italy office lease and recorded a reduction to the ROU assets and corresponding operating lease liabilities of approximately $0.2 million in the condensed consolidated balance sheets.

Operating lease expense was approximately $1.0 million and $0.9 million for the three months ended October 31, 2022 and 2021, respectively, and was approximately $2.8 million and $2.5 million for the nine months ended October 31, 2022 and 2021, respectively. The Company's short-term leases and finance leases were not material as of October 31, 2022 and January 31, 2022, respectively.

Supplemental cash flow information related to the operating leases is as follows:

	Three Months Ended October 31, 2022	Nine Months Ended October 31, 2022
	(in thousands)	
Cash paid for operating leases included in operating cash flows	$ 1,095	$ 3,254
Supplemental non-cash information related to lease liabilities arising from obtaining right-of-use assets	$ 78	$ 248
Leased assets changes arising from lease modifications	$ (235)	$ 575

As of October 31, 2022, the weighted average remaining lease term is 2.85 years, and the weighted average discount rate is 3.59 percent. Future minimum lease payments for the lease liabilities are as follows:

Fiscal Year	As of October 31, 2022 (in thousands)
2023 (3 months remaining)	$ 919
2024	3,664
2025	3,355
2026	1,363
2027	319
Thereafter	113
Total future annual minimum lease payments	9,733
Less: interest	(411)
Total lease liabilities	$ 9,322

8. Other Long-Term Liabilities

Other long-term liabilities at October 31, 2022 and January 31, 2022 consisted of the following:

	As of	
	October 31, 2022	January 31, 2022
	(in thousands)	
Unrecognized tax benefits, including interest	$ 9,684	$ 9,313
Deferred tax liabilities, non-current	1,536	1,769
Software license liabilities, non-current	1,004	1,674
Other long-term liabilities	4	7
Total other long-term liabilities	$ 12,228	$ 12,763

9. Capital Stock

Preference shares

After completion of the Company's initial public offering in 2012, a total of 20,000,000 preference shares, with a $0.00045 par value per share, were authorized. There were no preference shares issued and outstanding as of October 31, 2022 and January 31, 2022, respectively.

Ordinary shares

As of October 31, 2022 and January 31, 2022, a total of 200,000,000 ordinary shares were authorized.

In the first quarter of fiscal year 2023, the Company added 466,285 ordinary shares to the ordinary shares reserved for issuance, pursuant to an "evergreen" provision contained in the Amended and Restated 2012 Employee Stock Purchase Plan, or ESPP. Pursuant to such provision, for each fiscal year, the number of ordinary shares reserved for issuance under the ESPP is automatically increased by a number equal to the lesser of (i) 1,500,000 ordinary shares, (ii) one and one quarter percent (1.25%) of the aggregate number of ordinary shares outstanding on February 1st of each fiscal year, or (iii) an amount determined by the Company's Board of Directors or a duly authorized committee of the Board of Directors.

As of October 31, 2022 and January 31, 2022, the following ordinary shares were reserved for future issuance under the Company's equity plans and ESPP:

	As of	
	October 31, 2022	January 31, 2022
Shares reserved for options, restricted stock and restricted stock units under equity plans	6,120,269	7,461,541
Shares reserved for ESPP	2,986,403	2,624,704

Stock repurchase program

On May 27, 2022, the Company' s Board of Directors approved an extension of the current share repurchase program for an additional twelve months ending June 30, 2023. There were no ordinary shares repurchased in the nine months ended October 31, 2022. As of October 31, 2022, there was approximately $49.0 million available for repurchases under the current repurchase program through June 30, 2023. Repurchases may be made from time-to-time through open market purchases, 10b5-1 plans or privately negotiated transactions subject to market conditions, applicable legal requirements and other relevant factors. The repurchase program does not obligate the Company to acquire any particular amount of ordinary shares, and it may be suspended at any time at the Company's discretion. The repurchase program is funded using the Company's working capital and any repurchased shares are recorded as authorized but unissued shares.

10. Stock-based Compensation

The following table presents the classification of stock-based compensation for the periods indicated:

	Three Months Ended October 31,		Nine Months Ended October 31,	
	2022	2021	2022	2021
	(in thousands)			
Stock-based compensation:				
Cost of revenue	$ 360	$ 391	$ 1,071	$ 1,073
Research and development	18,741	13,725	53,775	36,444
Selling, general and administrative	9,000	7,937	27,205	22,750
Total stock-based compensation	$ 28,101	$ 22,053	$ 82,051	$ 60,267

As of October 31, 2022, approximately $2.4 million of stock-based compensation expense was accrued and reflected in accrued and other current liabilities in the condensed consolidated balance sheets. Total unrecognized compensation cost related to unvested stock options at October 31, 2022 was $18.7 million and is expected to be recognized over a weighted-average period of 2.02 years. Total unrecognized compensation cost related to unvested restricted stock units at October 31, 2022 was $213.7 million and is expected to be recognized over a weighted-average period of 2.59 years. In April 2022, the Company's Compensation Committee of the Board of Directors approved the acceleration of vesting of 35,703 shares of unvested equity awards associated with the departure of Mr. Casey Eichler, who was the Company's Chief Financial Officer until March 2022. As a result, there was approximately $1.7 million of additional stock-based compensation expense, net recognized in fiscal year 2023.

The following table sets forth the weighted-average assumptions used to estimate the fair value of stock options and employee stock purchase plan awards for the periods indicated:

	Three Months Ended October 31,		Nine Months Ended October 31,	
	2022	2021	2022	2021
Stock Options:				
Volatility	—	—	—	51%
Risk-free interest rate	—	—	—	0.98%
Expected term (years)	—	—	—	5.27
Dividend yield	—	—	—	0%
Employee stock purchase plan awards:				
Volatility	72%	54%	81%	57%
Risk-free interest rate	3.78%	0.05%	2.32%	0.06%
Expected term (years)	0.5	0.5	0.5	0.5
Dividend yield	0%	0%	0%	0%

The following table summarizes stock option activities for the period indicated:

	Option Outstanding					
	Shares	Weighted-Average Exercise Price	Weighted-Average Grant-date Fair Value	Total Intrinsic Value Of Options Exercised (in thousands)	Weighted-Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in thousands)
Outstanding at January 31, 2022	619,322	$ 40.08				
Granted	—	—	—			
Exercised	(79,880)	30.79		$ 4,696		
Forfeited	(7,995)	49.19				
Expired	(1,418)	19.81				
Outstanding at October 31, 2022	530,029	41.40			4.42	$ 8,605
Exercisable at October 31, 2022	392,266	$ 43.51			3.47	$ 5,417

The intrinsic value of options outstanding and exercisable is calculated based on the difference between the fair market value of the Company's ordinary shares on the reporting date and the exercise price. The closing price of the Company's ordinary shares on October 31, 2022 was $54.73, as reported by The NASDAQ Global Market. The intrinsic value of exercised options is calculated based on the difference between the fair market value of the Company's ordinary shares on the exercise date and the exercise price.

The following table summarizes restricted stock unit activities for the period indicated:

	Shares	Weighted-Average Grant-Date Fair Value
Unvested at January 31, 2022	2,651,135	$ 85.41
Granted	1,499,374	74.42
Vested	(1,258,895)	69.81
Forfeited	(77,346)	101.36
Unvested at October 31, 2022	2,814,268	$ 86.40

As of October 31, 2022, the aggregate intrinsic value of unvested restricted stock units was $154.0 million.

11. Net Income (Loss) Per Ordinary Share

The following table sets forth the computation of basic and diluted income (loss) per ordinary share for the periods indicated:

	Three Months Ended October 31,		Nine Months Ended October 31,	
	2022	2021	2022	2021
	(in thousands, except share and per share data)			
Numerator:				
Net income (loss)	$ (19,809)	$ 756	$ (54,281)	$ (17,218)
Denominator:				
Weighted-average ordinary shares - basic	38,582,584	36,792,187	38,185,421	36,391,676
Effect of potentially dilutive securities:				
Employee stock options	—	327,417	—	—
Restricted stock units	—	1,921,723	—	—
Employee stock purchase plan	—	4,947	—	—
Weighted-average ordinary shares - diluted	38,582,584	39,046,274	38,185,421	36,391,676
Net income (loss) per ordinary share:				
Basic	$ (0.51)	$ 0.02	$ (1.42)	$ (0.47)
Diluted	$ (0.51)	$ 0.02	$ (1.42)	$ (0.47)

The following weighted-average potentially dilutive securities were excluded from the computation of diluted income (loss) per ordinary share as their effect would have been antidilutive:

	Three Months Ended October 31,		Nine Months Ended October 31,	
	2022	2021	2022	2021
Options to purchase ordinary shares	314,645	13,399	351,595	269,713
Restricted stock units	1,408,315	51	1,549,473	1,105,083
Employee stock purchase plan	10,231	3,446	10,899	9,010
	1,733,191	16,896	1,911,967	1,383,806

12. Income Taxes

The following table provides details of income taxes for the periods indicated:

	Three Months Ended October 31,		Nine Months Ended October 31,	
	2022	2021	2022	2021
	(in thousands)			
Loss before income taxes	$ (18,697)	$ (804)	$ (49,323)	$ (16,089)
Provision (benefit) for income taxes	1,112	(1,560)	4,958	1,129
Effective tax rate	(6.0)%	194.2%	(10.1)%	(7.0)%

The Company recorded an income tax provision of $1.1 million and an income tax benefit $1.6 million for the three months ended October 31, 2022 and 2021, respectively. The Company recorded an income tax provision of $5.0 million and $1.1 million for the nine months ended October 31, 2022 and 2021, respectively. The increase in income tax expense for the three and nine months ended October 31, 2022 was primarily due to a decrease in the U.S. federal research tax credit, a decrease in tax benefits from excess stock-based compensation deductions, and an increase in non-deductible stock-based compensation, partially offset by a decrease in the proportion of profits generated in higher tax jurisdictions.

The Company files federal and state income tax returns in the United States and in various foreign jurisdictions. The Internal Revenue Service is currently examining the Company's U.S. federal income tax return for the fiscal year ended January 31, 2017. The tax years 2013 to 2021 remain open to examination by U.S. federal tax authorities. The tax years 2009 to 2021 remain open to examination by U.S. state tax authorities. The tax years 2015 to 2021 remain open to examination by foreign tax authorities. Fiscal years outside of the normal statute of limitations remain open to audit by tax authorities due to tax attributes generated in those earlier years, which have been carried forward and may be audited in subsequent years when utilized.

The Company regularly assesses the likelihood of adverse outcomes resulting from potential tax examinations to determine the adequacy of its provision for income taxes. These assessments can require considerable estimates and judgments. As of October 31, 2022, the gross amount of unrecognized tax benefits was approximately $31.5 million. If the estimates of income tax liabilities prove to be less than the ultimate assessment, then a further charge to expense could be required. If events occur, and the payment of these amounts ultimately proves to be unnecessary, the reversal of the liabilities could result in tax benefits being recognized in the period in which the Company determines the liabilities are no longer necessary. The Company does not anticipate significant changes to its uncertain tax positions during the next twelve months.

The Inflation Reduction Act of 2022 ("IRA") was enacted on August 16, 2022. The IRA applies to tax years beginning after December 31, 2022 and introduces a 15% minimum tax for corporations whose average annual adjusted financial statement income for any consecutive three-tax-year period preceding the tax year exceeds $1 billion. The tax also applies to U.S. members of a non-U.S. parented group if the group satisfies the $1 billion threshold and the U.S. members have adjusted financial statements income of $100 million or more. It also introduced a 1% excise tax on the fair market value of stock repurchases made by certain corporations after December 31, 2022 and several tax credits and incentives. The Company does not expect a material impact to its financial statements from these new tax laws.

13. Commitments and Contingencies

Contract Manufacturer Commitments

The Company's components and products are procured and built by independent contract manufacturers based on sales forecasts. These forecasts include estimates of future demand, historical trends, analysis of sales and marketing activities, and adjustment of overall market conditions. The Company regularly issues purchase orders to independent contract manufacturers which are cancelable upon agreement between the Company and the third-party manufacturers. These manufacturing purchase commitments typically provide the Company with flexibility to cancel, reschedule or adjust requirements based upon business needs but the Company may incur certain costs depending on the production stage of the products. As of October 31, 2022 and January 31, 2022, total manufacturing purchase commitments were approximately $47.9 million and $71.5 million, respectively. The Company also reviews and assesses the need for any expected loss liabilities on quarterly basis for all products that it does not expect to sell for which it has committed purchases from suppliers. As of October 31, 2022, an approximately $2.5 million loss was recognized in the condensed consolidated balance sheets from adverse purchase commitments. There were no material loss liabilities recorded in the condensed consolidated balance sheets from adverse purchase commitments as of January 31, 2022.

Indemnification

The Company, from time to time, in the normal course of business, indemnifies certain vendors with whom it enters into contractual relationships. The Company has agreed to hold the other party harmless against third-party claims in connection with the Company's future products. The Company also indemnifies certain customers against third-party claims related to certain intellectual property and product liability matters. It is not possible to determine the maximum potential amount of liability under these indemnification obligations due to the limited history of prior indemnification claims and the unique facts and circumstances that are likely to be involved in each particular claim. The Company has not made payments under these obligations, and no liabilities have been recorded for these obligations in the condensed consolidated balance sheets as of October 31, 2022 and January 31, 2022, respectively.

Other Matters

From time to time, the Company is subject to commercial disputes, employment issues, intellectual property claims and litigation, in the ordinary course of its business. Although the ultimate disposition of asserted claims cannot be predicted with certainty, it is the Company's belief that the outcome of any such claims, either individually or on a combined basis, will not have a material adverse effect on its consolidated financial position. The results of any litigation cannot be predicted with certainty, and regardless of the outcome, litigation can have an adverse impact on the Company because of defense and settlement costs, diversion of management resources, and other factors.

14. Segment Reporting

The Company operates in one reportable segment related to the development and sales of low-power, high-definition (HD), Ultra HD video compression, image processing and computer vision solutions. The Chief Executive Officer of the Company has been identified as the Chief Operating Decision Maker (the "CODM") and manages the Company's operations as a whole. For the purpose of evaluating financial performance and allocating resources, the CODM reviews financial information presented on a consolidated basis accompanied by information by customer and geographic region.

Geographic Revenue

The following table sets forth the Company's revenue by geographic region based on bill-to location for the periods indicated:

	Three Months Ended October 31,		Nine Months Ended October 31,	
	2022	2021	2022	2021
	(in thousands)			
Taiwan	$ 54,443	$ 59,412	$ 157,884	$ 153,135
Asia Pacific	15,292	21,323	54,691	60,122
Europe	5,295	4,432	18,167	11,837
North America other than United States	5,748	5,984	15,020	13,117
United States	2,318	1,016	8,523	3,416
Total revenue	$ 83,096	$ 92,167	$ 254,285	$ 241,627

As of October 31, 2022, substantially all of the Company's property and equipment were located in the Asia Pacific region, United States and Europe with approximate net amounts of $5.3 million, $3.9 million and $1.6 million, respectively.

Major Customers

For the three and nine months ended October 31, 2022, the customers representing 10% or more of revenue and accounts receivable were WT and Chicony, which accounted for approximately 61.6% and 10.7% of total revenue for the three months ended October 31, 2022, respectively, and accounted for approximately 59.1% and 11.6% of total revenue for the nine months ended October 31, 2022, respectively. For the three and nine months ended October 31, 2021, the customers representing 10% or more of revenue and accounts receivable were WT and Chicony, which accounted for approximately 63.1% and 13.4% of total revenue for the three months ended October 31, 2021, respectively, and accounted for approximately 62.7% and 14.9% of total revenue for the nine months ended October 31, 2021, respectively. Accounts receivable with WT and Chicony were approximately $25.4 million and $8.9 million, respectively, as of October 31, 2022.

ITEM 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with the unaudited condensed consolidated financial statements and related notes included elsewhere in this Quarterly Report on Form 10-Q, and the consolidated financial statements and notes thereto for the fiscal year ended January 31, 2022 and management's discussion and analysis of our financial condition and results of operations included in our Annual Report on Form 10-K for the 2022 fiscal year filed with the Securities and Exchange Commission, or SEC, on April 1, 2022.

This Quarterly Report on Form 10-Q, including this "Management's Discussion and Analysis of Financial Condition and Results of Operations", includes a number of forward-looking statements that involve many risks and uncertainties. Forward-looking statements are identified by the use of the words "would," "could," "will," "may," "expect," "believe," "should," "anticipate," "outlook," "if," "future," "intend," "plan," "estimate," "predict," "potential," "target," "seek," "project," "forecast," "continue" or "foreseeable" and similar words and phrases, including the negatives of these terms, or other variations of these terms, that denote future events. Such statements include, but are not limited to, statements concerning our market opportunity and our ability to compete in such markets, our product strategy, our ability to develop and introduce new solutions, our future financial and operating performance, our sales and marketing strategy, our investment strategy, research and development, our customer and supplier relationships and inventory levels, industry trends, our cash needs and capital requirements, our repurchase programs, our expectations about taxes, operating expenses, and cost recognition, the availability of third-party components and economic and political conditions. These statements reflect our current views with respect to future events and our potential financial performance, and are subject to risks and uncertainties that could cause our actual results and financial position to differ materially and adversely from what is projected or implied in any forward-looking statements included in this Quarterly Report on Form 10-Q. These factors include, but are not limited to: risks associated with revenue being generated from new customers or design wins, neither of which is assured; our ability to retain and expand customer relationships and to achieve design wins; the ongoing and potential impact of the COVID-19 pandemic on our operations or the operations of our supply chain or our customers; risks associated with the overall economy, including higher inflation and escalating trade tensions between the U.S. and China; the commercial success of our customers' products; our growth strategy; fluctuations in our operating results; our ability to anticipate future market demands and future needs and preferences of our customers; our ability to introduce new and enhanced solutions; the expansion of our current markets and our ability to successfully enter new markets; anticipated trends and challenges, including competition, in the markets in which we operate or seek to operate; our expectations regarding computer vision; our ability to effectively generate and manage growth; our ability to retain key employees; the potential for intellectual property disputes or other litigation; the risks described under Item 1A of Part II — "Risk Factors," and Item 2 of Part I — "Management's Discussion and Analysis of Financial Condition and Results of Operations"; the risks described elsewhere in this Quarterly Report on Form 10-Q and those discussed in other documents we file with the SEC. We make these forward-looking statements based upon information available on the date of this Quarterly Report on Form 10-Q, and we have no obligation (and expressly disclaim any such obligation) to update or alter any forward-looking statements, whether as a result of new information or otherwise except as otherwise required by securities regulations.

Overview

We are a leading developer of low-power system-on-a-chip, or SoC, semiconductors providing powerful artificial intelligence, or AI, processing, advanced image signal processing and high-resolution video compression. Since inception, we have primarily served human viewing applications with video and image processors for enterprise, public infrastructure and home applications, such as internet protocol, or IP, security cameras, sports cameras, wearables, aerial drones, and aftermarket automotive video recorders. Our recent development efforts have focused on creating advanced AI technology that enables edge devices to visually perceive the environment and make decisions based on the data collected from cameras and, most recently, other types of sensors. This category of AI technology is known as computer vision, or CV, and our CV SoCs integrate our state-of-the-art video processor technology together with our deep learning neural network processing technology, which we refer to as CVflow™. The CVflow-architecture supports a variety of CV algorithms, including object detection, classification and tracking, semantic and instance segmentation, image processing, stereo object detection, terrain mapping, and face recognition. CVflow can process other sensor modalities including lidar and radar, and allows customers to differentiate their products by porting their own, or third party, neural networks and/or classical CV algorithms to our CVflow-based SoCs. Our SoC designs fully integrate AI, computer vision functionality, HD video processing, image processing, audio processing, and system functions onto a single chip, delivering exceptional video and image quality at high compression rates, differentiated functionality and low power consumption. These CV-based technologies are allowing us to address a broader range of markets and applications requiring AI video features, including IP security cameras, a variety of automotive cameras, consumer cameras, and industrial and robotic applications. We anticipate that our CV technology will also enable us to capture more content per electronic system and increase our average selling price.

Our development efforts are focused on SoCs that provide both human viewing and computer vision functionality. As a result, we believe that our future revenue growth, if any, will significantly depend upon our ability to expand within camera markets with our AI and computer vision technology, particularly in the Internet of Things, or IoT, markets, as well as emerging markets such as AI-enabled security cameras, AI-based driving applications, including driver monitoring systems, advanced blind spot detection, object detection, and deep learning algorithms for HD mapping solutions, automotive advanced driver assistance systems, or ADAS, applications, and industrial and robotics markets. We expect our research and development expenditures to increase in comparison to prior periods as we devote additional resources to the development of innovative video and image processing solutions with increased functionality, such as AI and CV capabilities, and as we target new markets.

We sell our SoC solutions to leading original design manufacturers, or ODMs, and original equipment manufacturers, or OEMs, globally, and in the automotive market, we also sell to Tier-1 suppliers. We refer to ODMs and Tier-1 automotive suppliers as our customers and OEMs as our end customers, except as otherwise indicated or as the context otherwise requires.

Our sales cycles typically require a significant investment of time and a substantial expenditure of resources before we can realize revenue from the sale of our solutions, if any. Our typical sales cycle consists of a multi-month sales and development process involving our customers' system designers and management and our sales personnel and software engineers. If successful, this process culminates in a customer's decision to use our solutions in its system, which we refer to as a design win. Our sales efforts are typically directed to the OEM of the product that will incorporate our video and image processing solution, but the eventual design and incorporation of our SoC into the product may be handled by an ODM or Tier-1 supplier on behalf of the OEM.

Volume production may begin within 9 to 18 months after a design win, depending on the complexity of our customer's product and other factors upon which we may have little or no influence. In general, design cycles will be longer in the OEM automotive and industrial and robotics markets than in the IoT markets. Once our solutions have been incorporated into a customer's design, they are likely to be used for the life cycle of the customer's product. Conversely, a design loss to a competitor will likely preclude any opportunity for future revenue from such customer's product. Even if we obtain a design win and our SoC remains a component through the life cycle of a customer's product, the volume and timing of actual sales of our SoCs to the customer depend upon the production, release and market acceptance of that product, none of which are within our control. An IoT product typically has a life cycle of 6 to 24 months. We anticipate that product lifecycles will typically be longer than 24 months in the OEM automotive and industrial and robotics markets, as new product introductions occur less frequently in these markets.

Financial Highlights

- We recorded revenue of $83.1 million and $254.3 million for the three and nine months ended October 31, 2022, respectively. This represented a decrease of 9.8% and an increase of 5.2%, respectively, as compared to the same periods in the prior fiscal year. Our revenue for the three months ended October 31, 2022, has been primarily impacted by fewer product unit shipments driven by customer efforts to revert their inventory closer to pre-pandemic levels, as component lead times contract. Continued adoption of our CV-based solutions, which have higher average selling prices, and increased nonrecurring engineering (NRE) project services partially offset this decrease from fewer product unit shipments. Our revenue for the nine months ended October 31, 2022, increased compared to the corresponding period in prior fiscal year primarily due to continued adoption of our CV-based solutions which have higher average selling prices and increased NRE project services, partially offset by a marginal decline in product unit shipments driven by customer efforts to revert their inventory closer to pre-pandemic levels, as component lead times contract.
- We recorded operating losses of $20.1 million and $50.8 million for the three and nine months ended October 31, 2022, respectively, as compared to operating losses of $1.2 million and $17.3 million for the three and nine months ended October 31, 2021, respectively. The higher operating losses were primarily due to higher operating expenses. For the nine months ended October 31, 2022, the higher operating expenses were partially offset by increased revenue and gross profit. The increased operating expenses primarily related to higher personnel costs, including stock-based compensation, associated with headcount growth and benefit programs, increased chip tape-out costs due to the timing and number of chips in development, as well as increased engineering-related expenses for supporting automotive, robotic and industrial applications of our CV-based solutions, partially offset by decreased professional service expense associated with the acquisition of Oculii Corporation, or Oculii, in the prior fiscal year.
- We generated cash flows from operating activities of $39.0 million for the nine months ended October 31, 2022, as compared to $18.2 million for the nine months ended October 31, 2021. The higher cash flows from operating activities were primarily attributable to higher collections of accounts receivable associated with the timing of sales and lower inventory purchases due to improved supply chain constraints in the semiconductor industry, partially offset by increased net loss adjusted for certain non-cash items and decreased liabilities associated with employee benefit payments and the timing of payments to our suppliers.

- In the second quarter of fiscal year 2023, we resumed our investments in money market funds and debt securities. The debt security investment portfolio consists of commercial paper, debt securities of corporations or corporate bonds, asset-backed securities and U.S. government securities. All of the investments are denominated in United States dollars and are reported at a fair value of approximately $99.7 million with unrealized losses of $1.0 million in our condensed consolidated balance sheets.

Factors Affecting Our Performance

Impact of COVID-19 on our Business. The COVID-19 pandemic has resulted in significant governmental measures being implemented to control the spread of the virus, including, among others, restrictions on travel and the imposition of remote or work from home conditions in many of the locations where we have offices. We have experienced a significant disruption of orders and logistics throughout the Asia supply chain as a result of the COVID-19 pandemic, and if the remote or work from home conditions in any of our locations are imposed again, or continues for an extended period of time, we may experience delays in product development, a decreased ability to support our customers, reduced design win activity, and overall lack of productivity. Moreover, if there is a significant COVID-19 outbreak that impacts Samsung Electronic Corporation’s ability to manufacture our SoCs or our third-party contractors’ ability to assemble, test and ship our products, we could experience delays or reductions in our ability to ship products to our customers. The pandemic may also impact our customers’ ability to manufacture their products, support their customers or reduce or delay demand for their products, which could, in turn, reduce such demand for our solutions.

Impact of Global Supply Shortages on Our Business. Global supply shortages, and uncertainty in customer demand as well as the worldwide economy, in general, have continued as a result of the COVID-19 pandemic, and may be further exacerbated by the impacts of higher inflation. Supply chain issues impact our business as they relate to both our suppliers and our customers. With respect to our suppliers, we have in the past experienced supply constraints for certain chips from Samsung Electronics Corporation and we may in the future experience similar issues. With respect to our customers, to the extent customers face supply chain issues with respect to other components needed to pair with our products in order to produce their end products, such customers may delay future orders of our products or hold inventory of our products for longer periods of time. As a result, we may experience increased volatility in our sales and revenues in the near future, primarily owing to uncertainty around demand for semiconductor products, in general. In addition, recently, some customers have indicated they are reducing their inventory levels, as some component lead times contract toward normal levels. This may reduce such customers’ demand for our products. The magnitude and duration of such volatility is uncertain and thus its impact on our business cannot be reasonably estimated at this time.

Ability to Capitalize on AI and Computer Vision Trends. We expect that AI and computer vision functionality will become an increasingly important requirement in many of our current and future markets, including IoT, automotive, industrial and robotics markets. As a result, we believe that our ability to develop advanced AI computer vision technology, enable and support customer product development in emerging applications, such as ADAS, advanced blind spot detection, object detection, classification and tracking, people recognition, retail analytics, and machine learning, and gain customer acceptance of our technology platform and solutions will be critical to our future success. Moreover, achieving design wins, particularly for computer vision-centric applications in the IoT, automotive, industrial and robotics markets, is vital to our ability to generate revenue growth. As such, we closely monitor design wins by our customers. However, a design win may not successfully materialize into revenue, and even if it does result in revenue, the amount generated by each design win can vary significantly.

Ability to Develop and Introduce New or Enhanced Solutions. We operate in a dynamic environment characterized by rapidly changing technologies and technological obsolescence. To compete successfully, we must design, develop, market and sell enhanced solutions with increased levels of performance and functionality that meet the expectations of our customers. As such, we continuously invest in our research and development projects, especially AI and computer vision technologies. However, failure to anticipate or timely develop new or enhanced solutions in response to technology shifts and trends could result in decreased revenue and our competitors achieving design wins we sought. Moreover, any reliability or quality problems with our solutions could harm our reputation, increase additional development and replacement costs, and prevent us from retaining existing customers and attracting new customers.

Pricing, Product Cost and Margin. Our pricing and margins depend on the volumes and features of the solutions we provide to our customers. Additionally, we make significant investments in new solutions for both cost improvements and new features that we expect to drive revenue and maintain margins. In general, solutions incorporated into more complex configurations, such as those used in high-performance camera applications or, in the future, advanced driver assistance systems, have higher prices and higher gross margins as compared to solutions sold into lower-performing, more competitive camera applications. Our average selling price can vary by market and application due to market-specific supply and demand, the maturation of products launched in previous years and the launch of new products by us or our competitors.

We continually monitor the cost of our solutions. As we rely on third-party manufacturers for the manufacture of our products, we maintain a close relationship with these suppliers to continually monitor production yields, component costs and design efficiencies.

Shifting Consumer Preferences. Our revenue is also subject to consumer preferences, regarding form factor and functionality, and how those preferences impact the video and image capture electronics that we support. For example, improved smartphone video capture capabilities led to the decline of video cameras aimed at the video and image capture market. The current video and image capture market is now characterized by a greater volume of more specialized video and image capture devices that are less likely to be replaced with smartphones, such as wearable, IP security, aerial drone and automotive cameras. This increasing specialization of video capture devices has changed our customer base and end markets and has impacted our revenue. In the future, we expect further changes will continue to impact our business performance in those markets.

Continued Concentration of Revenue by End Market. Historically, our revenue has been significantly concentrated in a small number of end markets and we developed technologies to provide solutions for new markets as they emerged. Since fiscal year 2018, the IoTmarkets and automotive markets have been our largest end markets and sales into these markets collectively generated the majority of our revenue. We believe, however, that continued expansion into new markets is required to facilitate revenue growth and customer diversification. We have recently introduced solutions to address emerging applications and markets, such as the incorporation of AI and computer vision functionalities for AI-enabled security cameras, AI-based driving applications and industrial and robotics markets. While we will continue to seek to expand our end market exposure, we anticipate that sales to a limited number of markets will continue to account for a significant percentage of our total revenue for the foreseeable future. Our limited market concentration may cause our financial performance to fluctuate significantly from period to period based on the success or failure of products that our SoCs are designed into as well as the overall growth or decline in the video capture markets in which we compete. In addition, we derive a significant portion of our revenue from a limited number of ODMs who build products on behalf of a limited number of OEMs and from a limited number of OEMs to whom we ship directly. We believe that our operating results for the foreseeable future will continue to depend on sales to a relatively small number of customers.

Ability to Capitalize on Connectivity Trends. Mobile connected devices are ubiquitous today and play an increasingly prominent role in consumers' lives. The constant connectivity provided by these devices has created a demand for connected electronic peripherals such as video and image capture devices. Our ability to capitalize on these trends by supporting our end customers in the development of connected peripherals that seamlessly cooperate with other connected devices and allow consumers to distribute and share video and images with online media platforms is critical for our success. We incorporate wireless communication functionality into our solutions for wearable, IP security, aerial drone and automotive video recorder cameras. The combination of our compression technology with wireless connectivity enables wireless video streaming and uploading of videos and images to the Internet. Our solutions enable IP security camera systems to stream video content to either cloud infrastructure or connected mobile devices, and our solutions for wearable and aerial drone cameras allow consumers to quickly stream or upload video and images to social media platforms.

Sales Volume. A typical design win that successfully launches into the marketplace can generate a wide range of sales volumes for our solutions, depending on the end market demand for our customers' products. Our ability to accurately forecast demand can be adversely affected by a number of factors, including the reputation of the end customer, market penetration, product capabilities, size of the end market that the product addresses, our end customers' ability to sell their products, miscalculations by our customers of their inventory requirements, changes in market conditions, adverse changes in our product order mix and fluctuating demand for our customers' products. In certain cases, we may provide volume discounts on sales of our solutions, which may be offset by lower manufacturing costs related to higher volumes. In general, our customers with greater market penetration and better branding tend to develop products that generate larger volumes over the product life cycle.

Customer Product Life Cycle. We estimate our customers' product life cycles based on the customer, type of product and end market. We typically commence commercial shipments from 9 to 18 months following a design win; however, in some markets, lengthier product and development cycles are possible, depending on the scope and nature of the project, such as in the automotive markets. An IoT product typically has a product life cycle of 6 to 24 months. We anticipate that product development and product life cycles will typically be longer than 24 months in the OEM automotive, Tier-1 automotive suppliers and robotics markets, as new product introductions typically occur less frequently in these markets.

Results of Operations

The following table sets forth a summary of our statement of operations for the periods indicated:

	Three Months Ended October 31,		Nine Months Ended October 31,	
	2022	2021	2022	2021
	(dollars in thousands)			
Revenue	$ 83,096	$ 92,167	$ 254,285	$ 241,627
Cost of revenue	31,418	34,541	94,996	90,817
Gross profit	51,678	57,626	159,289	150,810
Operating expenses:				
Research and development	52,864	41,362	151,892	118,794
Selling, general and administrative	18,944	17,475	58,213	49,323
Total operating expenses	71,808	58,837	210,105	168,117
Loss from operations	(20,130)	(1,211)	(50,816)	(17,307)
Other income, net	1,433	407	1,493	1,218
Loss before income taxes	(18,697)	(804)	(49,323)	(16,089)
Provision (benefit) for income taxes	1,112	(1,560)	4,958	1,129
Net income (loss)	$ (19,809)	$ 756	$ (54,281)	$ (17,218)

The following table sets forth operating results as a percentage of revenue of each line item for the periods indicated:

	Three Months Ended October 31,		Nine Months Ended October 31,	
	2022	2021	2022	2021
Revenue	100 %	100 %	100 %	100 %
Cost of revenue	38	37	37	38
Gross profit	62	63	63	62
Operating expenses:				
Research and development	64	45	60	49
Selling, general and administrative	23	19	23	20
Total operating expenses	87	64	83	69
Loss from operations	(25)	(1)	(20)	(7)
Other income, net	2	—	1	1
Loss before income taxes	(23)	(1)	(19)	(6)
Provision (benefit) for income taxes	1	(2)	2	1
Net income (loss)	(24)%	1 %	(21)%	(7)%

Revenue

We derive substantially all of our revenue from the sale of HD and Ultra HD video and image processing SoC solutions to IoT OEMs, IoT ODMs, OEM or Tier-1 automotive suppliers, either directly or through our distributors. In recent years, our SoC solutions have been primarily used in IoT camera markets, such as IP security, automotive video recorder, drone and wearable cameras. Although we expect these human viewing camera markets to continue to generate revenue for the foreseeable future, we have recently introduced new SoCs targeting emerging AI and computer vision applications in the IoT, automotive, industrial and robotics markets. We derive a substantial portion of our revenue from sales made indirectly through one of our distributors, WT Microelectronics Co., Ltd., formerly Wintech Microelectronics Co., Ltd., or WT, and directly to one of our ODM customers, Chicony Electronics Co., Ltd., or Chicony.

The continued effects of the COVID-19 pandemic and persistent supply chain challenges have negatively affected our business performance and revenues this year, and may continue in the next fiscal year. Our average selling prices fluctuate based on the mix of our solutions sold in a period which reflects the impact of both changes in unit sales of existing solutions as well as the introduction and sales of new solutions. Our CV-based solutions generally have higher selling prices than our traditional video and image processing SoC solutions that do not enable CV functionality. Our solutions are typically characterized by a life cycle that begins with higher average selling prices and lower volumes, followed by broader market adoption, higher volumes and average selling prices that are lower than initial levels.

The end markets into which we sell our products have seen significant changes as consumer preferences have evolved in response to new technologies. As a result, the composition and timing of our revenue may differ meaningfully during periods of technology or consumer preference changes. We expect shifts in consumer use of video capture to continue to change over time, as AI and computer vision specialized use cases emerge and video capture continues to proliferate.

Cost of Revenue and Gross Margin

Cost of revenue includes the cost of materials, such as wafers processed by third-party foundries, costs associated with packaging, assembly and testing, and our manufacturing support operations, such as logistics, planning and quality assurance. Cost of revenue also includes indirect costs, such as warranty, inventory valuation reserves, adverse purchase commitments, amortization of developed technology and other general overhead costs.

We expect that our gross margin may fluctuate from period to period as a result of changes in customer mix, average selling price, product mix and the introduction of new products by us or our competitors. In general, solutions incorporated into more complex configurations, such as those used in high-performance cameras, and in future advanced automotive OEM applications, have had or are expected to have higher prices and higher gross margins, as compared to solutions sold into the lower-performance, more competitive camera applications. As semiconductor products mature and unit volumes sold to customers increase, their average selling prices typically decline. These declines may be paired with improvements in manufacturing yields and lower wafer, packaging and test costs, which offset some of the margin reduction that could result from lower selling prices.

Research and Development

Research and development expense consists primarily of personnel costs, including salaries, stock-based compensation and employee benefits. The expense also includes costs of development incurred in connection with our collaborations with our foundry vendors, costs and amortization of licensing intellectual property from third parties for product development, costs of development for software and hardware tools, costs of fabrication of mask sets for prototype products, equipment expenses, outside services and allocated depreciation and facility expenses, net of any research and development grants. All research and development costs are expensed as incurred. We expect our research and development expense to increase in absolute dollars as we continue to enhance and expand our product features and offerings and increase headcount for new SoC development and development of computer vision technology.

Selling, General and Administrative

Selling, general and administrative expense consists primarily of personnel costs, including salaries, stock-based compensation and employee benefits for our sales, marketing, finance, human resources, information technology and administrative personnel. The expense also includes amortization of trade name and customer relationships, professional service costs related to accounting, tax, legal services, and allocated depreciation and facility expenses. We expect our selling, general and administrative expense to increase in absolute dollars as we continue to maintain the infrastructure and expand the size of our sales and marketing organization to support our business strategy of addressing new opportunities with our computer vision technology.

Other Income, Net

Other income, net, consists primarily of interest income and realized gains and losses from debt security investments, subsidies granted by a foreign government as well as gains and losses from foreign currency transactions and remeasurements.

Provision (Benefit) for Income Taxes

We are incorporated and domiciled in the Cayman Islands and our operations are subject to income taxes in the United States, China, Hong Kong, Germany, Italy, Japan, South Korea, Taiwan and other jurisdictions in which we do business. Our worldwide operating income is subject to varying tax rates, and our effective tax rate is highly dependent upon the geographic distribution of our earnings or losses and the tax laws and regulations in each geographical region. It is also subject to fluctuation from changes in the valuation of our deferred tax assets and liabilities; tax benefits from excess stock-based compensation deductions; transfer pricing adjustments and the tax effects of nondeductible compensation. We have historically had lower effective tax rates as a substantial percentage of our operations are conducted in lower-tax jurisdictions. If our operational structure were to change in such a manner that would increase the amount of operating income subject to taxation in higher-tax jurisdictions, or if we were to commence operations in jurisdictions assessing relatively higher tax rates, our effective tax rate could fluctuate significantly on a quarterly basis and/or be adversely affected.

Significant judgment is required in evaluating our uncertain tax positions and determining our provision for income taxes. Although we believe our reserves are reasonable, no assurance can be given that the final tax outcome of these matters will not be different from that which is reflected in our historical provision for income taxes and accruals. We adjust these reserves in light of changing facts and circumstances, such as the closing of a tax audit or the refinement of an estimate. To the extent that the final tax outcome of these matters is different than the amounts recorded, such differences will impact the provision for income taxes in the period in which such determination is made. The provision for income taxes includes the impact of uncertain tax position reserves and changes to reserves that are considered appropriate, as well as the related net interest and penalties.

Significant judgment is also required in determining any valuation allowance recorded against deferred tax assets. In assessing the need for a valuation allowance, we consider all available evidence, including past operating results, estimates of future taxable income, and the feasibility of tax planning strategies. In the event that we change our determination as to the amount of deferred tax assets that can be realized, we will adjust our valuation allowance with a corresponding impact to the provision for income taxes in the period in which such determination is made.

Comparison of the Three and Nine Months Ended October 31, 2022 and 2021

Revenue

	Three Months Ended October 31,		Change		Nine Months Ended October 31,		Change	
	2022	2021	Amount	%	2022	2021	Amount	%
	(dollars in thousands)							
Revenue	$ 83,096	$ 92,167	$ (9,071)	(9.8)%	$ 254,285	$ 241,627	$ 12,658	5.2%

Revenue decreased for the three months ended October 31, 2022 but increased for the nine months ended October 31, 2022, as compared to the same periods in the prior fiscal year. Our revenue for the three months ended October 31, 2022, has been primarily impacted by fewer product unit shipments driven by customer efforts to revert their inventory closer to pre-pandemic levels, as component lead times contract. Continued adoption of our CV-based solutions, which have higher average selling prices, and increased NRE project services partially offset this decrease from fewer product unit shipments. Our revenue for the nine months ended October 31, 2022, increased compared to the corresponding period in prior fiscal year primarily due to continued adoption of our CV-based solutions which have higher average selling prices and increased NRE project services, partially offset by a marginal decline in product unit shipments driven by customer efforts to revert their inventory closer to pre-pandemic levels, as component lead times contract.

Cost of Revenue and Gross Margin

	Three Months Ended October 31,		Change		Nine Months Ended October 31,		Change	
	2022	2021	Amount	%	2022	2021	Amount	%
	(dollars in thousands)							
Cost of revenue	$ 31,418	$ 34,541	$ (3,123)	(9.0)%	$ 94,996	$ 90,817	$ 4,179	4.6%
Gross profit	51,678	57,626	(5,948)	(10.3)%	159,289	150,810	8,479	5.6%
Gross margin	62.2%	62.5%	—	(0.3)%	62.6%	62.4%	—	0.2%

The decreased cost of revenue for the three months ended October 31, 2022, as compared to the same period in the prior fiscal year, was primarily associated with the decrease in revenue, partially offset by approximately $0.6 million of amortization of acquisition-related intangible assets associated with the Oculii acquisition and $0.6 million of adverse purchase order commitments recognized in the third quarter of fiscal year 2023. The increased cost of revenue for the nine months ended October 31, 2022, as compared to the same period in the prior fiscal year, was primarily due to $1.8 million of amortization of acquisition-related intangible assets associated with the Oculii acquisition and $2.5 million of adverse purchase order commitments recognized in fiscal year 2023, partially offset by lower volume of product unit shipments driven by customer efforts to revert their inventory closer to pre-pandemic levels, as component lead times contract.

Gross margin decreased slightly for the three months ended October 31, 2022, as compared to the same period in the prior fiscal year, primarily due to the amortization of acquisition-related intangible assets as well as additional charges from adverse purchase order commitments. For the nine months ended October 31, 2022, the slight increase in gross margin was primarily attributable to an increase in the percentage of our total revenue derived from higher gross margin CV-based solutions and higher margin NRE revenue contracts, partially offset by the impact from the amortization of acquisition-related intangible assets and adverse purchase order commitments.

Research and Development

	Three Months Ended October 31,		Change		Nine Months Ended October 31,		Change	
	2022	2021	Amount	%	2022	2021	Amount	%
	(dollars in thousands)							
Research and development	$ 52,864	$ 41,362	$ 11,502	27.8%	$ 151,892	$ 118,794	$ 33,098	27.9%

Research and development expense increased for the three and nine months ended October 31, 2022, as compared to the same periods in the prior fiscal year, primarily due to increased personnel costs, engineering-related expenses and SoC development cost. Personnel costs increased by approximately $7.1 million and $24.0 million for the three and nine months ended October 31, 2022, respectively, as a result of higher stock-based compensation expense and an increase of 104 employees, including 44 engineering headcount added from our acquisition of Oculii in the fourth quarter of fiscal year 2022. Engineering-related expenses, including the cost and depreciation of equipment and tools, amortization of licensed intellectual property, outside services and facility related expenses in support of new SoCs and related applications, increased by approximately $2.1 million and $6.5 million, respectively. The increases in research and development expense were also attributable to increased SoC development cost due to the timing and number of chips in development. During the three and nine months ended October 31, 2022, SoC development cost increased by approximately $2.3 million and $2.6 million, respectively.

Selling, General and Administrative

	Three Months Ended October 31,		Change		Nine Months Ended October 31,		Change	
	2022	2021	Amount	%	2022	2021	Amount	%
	(dollars in thousands)							
Selling, general and administrative	$ 18,944	$ 17,475	$ 1,469	8.4%	$ 58,213	$ 49,323	$ 8,890	18.0%

Selling, general and administrative expense increased for the three and nine months ended October 31, 2022, as compared to the same periods in the prior fiscal year, primarily due to increased personnel costs, sales and administration-related expenses as well as the amortization of acquisition-related intangible assets associated with the Oculii acquisition. Personnel costs increased by approximately $1.9 million and $7.6 million, respectively, as a result of higher stock-based compensation expense and an increase of 23 employees. The increases were also attributable to approximately $0.7 million and $1.5 million, respectively, of additional sales and administration-related expenses to support our business development. For the three and nine months ended October 31, 2022, the amortization of acquisition-related intangible assets was approximately $0.5 million and $1.4 million, respectively. The increases were partially offset by approximately $1.6 million, respectively, of less professional services associated with the acquisition of Oculii in the prior fiscal year.

Other Income, Net

	Three Months Ended October 31,		Change		Nine Months Ended October 31,		Change	
	2022	2021	Amount	%	2022	2021	Amount	%
	(dollars in thousands)							
Other income, net	$ 1,433	$ 407	$ 1,026	252.1%	$ 1,493	$ 1,218	$ 275	22.6%

The increase in other income, net, for the three months ended October 31, 2022, as compared to the same period in the prior fiscal year, was primarily due to higher interest income from our debt security investments and subsidies received from a foreign government, as well as additional gains from foreign currency transactions and remeasurements, partially offset by lower realized gains from our investments. For the nine months ended October 31, 2022, the increase in other income, net, as compared to the same period in the prior fiscal year, was primarily due to additional gains from foreign currency transactions and remeasurements and subsidies received from a foreign government, partially offset by lower interest income and realized gains from our debt security investments as a result of the full liquidation of our investments in the third quarter of fiscal year 2022 to finance the acquisition of Oculii. In July 2022, we resumed our investments in money market funds and debt securities.

Provision (Benefit) for Income Taxes

	Three Months Ended October 31,		Change		Nine Months Ended October 31,		Change	
	2022	2021	Amount	%	2022	2021	Amount	%
	(dollars in thousands)							
Provision (benefit) for income taxes	$ 1,112	$ (1,560)	$ 2,672	171.3%	$ 4,958	$ 1,129	$ 3,829	339.1%
Effective tax rate	(6.0) %	194.2 %	—	(200.2)%	(10.1) %	(7.0) %	—	(3.1)%

The quarterly income taxes reflect an estimate of the corresponding fiscal year's annual effective tax rate and include, when applicable, adjustments from discrete tax items arising in the quarter.

The increases in income tax expense for the three and nine months ended October 31, 2022, as compared to the same periods in the prior fiscal year, were primarily due to a decrease in the U.S. federal research tax credit, a decrease in tax benefits from excess stock-based compensation deductions, and an increase in non-deductible stock-based compensation, partially offset by a decrease in the proportion of profits generated in higher tax jurisdictions.

Liquidity and Capital Resources

As of October 31, 2022 and January 31, 2022, we had cash, cash equivalents and marketable debt securities of approximately $199.0 million and $171.0 million, respectively. We invest in highly-liquid, short-term marketable debt securities and hold these investments as available-for-sale securities. As of October 31, 2022, these securities had a fair value of approximately $99.7 million with unrealized losses of approximately $1.0 million caused by market fluctuations. For the three and nine months ended October 31, 2022, there was approximately $0.7 million and $0.8 million, respectively, of interest income and realized gains recorded in other income, net in the condensed consolidated statements of operations. The current inflationary environment in the United States and resulting high interest rates have not had material impact on our investment portfolio and financial position.

Cash Flows

The following table summarizes our cash flows for the periods indicated:

	Nine Months Ended October 31,	
	2022	2021
	(in thousands)	
Net cash provided by operating activities	$ 39,003	$ 18,224
Net cash provided by (used in) investing activities	(99,159)	190,931
Net cash provided by financing activities	1,947	7,331
Net increase (decrease) in cash, cash equivalents and restricted cash	$ (58,209)	$ 216,486

Net Cash Provided by Operating Activities

Net cash provided by operating activities increased for the nine months ended October 31, 2022, as compared to the same period in the prior fiscal year, primarily attributable to higher collections of accounts receivable associated with the timing of sales and lower inventory purchases due to improved supply chain constraints in the semiconductor industry, partially offset by increased net loss adjusted for certain non-cash items and decreased liabilities associated with employee benefit payments and the timing of payments to our suppliers.

Net Cash Provided by (Used in) Investing Activities

Net cash used in investing activities increased for the nine months ended October 31, 2022, as compared to net cash provided by investing activities for the same period in the prior fiscal year, primarily due to approximately $284.0 million less net cash receipts from debt security investments after a full liquidation of investments in fiscal year 2022 and approximately $6.8 million higher cash payments for purchase of property and equipment and licenses, partially offset by an approximately $0.7 million claim from an escrow account associated with the acquisition of Oculii.

Net Cash Provided by Financing Activities

Net cash provided by financing activities decreased for the nine months ended October 31, 2022, as compared to the same period in the prior fiscal year, primarily due to approximately $4.3 million less cash proceeds from option exercises and employee stock purchase withholdings, as well as an additional $1.1 million payment for purchase of licenses.

Stock Repurchase Program

No ordinary shares were repurchased during the nine months ended October 31, 2022. On May 27, 2022, our Board of Directors approved an extension of the current share repurchase program for an additional twelve months ending June 30, 2023. The repurchase program does not obligate us to acquire any particular amount of ordinary shares, and it may be suspended at any time at our discretion. As of October 31, 2022, there was approximately $49.0 million remaining available for repurchases under the repurchase program through June 30, 2023.

Operating and Capital Expenditure Requirements

As of October 31, 2022, we had cash, cash equivalents and marketable debt securities of approximately $199.0 million. We believe that our existing cash balances will be sufficient to meet our anticipated cash requirements through at least the next 12 months. In the future, we expect our operating and capital expenditures to increase as we increase headcount, expand our business activities, and implement and enhance our information technology platforms. As we expand our operations, we may require more working capital. If our available cash balances are insufficient to satisfy our future liquidity requirements, we may seek to sell equity or convertible debt securities or borrow funds commercially. The sale of equity and convertible debt securities may result in dilution to our shareholders, and those securities may have rights senior to those of our ordinary shares. If we raise additional funds through the issuance of convertible debt securities or borrowing funds commercially, we may become subject to covenants that would restrict our operations. We may require additional capital beyond our currently anticipated amounts. Additional capital may not be available to us on reasonable terms, or at all.

Our short- term and long-term capital requirements will depend on many factors, including the following:

- our ability to generate cash from operations;
- our ability to control our costs;
- the expansion of our research and development of new technologies and products to address new markets and applications;
- the magnitude and duration of COVID-19 impact, as well as measures implemented to control the spread of the virus;
- the emergence of competing or complementary technologies or products;
- global economic and political conditions, including higher inflation and trade restrictions;
- the costs of filing, prosecuting, defending and enforcing any patent claims and other intellectual property rights or participating in litigation-related activities; and
- our acquisition of complementary businesses, products and technologies.

Contractual Obligations, Commitments and Contingencies

Manufacturing Purchase Obligations

As of October 31, 2022, we had purchase obligations with our independent contract manufacturers of $47.9 million.

Except as described above with respect to the manufacturing purchase obligations, there were no other material changes in our contractual obligations, commitments and contingencies from those disclosed in our Annual Report on Form 10-K for the fiscal year ended January 31, 2022. Please see Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations – Contractual Obligations, Commitments and Contingencies” in our Annual Report on Form 10-K for the fiscal year ended January 31, 2022 for a description of our contractual obligations.

Off-Balance Sheet Arrangements

As of October 31, 2022, we did not engage in any off-balance sheet arrangements, including the use of structured finance, special purpose entities or variable interest entities.

Recent Authoritative Accounting Guidance

See Note 1 of Notes to Condensed Consolidated Financial Statements for information regarding recently issued accounting pronouncements.

Critical Accounting Policies and Significant Management Estimates

There have been no material changes to our critical accounting policies and estimates as compared to the critical accounting policies and estimates described in our Annual Report on Form 10-K for the 2022 fiscal year filed with the SEC on April 1, 2022.

ITEM 3. Quantitative and Qualitative Disclosures about Market Risk

As of October 31, 2022 and January 31, 2022, we had cash, cash equivalents and marketable debt securities totaling $199.0 million and $171.0 million, respectively. Our cash is deposited in checking accounts with reputable financial institutions. The cash equivalents and marketable debt securities consist of investments in money market funds, commercial paper, debt securities of corporations or corporate bonds, asset-backed securities and U.S. government securities. Our cash is held for working capital purposes. We do not enter into investments for trading or speculative purposes.

Interest Rate Fluctuation Risk

The primary objective of our investment activities is to preserve capital, provide liquidity and maximize income without significantly increasing risk. Some of the securities we invest in are subject to market risk. This means that a change in prevailing interest rates may affect the interest income on our cash, cash equivalents and marketable debt securities, and the market value of those securities. To minimize this risk, we maintain our portfolio in a variety of debt securities with high liquidity and low credit risk. The current inflationary environment in the United States and resulting high interest rates have not had material impact on our investment portfolio and financial position. We do not enter into investments for trading or speculative purposes. A 10% change in interest rates will not have a material impact on our future interest income or investment fair value. The liquidity risk and the risk associated with fluctuating interest rates are limited to our investment portfolio.

Foreign Currency Risk

To date, all of our product sales and inventory purchases have been denominated in U.S. dollars. We therefore have not had any foreign currency risk associated with these two activities. The functional currency of all of our entities is the U.S. dollar. Our operations outside of the United States incur operating expenses and hold assets and liabilities denominated in foreign currencies, principally the New Taiwan Dollar, the Chinese Yuan Renminbi and the Eurozone Euro. Our results of operations and cash flows are subject to fluctuations due to changes in foreign currency exchange rates. As we grow our operations, our exposure to foreign currency risk could become more significant. To date, we have not entered into any foreign currency exchange contracts and currently do not expect to enter into foreign currency exchange contracts for trading or speculative purposes.

ITEM 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Principal Executive Officer and Principal Financial Officer, has evaluated the effectiveness of our disclosure controls and procedures as of the end of the period covered by this Quarterly Report on Form 10-Q. The term “disclosure controls and procedures” (as defined in Rules 13a- 15(e) and 15d- 15(e)) under the Securities Exchange Act of 1934, as amended, or the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company’s management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

Based upon such evaluation, our Principal Executive Officer and Principal Financial Officer have concluded that, as of October 31, 2022, our disclosure controls and procedures were effective at the reasonable assurance level.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting during the Company's fiscal quarter ended October 31, 2022 that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

Inherent Limitations of Disclosure Controls and Internal Control over Financial Reporting

Because of their inherent limitations, our disclosure controls and procedures and our internal control over financial reporting may not prevent material errors or fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. The effectiveness of our disclosure controls and procedures and our internal control over financial reporting is subject to risks, including that the controls may become inadequate because of changes in conditions or that the degree of compliance with our policies or procedures may deteriorate.

PART II – OTHER INFORMATION

ITEM 1. Legal Proceedings

We are not engaged in any material legal proceedings at this time.

ITEM 1A. Risk Factors

Certain factors may have a material adverse effect on our business, financial condition and results of operations. You should consider carefully the risks and uncertainties described below, in addition to other information contained in this Quarterly Report on Form 10-Q, including our unaudited condensed consolidated financial statements and related notes. The risks and uncertainties described below are not the only ones we face. Additional risks and uncertainties that we are unaware of, or that we currently believe are not material, may also become important factors that adversely affect our business. If any of the following risks actually occurs, our business, financial condition, results of operations, and future prospects could be materially and adversely affected. In that event, the trading price of our ordinary shares could decline, and you could lose part or all of your investment.

Summary of Risk Factors

Our business and our industry is subject to numerous risks and uncertainties, including those described in the following Risk Factors. These risks include, but are not limited to, the following:

- The COVID-19 pandemic could adversely affect our business in a material way, including closure of our offices or the facilities of our suppliers or customers, as well as the disruption of supply chains and normal customer ordering patterns.
- Our customers incorporate components supplied by multiple third parties, and a supply shortage or delay in delivery of these components could delay orders for our solutions by our customers.
- Shortages in, or increased costs of, wafers and materials could increase the manufacturing times for our products and adversely impact our ability to meet customer demand, reduce our gross margins and lead to reduced revenues. In addition, longer manufacturing lead times could lead to temporary periods of increased customer demand as customers seek to increase their inventory levels, which may be followed by periods of reduced demand as customers seek to reduce their inventory to normal levels.
- Our customers may cancel their orders, change production quantities or delay production for a variety of reasons. If we fail to accurately forecast demand for our solutions, revenue shortfalls and/or excess, obsolete or insufficient inventory could result.
- Global economic and political conditions, including higher inflation and trade restrictions, may impact our business and financial condition in ways that we currently cannot predict, including reduced demand for our solutions. Our primary inventory warehouse is located in Hong Kong and may be affected by political, social and economic conditions in Hong Kong.
- We face political and other risks conducting business in Taiwan, particularly due to its relationship with China.
- We outsource our wafer fabrication, assembly and testing operations to third parties, and if these parties fail to produce and deliver our products according to requested demands in specification, quantity, cost and time, our reputation, customer relationships and operating results could suffer.

- We do not have long-term supply contracts with our third-party manufacturing vendors, and they may not allocate sufficient capacity to us at reasonable prices to meet future demands for our solutions.

- If our customers do not design our solutions into their product offerings, or if our customers' product offerings are not commercially successful, our business would suffer.

- If we fail to develop and introduce new or enhanced solutions that meet market requirements on a timely basis, our ability to attract and retain customers could be impaired and our competitive position could be harmed.

- If we fail to penetrate new markets, including the automotive OEM ADAS market, our revenue and financial condition could be harmed.

- Our target markets may not grow or develop as we currently expect and are subject to market risks, any of which could harm our business, revenue and operating results.

- Our ability to sell our products to certain China customers has been restricted. In addition, we are subject to governmental export and import controls that could subject us to liability or impair our ability to compete in international markets, including China.

- Achieving design wins is subject to lengthy competitive selection processes that require us to incur significant costs. Even if we begin a product design, a customer may decide to cancel or change its product plans, resulting in no revenue from such expenditures.

- We depend on a limited number of customers and end customers for a significant portion of our revenue. If we fail to retain or expand our customer relationships, our revenue could decline.

- We are subject to risks related to our ability to successfully integrate and to realize anticipated synergies, on a timely basis or at all, in connection with the Oculii Corp. merger and other strategic transactions we may undertake.

- We are subject to governmental export and import controls that could subject us to liability or impair our ability to compete in international markets.

- We expect competition to increase in the future, which could have an adverse effect on our revenue and market share.

- Fluctuations in our operating results on a quarterly and annual basis could cause the market price of our ordinary shares to decline.

- A breach of our security systems may have a material adverse effect on our business.

- We rely on highly skilled personnel and, if we are unable to hire, retain or motivate key personnel, we may not be able to grow effectively. Similarly, the loss of any of our key personnel could seriously harm our business.

- While we intend to continue to invest in research and development, we may be unable to make the substantial investments that are required to remain competitive in our business.

- We may experience difficulties in transitioning to new wafer fabrication process technologies or in achieving higher levels of design integration, which may result in reduced manufacturing yields, delays in product deliveries and increased costs.

- The average selling prices of video and image processing solutions in our target markets have historically decreased over time and will likely do so in the future, which could harm our revenue and gross margins.

- If we do not generate revenue growth, we may not be able to execute our business plan and our operating results could suffer.

- We are subject to the cyclical nature of the semiconductor industry. We may have difficulty accurately predicting our future revenue and appropriately budgeting our expenses.

- The complexity of our solutions could result in unforeseen delays or expenses from undetected defects, errors or bugs in hardware or software which could reduce the market adoption of our new solutions, damage our reputation with current or prospective customers and adversely affect our operating costs.

- We are subject to warranty and product liability claims and to product recalls which could adversely affect our business.
- A substantial portion of our revenue is processed through a single distributor and the loss of this distributor, or our inability to collect from them, may cause disruptions in our shipments, which may adversely affect our operations and financial condition.
- We are subject to risks associated with our distributors' product inventories.
- Deterioration of the financial conditions of our customers could adversely affect our operating results.
- Third parties’ assertions of infringement of their intellectual property rights could result in our having to incur significant costs and cause our operating results to suffer. Any potential dispute involving our patents or other intellectual property could affect our customers, which could trigger our indemnification obligations to them and result in substantial expense to us.
- Some of our operations and a significant portion of our customers and our subcontractors are located outside of the United States, which subjects us to additional risks, including increased complexity and costs of managing international operations and geopolitical instability.
- Unfavorable tax law changes, an unfavorable governmental review of our tax returns, changes in our geographical earnings mix or imposition of withholding taxes on repatriated earnings could adversely affect our effective tax rate and our operating results.
- We are subject to numerous regulatory compliance requirements, which are costly to comply with, and our failure to comply with these requirements could harm our business and operating results.

Risks Related to Our Business and Our Industry

The COVID-19 pandemic could adversely affect our business in a material way.

The global COVID-19 pandemic has significantly affected the populations and businesses of many countries. Our business has been, and is expected to continue to be, adversely impacted by the effects of the COVID-19 pandemic. In addition to global macroeconomic effects, the COVID-19 pandemic and related adverse public health developments have been causing, and are expected to continue to cause, disruption to our operations. We have had to impose remote or work from home conditions for varying periods of time in many of our offices, including the United States, China, Italy, Japan, South Korea and Taiwan. If such remote or work from home conditions were to continue for an extended period of time, we may experience delays in product development, a decreased ability to support our customers, reduced design win activity, and overall lack of productivity, which could harm our financial results. Approximately 360 of our employees are located in Taiwan and approximately 220 employees are located in China, and lengthy closures of these offices could significantly disrupt our software engineering and customer support operations. In addition, we and our suppliers, third-party distributors and customers have been, and are expected to continue to be, disrupted by quarantines and restrictions on certain employees' ability to perform their jobs, office closures or restrictions, disruptions to shipping infrastructure, or other travel or health-related restrictions.

During fiscal year 2023, we have experienced, and we expect to continue to experience, a significant disruption of orders by customers, as well as logistics throughout the Asia supply chain, as a result of the COVID-19 pandemic and measures taken to control spread of the virus. During the first half of fiscal year 2023, we experienced a significant increase in the manufacturing lead time for our products, including supply constraints for certain chips from Samsung Electronics Corporation ("Samsung"), which disrupted the normal ordering patterns of our customers and harmed our revenue, but which may have in turn led to increased customer demand for our products in order to increase their inventory levels. Recently, some customers have indicated they are reducing their inventory levels as lead times for semiconductor chips and other components used by customers begin to shrink, which may reduce such customers' demand for our products in future periods. Higher inflation may exacerbate these risks. In addition, decreased consumer demand from the impact of pandemic lockdowns in China has contributed to, and may in the future contribute to, decreased revenue in consumer-related markets, including home IP security, automotive aftermarket and consumer markets.

There can be no assurance that any decrease in sales resulting from the COVID-19 pandemic will be offset by increased sales in subsequent periods. Moreover, if there is a significant COVID-19 outbreak that impacts Samsung's ability to manufacture our SoCs or our third-party contractors' ability to assemble, test and ship our products, we could experience delays or reductions in our ability to ship products to our customers. These effects, alone or taken together, could have a material adverse effect on our business, results of operations, legal exposure, or financial condition. The extent of the COVID-19 pandemic's effect on our operational and financial performance will depend on future developments, including the duration, spread and intensity of the pandemic, all of which are uncertain and difficult to predict. Due to the constantly evolving global conditions, we are not able at this time to estimate the long-term effect of these factors on our business, but the adverse impact on our business, results of operations, financial condition and cash flows could be material.

Impacts of the global semiconductor supply shortage and high inflation could adversely affect our business, financial condition, and results of operations.

During the COVID-19 global pandemic, which is still ongoing, various restrictions were put in place causing a temporary decline in demand for certain items. As restrictions began easing across the world, an increase in demand for products containing semiconductor chips exacerbated bottlenecks in the supply chain, resulting in a global semiconductor supply shortage impacting our industry, which has resulted in a lengthening of the manufacturing lead time for our products and impacting the normal forecasting and ordering patterns of our customers. With respect to our suppliers, we have in the past experienced supply constraints for certain chips from Samsung and we may in the future experience similar issues. With respect to our customers, to the extent customers face supply chain issues with respect to other components needed to pair with our products in order to produce their end products, such customers may delay future orders of our products or hold inventory of our products for longer periods of time. While we are continuing to work closely with our suppliers and customers to minimize the potential adverse impacts of the supply shortage and longer lead times, we have experienced increased volatility in our business. Recently, some customers have indicated they are reducing their inventory levels as lead times for semiconductor chips and other components used by customers begin to shrink, which may reduce such customers' demand for our products in future periods and harm our financial results. The global supply shortages and uncertainty in customer demand and the worldwide economy in general may be exacerbated by the impacts of high inflation, and we may experience increased volatility in sales and revenues as a result. However, the magnitude of such volatility on our business and its duration is uncertain and cannot be reasonably estimated at this time.

If our customers do not design our solutions into their product offerings, or if our customers' product offerings are not commercially successful, our business would suffer.

We sell our video and image processing system-on-a-chip, or SoC, solutions to original equipment manufacturers, or OEMs, who include our SoCs in their products, and to original design manufacturers, or ODMs, who include our SoCs in the products that they supply to OEMs. We generally refer to ODMs as our customers and OEMs as our end customers, except as otherwise indicated or as the context otherwise requires. Our computer vision, video and image processing SoCs are generally incorporated into our customers' products at the design stage, which is referred to as a design win. As a result, we rely on OEMs to design our solutions into the products that they design and sell. Without these design wins, our business would be significantly harmed. We often incur significant expenditures developing a new SoC solution without any assurance that any OEM will select our solution for design into its own product. Once an OEM designs a competitor's device into its product, it becomes significantly more difficult for us to sell our SoC solutions to that OEM because changing suppliers involves significant cost, time, effort and risk for the OEM. We anticipate that it will take longer and require more resources and greater expenditures to achieve design wins, and likely take longer to generate revenue from such design wins, in the new markets we are targeting, such as the OEM automotive and robotics markets, than our legacy camera markets. In addition, trade tensions between the United States and China and potential new export restrictions, as discussed in subsequent risk factors, may make it more difficult to secure future design wins with China customers.

Even if an OEM designs one of our SoC solutions into its product, we cannot be assured that the OEM's product will be commercially successful over time or at all. For example, in the past we have secured design wins for camera products that were never commercially released by our customer or did not sell in volumes initially forecast by the customer, as a result of factors beyond our control. If products incorporating our SoC solutions are not commercially successful or experience rapid decline, our revenue and business will suffer. Similarly, if an OEM designs one of our SoC solutions into its product, we are not assured that we will receive or continue to receive new design wins from that OEM, which could negatively impact our business.

If we fail to penetrate new markets, our revenue and financial condition could be harmed.

We believe that our future revenue growth, if any, will significantly depend on our ability to expand within the Intelligence of Things, or IoT, camera markets with our new artificial intelligence, or AI, computer vision SoC solutions, and the OEM automotive, robotics and industrial markets. Each of these markets presents distinct and substantial risks and, in many cases, requires us to develop new functionality or software to address the particular requirements of that market. If any of these markets do not develop as we currently anticipate, the technical requirements of these markets evolve in ways we do not anticipate, the development of such markets is delayed or impacted by factors outside of our control, such as the COVID-19 pandemic, or if we are unable to penetrate them successfully with our solutions, our revenue could decline and our financial condition would be negatively impacted. Some of these markets are primarily served by only a few large, multinational OEMs with substantial negotiating power relative to us and, in some instances, with internal solutions that are competitive to our products. Meeting the technical requirements and securing design wins with any of these companies will require a substantial investment of our time and resources and we cannot assure you that we will secure design wins from these or other companies or that we will achieve meaningful revenue from the sales of our solutions into these markets. We anticipate that as we continue to move into new markets, such as the OEM automotive, robotics and industrial markets, we will face competition from larger competitors with greater resources and more history in these markets. If we fail to penetrate these or other new markets we are targeting, our financial condition would likely suffer. Moreover, if we are successful in achieving design wins in these new markets, it will likely take longer to generate revenue from such design wins than in our current markets.

If we fail to develop and introduce new or enhanced solutions on a timely basis, our ability to attract and retain customers could be impaired and our competitive position could be harmed.

We operate in a dynamic environment characterized by rapidly changing technologies. To compete successfully, we must design, develop, market and sell enhanced solutions that provide increasingly higher levels of performance and functionality and that meet the technical and cost expectations of our customers. Our existing or future solutions could be rendered obsolete by the introduction of new products by our competitors; convergence of other markets with or into the camera market; the market adoption of products based on new or alternative technologies; the emergence of new industry standards applicable to our solutions; or the requirement of additional functionality included in video processors. In addition, some of the markets for our solutions are characterized by frequent introduction of next-generation and new products, short product life cycles, increasing demand for added functionality and significant price competition. As we develop and introduce new solutions, we face the risk that customers may not value or be willing to bear the cost of incorporating these newer solutions into their products, particularly if they believe their customers are satisfied with current solutions. Regardless of the improved features or superior performance of the newer solutions, customers may be unwilling to adopt our new solutions due to design or pricing constraints. If we or our customers are unable to manage product transitions in a timely and cost-effective manner, our business and results of operations would suffer.

Our failure to anticipate or timely develop new or enhanced solutions in response to technological shifts could result in decreased revenue and our competitors achieving design wins that we sought. In particular, we may experience difficulties with product design, development of new software, manufacturing, marketing or qualification that could delay or prevent our development, introduction or marketing of new or enhanced solutions. In addition, for some markets, such as the automotive OEM market, we need to establish and maintain relationships with third-party suppliers or software providers in order to effectively market our solutions to end-customers. Failure to establish these relationships could harm our ability to achieve design wins. Delays in product development could impair our relationships with our customers and negatively impact sales of our solutions under development. If we fail to introduce new or enhanced solutions that meet the needs of our customers or penetrate new markets in a timely fashion, we will lose market share, and our operating results will be adversely affected.

Shortages in, or increased costs of, wafers and materials could adversely impact our gross margins and lead to reduced revenues.

Worldwide manufacturing capacity for silicon wafers is relatively inelastic. If the demand for silicon wafers or assembly material exceeds market supply, our supply of silicon wafers or assembly material could quickly become limited or prohibitively expensive. The semiconductor industry is currently experiencing significant shortages of manufacturing capacity, which has resulted in a lengthening of the manufacturing lead time for our products and which has at times harmed our revenue due to supply constraints for certain chips. If this capacity shortage continues for an extensive period of time, it could negatively impact our ability to meet our customer's demand for our products and have an adverse impact on our revenue, results of operations and customer relationships. In addition, silicon wafers constitute a material portion of our product cost. If we are unable to purchase wafers at favorable prices, our results of operations and financial condition will be adversely affected. It is also possible during times of supply chain capacity shortages that customers place orders for our products that exceed their actual demand, which may lead to us manufacturing a surplus of products and could have a negative impact on our results of operations and cash reserves. Recently, some customers have indicated they are reducing their inventory levels as lead times for semiconductor chips and other components used by customers begin to shrink, which may reduce such customers' demand for our products in future periods and harm our financial results.

Our primary inventory warehouse is located in Hong Kong and may be affected by continued political, social, health and economic conditions in Hong Kong.

We operate a warehouse facility in Hong Kong through which the substantial majority of our finished SoCs are shipped to customers or logistic partners. Hong Kong has experienced, and continues to experience, political unrest and social strife in addition to the impact of ongoing COVID-19 pandemic and measures to control spread of the virus. In response to national security legislation adopted by the Chinese government, the U.S. Secretary of State certified to the U.S. Congress in May 2020 that Hong Kong no longer maintains a sufficient degree of autonomy from China to warrant special treatment by the U.S. In addition, the Bureau of Industry and Security, or BIS, has imposed restrictions on exports and reexports of U.S.-controlled items to Hong Kong by imposing stringent licensing requirements similar to those applicable to China. It is possible that the U.S. government may take future measures to impose stricter export controls or duties on shipments made to Hong Kong, which could harm our business, increase the cost of conducting our operations in Hong Kong or result in retaliatory actions against U.S. interests. Further, Hong Kong has been impacted by the COVID-19 pandemic and office closures or other restrictions in light of the pandemic may harm our business or increase the cost of conducting our operations in Hong Kong. While we have not been materially impacted by these problems to date, continued deterioration in political, social or economic conditions in Hong Kong or future unforeseen problems, including health pandemics, could affect deliveries of our SoCs to our customers or logistic partners, possibly resulting in business interruptions, substantially delayed or lost sales, loss of inventory, or increased expenses that cannot be passed on to customers, any of which could ultimately have a material adverse effect on our business and financial results. In such an eventuality, we could be forced to relocate our warehouse operations, either temporarily or permanently, to another potentially costlier location (or a location resulting in higher tax costs) or find alternative potentially costlier methods of shipping our finished SoCs to customers and logistic partners.

Our target markets may not grow or develop as we currently expect and are subject to market risks, any of which could harm our business, revenue and operating results.

We are focusing our development resources on addressing computer vision applications, primarily in the IoT and automotive markets. The application of computer vision functionality in these markets is relatively new, and we may be unable to predict the timing or development of these markets with accuracy. For example, a slower than expected adoption rate for computer vision technology in IP security cameras could slow the demand for our new solutions. If our key target markets, such as IoT and automotive cameras, do not grow, grow slower, or do not develop in ways that we currently expect, demand for our computer vision, video and image processing SoCs may not materialize as expected, and our business and operating results could suffer.

Our customers may cancel their orders, change production quantities or delay production. If we fail to accurately forecast demand for our solutions, revenue shortfalls or excess, obsolete or insufficient inventory could result.

Our customers typically do not provide us with firm, long-term purchase commitments. A substantial majority of our sales are made on a purchase order basis, which permits our customers to cancel, change or delay their product purchase commitments with little or no notice to us and often without penalty to them. Because production lead times often exceed the amount of time required by our customers to fill their orders, we often must build SoCs in advance of receiving orders from customers, relying on an imperfect demand forecast to project volumes and product mix. As a result of a number of factors, including longer manufacturing times for our products and increased demand from customers, we have increased our inventory levels in the near term.

Our SoCs are incorporated into products manufactured by or for our end customers, and as a result, demand for our solutions is influenced by the demand for our customers' products. Our ability to accurately forecast demand can be adversely affected by a number of factors, including inaccurate forecasting by our customers, changes in market conditions including reductions in market activity due to the COVID-19 pandemic, adverse changes in our product order mix and fluctuating demand for our customers' products. Recently, some customers have indicated they are reducing their inventory levels, which may reduce such customers' demand for our products. Even after an order is received, our customers may cancel these orders, request a decrease in production quantities or request a delay in the delivery of our solutions. Any such cancellation, decrease or delay subjects us to a number of risks, most notably that our projected sales will not materialize on schedule or at all, leading to unanticipated revenue shortfalls and excess or obsolete inventory that we may be unable to sell to other customers. This risk may be exacerbated during the current period of supply chain constraints by customers placing orders with us that could exceed their actual demand for our solutions.

Alternatively, if we are unable to project customer requirements accurately, we may not build enough SoCs, which could lead to delays in product shipments and lost sales opportunities in the near term, as well as force our customers to identify alternative sources, which could affect our ongoing relationships with these customers. In addition, the rapid pace of innovation in our industry could render portions of our inventory obsolete. Excess or obsolete inventory levels could result in unexpected expenses or increases in our reserves that could adversely affect our business, operating results and financial condition.

We depend on a limited number of customers and end customers for a significant portion of our revenue. If we fail to retain or expand our customer relationships, our revenue could decline.

We derive a significant portion of our revenue from a limited number of ODMs who build products on behalf of a limited number of OEMs and from a limited number of OEMs to whom we ship directly. We anticipate that this customer concentration will continue for the foreseeable future. In fiscal year 2022, the customers representing 10% or more of our revenue were WT Microelectronics Co., Ltd., formerly Wintech Microelectronics Co., Ltd., or WT, our distributor, and Chicony Electronics Co., Ltd., or Chicony, a direct ODM customer, which accounted for approximately 62% and 13% of total revenue, respectively. For the nine months ended October 31, 2022, the customers representing 10% or more of revenue were WT and Chicony, which accounted for approximately 59% and 12% of total revenue, respectively. We believe that our operating results for the foreseeable future will continue to depend on sales to a relatively small number of customers and end customers. In the future, these customers may decide not to purchase our SoC solutions at all, may purchase fewer solutions than they did in the past or may alter their purchasing patterns. As substantially all of our sales to date have been made on a purchase order basis, these customers may cancel, change or delay product purchase commitments with little or no notice to us and often without penalty and may make our revenue volatile from period to period, which has happened in the past. The loss of a significant customer, or substantial reduction in purchases by a significant customer, could happen again at any time and without notice, and such loss would likely harm our financial condition and results of operations. Moreover, because several of our largest OEM customers have a dominant position in their markets, a loss of a significant customer may not be easily replaced.

Achieving design wins is subject to lengthy competitive selection processes that require us to incur significant costs. Even if we begin a product design, a customer may decide to cancel or change its product plans, resulting in no revenue from such expenditures.

We are focused on selling our computer vision, video and image processing solutions to ODMs and OEMs for incorporation into their products at the design stage. These efforts to achieve design wins typically are lengthy, especially in emerging markets such as the OEM automotive market, and in any case can require us to both incur design and development costs and dedicate scarce engineering resources in pursuit of a single customer opportunity. We may not prevail in the competitive selection process, and even when we do achieve a design win, we may never generate any revenue despite incurring development expenditures. In addition, even if an OEM designs one of our SoC solutions into one of its products, we cannot be assured that we will secure new design wins from that OEM for future products. Further, even after securing a design win, we have experienced and may again experience delays in generating revenue from our solutions as a result of the lengthy product development cycle typically required, if we generate any revenue at all as a result of any such design win.

Our customers generally take a considerable amount of time to evaluate our solutions. The typical time from early engagement by our sales force to actual product introduction runs from nine to 12 months for IoT markets and potentially significantly longer in the OEM automotive, robotics and industrial markets. The delays inherent in these lengthy sales cycles increase the risk that a customer will decide to cancel, curtail, reduce or delay its product plans, causing us to lose anticipated sales. In addition, any delay or cancellation of a customer's plans could harm our financial results, as we may have incurred significant expense and generated no revenue. If we were unable to generate revenue after incurring substantial expenses to develop any of our solutions, our business would suffer.

Some of our customers may require our products and our third-party contractors to undergo a qualification process that does not assure product sales. If we are unsuccessful or delayed in qualifying these products or third-party contractors with a customer, our business and operating results could suffer.

Prior to purchasing our products, some of our customers, particularly in the automotive market, may require that our products and our third-party contractors undergo extensive qualification processes, which involve testing of our products in the customers' systems, as well as testing for reliability. This qualification process may take several months and qualification of a product by a customer does not assure any sales of the product to that customer. Even after successful qualification and sales of a product to a customer, a subsequent revision in our third party contractors' manufacturing process or our selection of a new supplier may require a new qualification process, which may result in delays and in our holding excess or obsolete inventory. After our products are qualified, it can take several months or more before the customer commences volume production of components or systems that incorporate our products. Despite these uncertainties, we devote substantial resources, including design, engineering, sales, marketing and management efforts, to qualify our products with customers in anticipation of sales. If we are unsuccessful or delayed in qualifying these products with a customer, sales of the products to the customer may be precluded or delayed, which may impede our growth and cause our business to suffer.

We expect competition to increase in the future, which could have an adverse effect on our revenue and market share.

The global semiconductor market in general, and the computer vision and video/image processing markets in particular, are highly competitive. We compete in different target markets to various degrees on the basis of a number of competitive factors, including our solutions' performance, features, energy efficiency, size, ease with which our solution may be integrated into our customers' products, customer support, reliability and price, as well as on the basis of our reputation. We expect competition to increase and intensify as more and larger semiconductor companies enter our markets and as existing competitors improve or expand their product offerings. We also expect that the trend among large OEMs to seek to develop their own semiconductor solutions will continue and expand, particularly in camera markets experiencing consolidation, such as the IP security market. In addition, in our newer markets, such as the OEM automotive and robotics markets, we will face competition from larger competitors with longer histories in these markets. Increased competition could result in price pressure, reduced profitability and loss of market share, any of which could harm our business, revenue and operating results.

Our competitors range from large, international companies with greater resources offering a wide range of semiconductor products to smaller, nimble companies specializing in narrow markets. In the IoT market, our primary competitors include AMLogic Inc., Fuzhou Rockchip Electronics Co., Ltd., HiSilicon Technologies Co., Ltd., or HiSilicon, which is owned by Huawei Technologies Co., Ingenic Semiconductor Co., Ltd., Novatek Microelectronics Corp., or Novatek, NVIDIA Corporation, or NVIDIA, OmniVision Technologies, Inc., Qualcomm Incorporated, or Qualcomm, SigmaStar Technology Corp., and Socionext Inc. In the automotive camera market, we compete against Allwinner Technology Co., Ltd., Horizon Robotics Inc., iCatch Technology, Inc., Mobileye, a subsidiary of Intel Corporation, Novatek, NVIDIA, NXP Semiconductors N.V., Qualcomm, Renesas Electronics Corporation, and Texas Instruments. Certain of our customers and suppliers also have divisions that produce products competitive with ours and other customers may seek to vertically integrate competitive solutions in the future. In addition, certain third-party developers of technology competitive to our solutions have licensed their technology, including image signal processing and computer vision IP, which potentially enables a greater number of competitors to offer competitive solutions.

Our ability to compete successfully depends on elements both within and outside of our control. Many of our competitors are substantially larger, have greater financial, technical, marketing, distribution, customer support and other resources, are more established than we are and have significantly better brand recognition and broader product offerings than us, which may enable them to develop and enable new technology into product solutions better or faster than us and to better withstand adverse economic or market conditions in the future. Our ability to compete will depend on a number of factors, including:

- our ability to anticipate market and technology trends and successfully develop solutions that meet market needs;
- our success in identifying and penetrating new markets, applications and customers;
- our ability to understand the price points and performance metrics of competing products in the marketplace;
- our solutions' performance and cost-effectiveness relative to that of competing products;

- our ability to gain access to leading design tools and product specifications at the same time as our competitors;
- our ability to develop and maintain relationships with key OEMs and ODMs;
- our products' effective implementation of video processing or radar standards;
- our ability to protect our intellectual property;
- our ability to expand international operations in a timely and cost-efficient manner;
- our ability to deliver products in volume on a timely basis at competitive prices;
- our ability to support our customers' incorporation of our solutions into their products; and
- our ability to recruit design and application engineers with expertise in computer vision, video and image processing technologies and sales and marketing personnel.

Our competitors may also establish cooperative relationships among themselves or with third parties or acquire companies that provide similar products to ours. As a result, new competitors or alliances may emerge that could acquire significant market share. Any of these factors, alone or in combination with others, could harm our business and result in a loss of market share and an increase in pricing pressure.

A breach of our security systems may have a material adverse effect on our business.

Our security systems are designed to maintain the physical security of our facilities and information systems and protect our customers', suppliers' and employees' confidential information. Accidental or willful security breaches or incidents or other unauthorized access by third parties to our facilities or our information systems or the existence of computer viruses in our data or software could expose us to a risk of loss, misappropriation and other unauthorized processing of proprietary and confidential information. The costs to us to eliminate or alleviate cyber or other security problems, bugs, viruses, ransomware and other malicious software programs and security vulnerabilities could be significant, and our efforts to address these problems may not be successful and could result in interruptions and delays that may impede our sales, product distribution, financial reporting or other critical functions. In addition, we could incur significant costs in notifying affected persons and entities and otherwise complying with the multitude of foreign, federal, state and local laws and regulations relating to the unauthorized access to, or use or disclosure of, personal information.

Security breaches and incidents, computer malware and computer hacking attacks have become more prevalent and sophisticated. These threats are constantly evolving, making it increasingly difficult to successfully defend against or implement adequate preventive measures. Moreover, as a result of the COVID-19 pandemic, the need for remote work and remote access to our systems has increased significantly, which also increases our cybersecurity risk profile. Experienced computer programmers and hackers may be able to penetrate our security controls and misappropriate or compromise our confidential information or that of third parties or create system disruptions. Computer programmers and hackers also may be able to develop and deploy viruses, worms and other malicious software programs that attack our information systems and cause disruptions of our business. For portions of our IT infrastructure, we rely on products and services provided by third parties. These third-party providers may also experience breaches and attacks to their products, which could impact our systems. For example, in 2020, SolarWinds Corp., one of our third-party IT infrastructure software providers, was subject to a data security breach. Our investigation of the breach, which was supported by a third-party security expert, has not identified any adverse impact to our business or operations, but there can be no guarantee we will not experience such an impact. Data security breaches and incidents may also result from non-technical means, for example, actions by an employee. Any data security breach or incident or theft, misuse, loss or other unauthorized processing of this information, or the perception that any of these matters has occurred, could result in, among other things, damage to our reputation, allegations by our customers that we have not performed our contractual obligations, regulatory investigations and other proceedings, litigation by affected parties and possible financial obligations for liabilities and damages, any of which could have a material adverse effect on our business, financial condition, our reputation, and our relationships with our customers and partners. We may also encounter errors in corruption or loss of data, an inability to accurately process or record transactions, and security or technical reliability issues. All of these could harm our ability to conduct core operating functions such as processing purchase orders and invoices, product distribution, recording and reporting financial and management information on a timely and accurate basis, and could impact our internal control compliance efforts. Due to political uncertainty and military actions associated with the ongoing hostility between Russia and Ukraine, we and our vendors, contractors, and other third parties we work with are vulnerable to a heightened risk of cybersecurity attacks, phishing attacks, viruses, malware, ransomware, hacking or similar breaches and incidents from nation-state and affiliated actors, including attacks that could materially disrupt our supply chain and our systems and operations.

We also rely on a number of third-party "cloud-based" service providers of corporate infrastructure services relating to, among other things, human resources, electronic communication services and some finance functions, and we are, of necessity, dependent on the security systems of these providers. Any security breaches or incidents or other unauthorized access by third parties to the systems of our cloud-based service providers or the existence of computer viruses, ransomware or malicious code in their data or software could expose us to a risk of loss, misappropriation, unavailability and other unauthorized processing of information.

Additionally, we cannot be certain that our insurance coverage will be adequate or otherwise protect us with respect to claims, expenses, fines, penalties, business loss, data loss, litigation, regulatory actions, or other impacts arising from security breaches or incidents, or that such coverage will continue to be available on acceptable terms or at all. Any of these results could adversely affect our business, financial condition, and operating results.

While we intend to continue to invest in research and development, we may be unable to make the substantial investments that are required to remain competitive in our business.

The semiconductor industry requires substantial investment in research and development in order to bring to market new and enhanced solutions. Our research and development expense was $167.3 million, $140.8 million and $129.7 million in fiscal years 2022, 2021 and 2020, respectively. For the nine months ended October 31, 2022, our research and development expense was $151.9 million. We expect to increase our research and development expenditures as compared to prior periods as part of our strategy of focusing on the development of innovative computer vision, video and image processing solutions with increased functionality, and as we target new markets, such as the automotive OEM and robotics markets. We are unable to predict whether we will have sufficient resources to achieve the level of investment in research and development required to remain competitive. For example, development in the latest process nodes, such as 5 nanometer, or nm, or smaller, costs significantly more than required to develop in larger process nodes, such as 14 or 10nm. This added cost could prevent us from being able to maintain a technology advantage over larger competitors that have significantly more resources to invest in research and development. In addition, we cannot assure you that the technologies which are the focus of our research and development expenditures will become commercially successful or generate any revenue.

The loss of any of our key personnel could seriously harm our business.

We believe our future success depends in large part upon the continuing services of the members of our senior management team and various engineering and other technical personnel. If one or more of our senior executives or other key personnel are unable or unwilling to continue in their present positions, we may not be able to replace them easily or at all, our business may be disrupted, and our financial condition and results of operations may be materially and adversely affected. In addition, if any member of our senior management team or any of our other key personnel joins a competitor or forms a competing company, we may experience material disruption of our operations and development plans and lose customers, know-how and key professionals and staff members, and we may incur increased operating expenses as the attention of other senior executives is diverted to recruit replacements for key personnel.

We rely on highly skilled personnel and, if we are unable to hire, retain or motivate key personnel, we may not be able to grow effectively.

Our performance largely depends on the talents and efforts of highly skilled individuals. Our future success depends on our continuing ability to identify, hire, develop, motivate, and retain highly skilled personnel for all areas of our organization. Our industry is characterized by high demand and intense competition for talent, particularly for engineering personnel. The pool of qualified candidates is limited, particularly in Silicon Valley and parts of Asia for very-large-scale integration, or VLSI, and artificial intelligence and computer vision engineers, and certain of our competitors and potential competitors with greater resources have directly targeted our employees. In addition, we also face competition in hiring artificial intelligence engineers, including from companies with which we do not directly compete. Our compensation arrangements, such as our equity award programs, may not always be successful in attracting new employees and retaining and motivating our existing employees. Our continued ability to compete effectively, and to grow our business, depends on our ability to attract new employees and to retain and motivate our existing employees.

The average selling prices of video and image processing solutions in our target markets have typically decreased over time and will likely do so in the future, which could harm our revenue and gross margins.

Average selling prices of semiconductor products in the markets we serve have historically decreased over time, and we expect such declines to occur for our solutions over time. Our gross margins and financial results will suffer if we are unable to offset reductions in our average selling prices by reducing our costs, developing new or enhanced SoC solutions, such as our new CV-based solutions, on a timely basis with higher selling prices or gross margins, or increasing our sales volumes. Additionally, because we do not operate our own manufacturing, assembly or testing facilities, we may not be able to reduce our costs as rapidly as companies that operate their own facilities, and our costs may even increase, which could also reduce our gross margins. In the past, we have reduced the prices of our SoC solutions in anticipation of future competitive pricing pressures, new product introductions by us or our competitors and other factors. We expect that we will have to address pricing pressures again in the future, particularly in markets experiencing consolidation, which could require us to reduce the prices of our SoC solutions and harm our operating results.

If we are unable to manage any future growth, we may not be able to execute our business plan and our operating results could suffer.

Our business has grown rapidly in the past. Our future operating results depend to a large extent on our ability to successfully manage any expansion and growth, including the challenges of managing a company with an executive management team in the United States and the majority of its employees in Asia. We are increasing our investment in research and development and other functions to grow our business and address new markets, such as the OEM automotive and robotics markets. To manage growth successfully, we believe we must effectively, among other things:

- recruit, hire, train and manage additional qualified engineers for our research and development activities, particularly for the positions of semiconductor design and systems, AI computer vision development and applications engineering;
- add additional sales and business development personnel;
- maintain and improve our administrative, financial and operational systems, procedures and controls;
- enhance our information technology support for enterprise resource planning and design engineering by adapting and expanding our systems and tool capabilities, and properly training new hires as to their use; and
- be able to secure sufficient manufacturing capacity.

We are likely to incur the costs associated with these increased investments earlier than some of the anticipated benefits, and the return on these investments, if any, may be lower, may develop more slowly than we expect or may not materialize. If we are unable to manage growth effectively, we may not be able to take advantage of market opportunities or develop new solutions, and we may fail to satisfy customer product or support requirements, maintain product quality, execute our business plan or respond to competitive pressures.

Deterioration of the financial conditions of our customers could adversely affect our operating results.

Deterioration of the financial condition of our distributors or customers could adversely impact our collection of accounts receivable. For the nine months ended October 31, 2022, the customers representing 10% or more of revenue were WT and Chicony, which accounted for approximately 59% and 12% of total revenue, respectively. As of October 31, 2022, accounts receivable with WT and Chicony were approximately $25.4 million and $8.9 million, respectively. We regularly review the collectability and creditworthiness of our distributors and customers to determine an appropriate allowance for credit losses. Based on our review of our distributors and customers, we currently have only immaterial reserves for uncollectible accounts. If our uncollectible accounts, however, were to exceed our current or future allowance for credit losses, our operating results would be negatively impacted.

We are subject to the cyclical nature of the semiconductor industry.

The semiconductor industry is highly cyclical and is characterized by constant and rapid technological change, rapid product obsolescence, price erosion, evolving standards, short product life cycles and wide fluctuations in product supply and demand. The industry experienced a significant downturn during the 2008-2009 global recession. These downturns have been characterized by diminished product demand, production overcapacity, high inventory levels and accelerated erosion of average selling prices. Any future downturns could harm our business and operating results. Recently, the semiconductor industry has experienced increased competition for access to third-party foundry and assembly capacity. We are dependent on the availability of this capacity to manufacture and assemble our SoC solutions. None of our third-party foundry or assembly contractors has provided assurances that adequate capacity will be available to us in the future. The semiconductor industry is currently experiencing significant shortages of capacity, which has resulted in a lengthening of the manufacturing lead time for our products. This capacity shortage could negatively impact our ability to meet our customers' demand for our products and have an adverse impact on our revenue, results of operations and customer relationships. In addition, it is possible during this time of supply chain capacity shortage that customers may place orders for our products that exceed their actual demand, which may lead to us manufacturing a surplus of products, which could have a negative impact on our results or operations and cash reserves. Further, some customers have indicated their intent to reduce their inventory levels as capacity shortages improve, which may decrease such customers' demand for our solutions in future periods.

The complexity of our solutions could result in unforeseen delays or expenses from undetected defects, errors or bugs in hardware or software which could reduce the market adoption of our new solutions, damage our reputation with current or prospective customers and adversely affect our operating costs.

Highly complex SoC solutions such as ours frequently contain defects, errors and bugs when they are first introduced or as new versions are released. We have in the past and may in the future experience these defects, errors and bugs. If any of our solutions have reliability, quality or compatibility problems, we may not be able to successfully correct these problems in a timely manner or at all. In addition, if any of our proprietary features contain defects, errors or bugs when first introduced or as new versions of our solutions are released, we may be unable to timely correct these problems. Consequently, our reputation may be damaged and customers may be reluctant to buy our solutions, which could harm our ability to retain existing customers and attract new customers, and could adversely affect our financial results. In addition, these defects, errors or bugs could interrupt or delay sales to our customers. If any of these problems are not found until after we have commenced commercial production of a new product, we may incur significant additional development costs and product recall, repair or replacement costs. These problems may also result in claims against us by our customers or others.

We may experience difficulties in transitioning to new wafer fabrication process technologies or in achieving higher levels of design integration, which may result in reduced manufacturing yields, delays in product deliveries and increased costs.

We aim to use the most advanced manufacturing process technology appropriate for our products that is available from our third-party foundries. As a result, we periodically evaluate the benefits of migrating our solutions to smaller geometry process technologies in order to improve performance and reduce costs. We believe this strategy will help us remain competitive. We may face difficulties, delays and increased expense as we transition our products to new processes, such as the 4nm or 3nm process nodes, and potentially to new foundries. We currently depend on Samsung, as the principal foundry for our products, to transition to new processes successfully. We cannot assure you that Samsung will be able to effectively manage such transitions or that we will be able to maintain our relationship with Samsung or develop relationships with new foundries. Moreover, as we utilize more advanced process nodes beyond 5nm, we are increasingly dependent upon a very small number of foundries currently available for certain advanced process technologies. If we or our foundry vendors experience significant delays in transitioning to smaller geometries or fail to efficiently implement transitions, we could experience reduced manufacturing yields, delays in product deliveries and increased costs, all of which could harm our relationships with our customers and our operating results.

Rapidly changing industry standards could make our video and image processing solutions obsolete, which would cause our operating results to suffer.

We design our video and image processing solutions to conform to video compression standards, including MPEG-2, H.264 Advanced Video Coding (AVC) and H.265 High Efficiency Video Coding (HEVC), set by industry standards setting bodies such as ITU-T Video Coding Experts Group and the ISO/IEC Moving Picture Experts Group. Generally, our solutions comprise only a part of a camera device. All components of these devices must uniformly comply with industry standards in order to operate efficiently together. We depend on companies that provide other components of the devices to support prevailing industry standards. Many of these companies are significantly larger and more influential in driving industry standards than we are. Some industry standards may not be widely adopted or implemented uniformly, and competing standards may emerge that may be preferred by our customers or by consumers. If our customers or the suppliers that provide other device components adopt new or competing industry standards with which our solutions are not compatible, or if the industry groups fail to adopt standards with which our solutions are compatible, our existing solutions would become less desirable to our customers. If our solutions are not in compliance with prevailing industry standards for a significant period of time, we could miss opportunities to achieve crucial design wins, which could harm our business. As a result, our sales would suffer, and we could be required to make significant expenditures to develop new SoC solutions to ensure compliance with relevant standards.

Some of our operations and a significant portion of our customers and our subcontractors are located outside of the United States, which subjects us to additional risks, including increased complexity and costs of managing international operations and geopolitical instability.

We have research and development design centers and business development offices in China, Germany, Italy, Japan, South Korea and Taiwan, and we expect to continue to conduct business with companies that are located outside the United States, particularly in Asia. We purchase wafers from foreign foundries, have our solutions assembled and tested by subcontractors located in Asia, and supply our solutions to customers located outside of the United States. Even customers of ours that are based in the United States often use contract manufacturers based in Asia to manufacture their products, and these contract manufacturers typically purchase products directly from us. As a result of our international focus, we face numerous challenges and risks, including:

- increased complexity and costs of managing international operations;
- longer and more difficult collection of receivables;
- difficulties in enforcing contracts generally;
- regional economic instability;
- geopolitical instability and military conflicts, including the ongoing conflict in Ukraine;
- limited protection of our intellectual property and other assets;
- compliance with local laws and regulations and unanticipated changes in local laws and regulations, including tax laws and regulations;
- trade and foreign exchange restrictions and higher tariffs;
- travel restrictions;
- timing and availability of import and export licenses and other governmental approvals, permits and licenses, including export classification requirements;
- foreign currency exchange fluctuations relating to our international operating activities;
- restrictions imposed by the U.S. government on our ability to do business with certain companies or in certain countries as a result of international political conflicts;
- transportation delays and other consequences of limited local infrastructure, and disruptions, such as large-scale outages or interruptions of service from utilities or telecommunications providers;
- heightened risk of terrorist acts;
- local business and cultural factors that differ from standards and practices in the U.S.;
- differing employment practices and labor relations;
- regional health issues, pandemics, and natural disasters; and
- work stoppages.

Our acquisition of Oculii Corp. involves a number of risks, including, among others, risks associated with our use of a significant portion of our cash, other financial risks, integration risks, and risks associated with the reactions of customers and suppliers.

On November 5, 2021, we completed our acquisition of Oculii Corp. In connection with the transaction, Oculii became our wholly-owned subsidiary. The benefits we expect to realize from this acquisition will depend, in part, on our ability to integrate the businesses successfully and efficiently.

We entered into the merger agreement with Oculii with the expectation that the merger will result in various benefits to us, including certain technology and operational efficiencies or synergies. To realize these anticipated benefits, the businesses and certain technologies of Ambarella and Oculii must be successfully integrated. Historically, Ambarella and Oculii have been independent companies, and they were operated as such until the completion of the merger. The integration may be complex and time consuming and may require substantial resources and effort. Our management may face significant challenges in consolidating the operations of Ambarella and Oculii, integrating the technologies, procedures, and policies, as well as addressing the different corporate cultures of the two companies and retaining key personnel. If the businesses or technology are not successfully integrated, the anticipated benefits of the merger may not be realized fully or at all or may take longer to realize than expected.

Our existing or prospective customers, licensees, suppliers and/or partners may delay, defer or cease purchasing products or services from or providing products or services to us, delay or defer other decisions concerning us, or otherwise seek to change the terms on which they do business with us. Any of the above could harm us, and thus decrease the benefits we expect to receive from the merger.

In addition, the acquisition may also result in significant charges or other liabilities, including taxes, that could adversely affect our results of operations, such as cash expenses and non-cash accounting charges incurred in connection with the acquisition and/or integration of the business and operations of Ambarella and Oculii. The amount and timing of these possible charges are not yet known. Further, our failure to identify or accurately assess the magnitude of certain liabilities we are assuming in the transaction could result in unexpected litigation or regulatory exposure, unfavorable accounting charges, unexpected increases in taxes due, a loss of anticipated tax benefits or other adverse effects on our business, results of operations, financial condition or cash flows.

The Oculii acquisition or potential future acquisitions involve a number of risks, including, among others, those associated with our use of a significant portion of our cash and other financial risks.

We used a significant portion of our cash in connection with the acquisition of Oculii, which was completed on November 5, 2021. Our use of cash to fund the Oculii acquisition has reduced our liquidity and any future acquisitions may also reduce our liquidity or require the use of equity. Using cash to fund acquisitions may limit our flexibility in responding to other business opportunities and increase our vulnerability to adverse economic and industry conditions.

Our acquisition of Oculii and any acquisitions we may make in the future could disrupt our business, cause dilution to our shareholders, reduce our financial resources and harm our business.

Prior to our acquisition of Oculii, we had not made any acquisitions since our acquisition of VisLab S.r.l. in June 2015. Our ability to make and successfully integrate acquisitions is largely unproven. The Oculii acquisition and any future acquisitions may not strengthen our competitive position and may be viewed negatively by our customers, financial markets or investors, and we may not achieve our goals in a timely manner, or at all. In addition, any acquisitions we make could lead to difficulties in integrating personnel, technologies and operations from the acquired businesses and in retaining and motivating key personnel from these businesses. Acquisitions may disrupt our ongoing operations, divert management from their primary responsibilities, subject us to additional liabilities, increase our expenses and adversely impact our business, operating results, financial condition and cash flows. Acquisitions may also reduce our cash available for operations and other uses, and could also result in an increase in amortization expense related to identifiable assets acquired, potentially dilutive issuances of equity securities or the incurrence of debt, any of which could harm our business.

The complexity of calculating our tax provision may result in errors that could result in restatements of our financial statements.

We are incorporated in the Cayman Islands and our operations are subject to income and transaction taxes in the United States, China, Hong Kong, Germany, Italy, Japan, South Korea, Taiwan and other jurisdictions in which we do business. Due to the complexity associated with the calculation of our tax provision, we have hired independent tax advisors to assist us. If we or our independent tax advisors fail to resolve or fully understand certain issues, there may be errors that could result in us having to restate our financial statements. Restatements are generally costly and could adversely impact our results of operations or have a negative impact on the trading price of our ordinary shares.

Risks Related to Our Financial Performance or Results

Fluctuations in our operating results on a quarterly and annual basis could cause the market price of our ordinary shares to decline.

Our revenue and operating results have fluctuated significantly from period to period in the past and are likely to do so in the future. In particular, our business has in the past tended to be seasonal with higher revenue in our third quarter as our customers typically increase their production to meet holiday shopping season or year-end demand for their products. As a result, you should not rely on period-to-period comparisons of our operating results as an indication of our future performance. It is also possible that our normal seasonal patterns will be impacted by ongoing effects of the COVID-19 pandemic, recent supply chain disruptions and semiconductor capacity shortages, and higher inflation. In future periods, our forecasted or actual revenue and results of operations may be below the expectations of analysts and investors, which could cause the market price of our ordinary shares to decline.

Factors that may affect our operating results include:

- fluctuations in demand, sales cycles, product mix, and prices for our products;
- the forecasting, scheduling, rescheduling or cancellation of orders by our customers;
- shifts in consumer or manufacturer preferences and any resultant change in demand for our customers' products;
- changes in the competitive dynamics of our markets, including new entrants or pricing pressures;
- delays in our customers' ability to manufacture and ship products that incorporate our solutions caused by internal and external factors beyond our control;
- our ability to successfully define, design and release new solutions in a timely manner that meet our customers' needs;
- timely availability of adequate manufacturing capacity from our manufacturing subcontractors;
- changes in manufacturing costs, including wafer, test and assembly costs, mask costs, manufacturing yields and product quality and reliability;
- the timing of product announcements by our competitors or by us;
- incurrence of research and development and related new products expenditures;
- write-downs of inventory for excess quantities and technological obsolescence;
- impairment of investment or other asset values;
- future accounting pronouncements and changes in accounting policies;
- volatility in our share price, which may lead to higher stock-based compensation expense;
- volatility in our effective tax rate;
- general socioeconomic and political conditions in the countries where we operate or where our products are sold or used, including the COVID-19 pandemic, U.S.-China relations and the conditions in Hong Kong; and
- costs associated with litigation, especially related to intellectual property.

Moreover, the semiconductor industry has historically been cyclical in nature, reflecting overall economic conditions as well as budgeting and buying patterns of consumers. For example, the semiconductor industry recently experienced significant shortages of capacity, which has resulted in a lengthening of the manufacturing lead time for our products and could be impacting the normal forecasting and ordering patterns of our customers. Recently, some customers have indicated their intent to reduce their inventory levels as capacity shortages improve, which may decrease such customers' demand for our solutions in future periods. We expect these cyclical conditions to continue. As a result, our quarterly operating results are difficult to predict, even in the near term. Our expense levels are relatively fixed in the short term and are based, in part, on our expectations of future revenue. If revenue levels are below our expectations, we may experience material adverse impacts on our business, including declines in margins and profitability, or incur losses.

If we do not generate revenue growth, we may not be able to execute our business plan and our operating results could suffer.

We believe that our future revenue growth, if any, will significantly depend on our ability to expand within our existing IoT camera markets, such as the existing professional IP security and home security and monitoring camera markets, and successfully penetrate new markets, such as the OEM automotive, robotics and industrial markets, with our new AI computer vision SoC solutions. We believe that executing upon our business plan requires us to continue to develop new SoCs and new software to address the particular requirements of these markets. Accordingly, we continue to invest in the development of new technology and solutions and expect our research and development expenditures to increase compared to prior periods. If we are unable to generate or maintain adequate revenue growth, our financial results could suffer and we may not be able to continue to invest in the development of new technology and solutions required to be successful.

We may have difficulty accurately predicting our future revenue and appropriately budgeting our expenses.

The rapidly evolving nature of the markets in which we sell our solutions, combined with substantial uncertainty concerning how these markets may develop, the considerable amount of time our customers generally take to evaluate our solutions, and other factors beyond our control, limits our ability to accurately forecast quarterly or annual revenue. We continue to expand our staffing and increase our expenditures in anticipation of future revenue growth. If our revenue does not increase as anticipated, we could incur significant losses due to our higher expense levels if we are not able to decrease our expenses in a timely manner to offset any shortfall in future revenue. Continued or persistent losses may require us to obtain additional capital that may not be available on reasonable terms or at all.

Changes to financial accounting standards may affect our results of operations and could cause us to change our business practices.

We prepare our consolidated financial statements to conform to generally accepted accounting principles, or GAAP, in the United States. These accounting principles are subject to interpretation by the American Institute of Certified Public Accountants, the SEC and various bodies formed to interpret and create accounting rules and regulations. Changes in those accounting rules could have a significant effect on our financial results, require significant resources, pose challenges in forecasting revenue and may affect our reporting of transactions completed before a change is announced. Changes to those rules or the questioning of current practices may adversely affect our reported financial results or the way we conduct our business.

Fluctuations in exchange rates between and among the currencies of the countries in which we do business may adversely affect our operating results.

Our sales have been historically denominated in U.S. dollars. An increase in the value of the U.S. dollar relative to the currencies of the countries in which our end customers operate could impair the ability of our end customers to cost-effectively integrate our SoCs into their devices which may materially affect the demand for our solutions and cause these end customers to reduce their orders, which would adversely affect our revenue and business. We may experience foreign exchange gains or losses due to the volatility of other currencies compared to the U.S. dollar. A significant portion of our solutions are sold to camera manufacturers located outside the United States, primarily in Asia. Sales to customers in Asia accounted for approximately 88%, 88% and 90% of our total revenue in fiscal years 2022, 2021 and 2020, respectively. For the nine months ended October 31, 2022, sales to customers in Asia accounted for approximately 84% of our total revenue. Because most of our end customers or their ODM manufacturers are located in Asia, we anticipate that a majority of our future revenue will continue to come from sales to that region. Although a large percentage of our sales are made to customers in Asia, we believe that a significant number of the products designed by these customers and incorporating our SoCs are then sold to consumers globally. In addition, if in the future we sell products or purchase inventory in currencies other than the U.S. dollar, our exposure to foreign currency risk could become more significant.

A significant number of our employees are located in Asia, principally Taiwan and China, and Europe. Therefore, a portion of our payroll as well as certain other operating expenses are paid in currencies other than the U.S. dollar, such as the New Taiwan Dollar, the Chinese Yuan Renminbi and the Eurozone Euro. Our operating results are denominated in U.S. dollars and the difference in exchange rates in one period compared to another may directly impact period-to-period comparisons of our operating results. Furthermore, currency exchange rates, particularly the exchange rates between the Chinese Yuan Renminbi and the U.S. dollar, between the New Taiwan Dollar and the U.S. dollar, and between the Eurozone Euro and the U.S. dollar, have been volatile in the recent past and these currency fluctuations may make it difficult for us to predict our operating results.

We have not implemented any hedging strategies to mitigate risks related to the impact of fluctuations in currency exchange rates. Even if we were to implement hedging strategies, not every exposure can be hedged and, where hedges are put in place based on expected foreign exchange exposure, they are based on forecasts which may vary or which may later prove to have been inaccurate. Failure to hedge successfully or anticipate currency risks accurately could adversely affect our operating results.

We cannot predict our future capital needs, and we may not be able to obtain additional financing to fund our operations.

We may need to raise additional funds in the future. Any required additional financing may not be available on terms acceptable to us, or at all. If we raise additional funds by issuing equity securities or convertible debt, investors may experience significant dilution of their ownership interest, and the newly-issued securities may have rights senior to those of the holders of our ordinary shares. If we raise additional funds by obtaining loans from third parties, the terms of those financing arrangements may include negative covenants or other restrictions on our business that could impair our operational flexibility and would also require us to incur interest expense. If additional financing is not available when required or is not available on acceptable terms, we may have to scale back our operations or limit our production activities, and we may not be able to expand our business, develop or enhance our products, take advantage of business opportunities or respond to competitive pressures which could result in lower revenue and reduce the competitiveness of our products.

Our marketable securities portfolio could experience a decline in market value, which could materially and adversely affect our financial results.

As of October 31, 2022, we had approximately $99.7 million in money market funds and debt security investments. The debt security investments consisted of commercial paper, debt securities of corporations or corporate bonds, asset-backed securities and U.S. government securities. We currently do not use derivative financial instruments to adjust our investment portfolio risk or income profile. These investments, as well as any cash deposited in bank accounts, are subject to general credit, liquidity, market and interest rate risks, which may be exacerbated by unusual events, such as the COVID-19 pandemic, the Eurozone crisis and the U.S. debt ceiling crisis, which affected various sectors of the financial markets and led to global credit and liquidity issues. If the global credit market continues to experience volatility or deteriorates, our investment portfolio may be impacted and some or all of our investments may experience credit-related loss which could adversely impact our financial results and position. To the extent that we increase the amount of our security investments in the future, these risks would be exacerbated.

Risks Related to Our Dependence on Third Parties

We do not have long-term supply contracts with our third-party manufacturing vendors, and they may not allocate sufficient capacity to us at reasonable prices to meet future demands for our solutions.

The semiconductor industry is subject to intense competitive pricing pressure from customers and competitors. Accordingly, any increase in the cost of our solutions, whether by adverse purchase price variances or adverse manufacturing cost variances, will reduce our gross margins and operating profit. We currently do not have long-term supply contracts with most of our primary third-party vendors, and we negotiate pricing with our main vendors on a purchase order-by-purchase order basis. Therefore, they are not obligated to perform services or supply product to us for any specific period, in any specific quantities, or at any specific price, except as may be provided in a particular purchase order. The ability of our foundry vendors to provide us with a product, which is solely sourced at each foundry, is limited by their available capacity, existing obligations and technological capabilities. Foundry capacity may not be available when we need it or at reasonable prices. None of our third-party foundry or assembly and test vendors have provided contractual assurances to us that adequate capacity will be available to us to meet our anticipated future demand for our solutions. Moreover, availability of foundry capacity at our primary foundry vendor has tightened recently, which could limit the volume of products we can produce and/or delay production of new products, both of which would negatively impact our business and operations. Similarly, our assembly vendors have recently experienced shortages of certain substrates necessary for the production of our solutions due in part to COVID-19, which has negatively impacted the production time of our devices. If these conditions continue for a substantial period or worsen, our ability to meet our anticipated demand for our solutions could be impacted which, in turn, could negatively impact our operations and financial results.

Our foundry and assembly and test vendors may allocate capacity to the production of other companies' products while reducing deliveries to us on short notice. In particular, other companies that are larger and better financed than we are or that have long-term agreements with our foundry or assembly and test vendors may cause our foundry or assembly and test vendors to reallocate capacity to them, decreasing the capacity available to us. Converting or transferring manufacturing from a primary location or supplier to a backup provider could be expensive and would likely take at least two or more quarters. There are only a few foundries, including Samsung and Taiwan Semiconductor Manufacturing Co., Ltd., or TSMC, that are currently available for certain advanced process technologies that we utilize or may utilize, such as 10nm or 5nm. Accordingly, as we continue to develop solutions in advanced process nodes, we will be increasingly dependent upon such foundries. The unavailability of one or both of these foundries could significantly impact our ability to produce our new products or delay production, which would negatively impact our business.

Our customers incorporate components supplied by multiple third parties, and a supply shortage or delay in delivery of these components could delay orders for our solutions by our customers.

Our customers purchase components used in the manufacture of their products from various sources of supply, often involving several specialized components, including lenses, sensors, microcontrollers, power management integrated circuits (PMICs), Wi-Fi chips, and memory chips. Any supply shortage or delay in delivery by third-party component suppliers, or a third-party supplier's cessation or shut down of its business, may prevent or delay production of our customers' products. As a result of delays in delivery or supply shortages of third-party components, orders for our solutions may be delayed or canceled and our business may be harmed. The semiconductor industry is currently experiencing shortages of certain devices, including microcontrollers, PMICs, Wi-Fi chips, which has impacted, and may continue to impact, our customers' ability to build their products and negatively impact our customers' demand for our solutions. We believe these shortages have been exacerbated by the COVID-19 pandemic. Similarly, our ability to generate design wins in some markets, such as the automotive OEM market, requires us to collaborate with third-party software suppliers in order to offer a complete solution to customers. Our inability to successfully collaborate with such third-party suppliers, or such suppliers' inability to develop and deliver software, could harm our ability to achieve design wins and harm our business. Errors or defects within a camera system or in the manner in which the various components interact could prevent or delay production of our customers' products, which could harm our business.

We outsource our wafer fabrication, assembly and testing operations to third parties, and if these parties fail to produce and deliver our products according to requested demands in specification, quantity, cost and time, our reputation, customer relationships and operating results could suffer.

We rely on third parties for substantially all of our manufacturing operations, including wafer fabrication, assembly and testing. Currently, the majority of our SoCs are supplied by Samsung in facilities located in Austin, Texas and South Korea, from whom we have the option to purchase both fully assembled and tested products as well as tested die in wafer form for assembly. Samsung subcontracts the assembly and initial testing of the assembled chips it supplies to us to Signetics Corporation and STATS ChipPAC Ltd. In the case of purchases of tested die from Samsung, we contract the assembly to Advanced Semiconductor Engineering, Inc., or ASE. Final testing of all of our products is handled by King Yuan Electronics Co., Ltd. or Sigurd Corporation under the supervision of our engineers. We depend on these third parties to supply us with material of a requested quantity in a timely manner that meets our standards for yield, cost and manufacturing quality. Availability of capacity within our supply chain has tightened recently, which has at times limited and could in the future limit the volume of products we can produce, negatively impacting our business and operations. Moreover, because each SoC is fabricated in only one manufacturing facility, or single sourced, any disruption to a facility could cause significant delays in the production or shipment of the products produced in that facility that could not be easily offset by having such product(s) produced in another facility. We do not have any long-term supply agreements with any of our manufacturing suppliers. If one or more of these vendors terminates its relationship with us, or if we encounter any problems with our manufacturing supply chain, including available capacity constraints, our ability to ship our solutions to our customers on time and in the quantity required would be adversely affected, which in turn could cause an unanticipated decline in our sales and damage our customer relationships.

If, in the future, we enter into arrangements with suppliers that include additional fees to expedite delivery, nonrefundable deposits or loans in exchange for capacity commitments or commitments to purchase specified quantities over extended periods, such arrangements may be costly, reduce our financial flexibility and be on terms unfavorable to us, if we are able to secure such arrangements at all. To date, we have not entered into any such arrangements with our suppliers. If we need additional foundry or assembly and test subcontractors because of increased demand or the inability to obtain timely and adequate deliveries from our current vendors, we may not be able to do so cost-effectively, if at all.

A substantial portion of our revenue is processed through a single distributor and the loss of this distributor may cause disruptions in our shipments, which may adversely affect our operations and financial condition.

We sell a significant percentage of our solutions through a single distributor, WT, which serves as our non-exclusive sales representative in Asia, other than Japan. Approximately 62%, 63% and 60% of our revenue was derived from sales through WT for the fiscal years ended January 31, 2022, 2021 and 2020, respectively, and approximately 59% of our revenue was derived from sales through WT for the nine months ended October 31, 2022. We anticipate that a significant portion of our revenue will continue to be derived from sales through WT in the foreseeable future. In November 2019, WPG Holdings Co., or WPG, a Taiwan distributor, announced an unsolicited bid to acquire up to 30% of WT. In January 2020, WPG acquired approximately 17% of WT, but indicated it intended to remain a passive investor in WT. An acquisition of WT by WPG could have an adverse impact on our relationship with WT. Our current agreement with WT is effective until September 2023, unless it is terminated earlier by either party for any or no reason with 60 days written notice or by failure of the breaching party to cure a material breach within 30 days following written notice of such material breach by the non-breaching party. Our agreement with WT will automatically renew for additional successive 12-month terms unless at least 60 days before the end of the then-current term either party provides written notice to the other party that it elects not to renew the agreement. Termination of the relationship with WT, either by us or by WT, could result in a temporary or permanent loss of revenue. We may not be successful in finding suitable alternative distributors on satisfactory terms, or at all, and this could adversely affect our ability to effectively sell our solutions in certain geographical locations or to certain end customers. Furthermore, WT, or any successor or other distributors we do business with, may face issues obtaining credit, which could impair their ability to make timely payments to us.

We are subject to risks associated with our distributors' product inventories.

We sell many of our products to customers through distributors who maintain their own inventory of our products for sale to ODMs and end customers. We allow limited price adjustments on sales to distributors. Price adjustments may be effected by way of credits for future product or by cash payments to the distributor, either in arrears or in advance, using estimates based on historical transactions. In accordance with ASC 606, we recognize revenue on sales to distributors upon shipment and transfer of control (known as “sell-in” revenue recognition) based on the amount of consideration expected to be received. To the extent that the actual consideration received is materially different from estimated variable consideration recognized, we may be required to adjust revenue in subsequent periods.

If our distributors are unable to sell an adequate amount of their inventory of our products in a given quarter to ODMs and end customers, or if they decide to decrease their inventories for any reason, such as adverse global economic conditions or a downturn in technology spending, our sales to these distributors and our revenues may decline. We also face the risk that our distributors may purchase, or for other reasons accumulate, inventory levels of our products in any particular quarter in excess of future anticipated sales to end customers. If such sales do not occur in the time frame anticipated by these distributors for any reason, these distributors may substantially decrease the amount of product they order from us in subsequent periods until their inventory levels realign with end-customer demand, which would harm our business and could adversely affect our revenues in such subsequent periods. Recently, some end customers have indicated they are seeking to reduce their inventory levels, which may reduce such customers’ demand for our products, including products purchased through our distributors, in future periods and harm our financial results.

Camera manufacturers incorporate components supplied by multiple third parties, and a supply shortage or delay in delivery of these components could delay orders for our solutions by our customers.

Our customers purchase components used in the manufacture of their cameras from various sources of supply, often involving several specialized components, including lenses, sensors, and memory chips. Any supply shortage or delay in delivery by third-party component suppliers, or a third-party supplier’s cessation or shut down of its business, may prevent or delay production of our customers’ products. As a result of delays in delivery or supply shortages of third-party components, orders for our solutions may be delayed or canceled and our business may be harmed. The semiconductor industry is currently experiencing shortages of certain devices, which has impacted, and may continue to impact, our customers’ ability to build their products and negatively impact our customers’ demand for our solutions. Similarly, our ability to generate design wins in some markets, such as the automotive OEM market, requires us to collaborate with third-party software suppliers in order to offer a complete solution to customers. Our inability to successfully collaborate with such third-party suppliers, or such suppliers’ inability to develop and deliver software, could harm our ability to achieve design wins and harm our business. Errors or defects within a camera system or in the manner in which the various components interact could prevent or delay production of our customers’ products, which could harm our business.

If our foundry vendors do not achieve satisfactory yields or quality, our reputation and customer relationships could be harmed.

The fabrication of our video and image processing SoC solutions is a complex and technically demanding process. Minor deviations in the manufacturing process can cause substantial decreases in yields, and in some cases, cause production to be suspended. Our foundry vendors, from time to time, experience manufacturing defects and reduced manufacturing yields, including in the fabrication of our SoCs. Changes in manufacturing processes or the inadvertent use of defective or contaminated materials by our foundry vendors could result in lower than anticipated manufacturing yields or unacceptable performance of our SoCs. Many of these problems are difficult to detect at an early stage of the manufacturing process and may be time consuming and expensive to correct. Poor yields from our foundry vendors, or defects, integration issues or other performance problems in our solutions, could cause us significant customer relations and business reputation problems, harm our financial results and give rise to financial or other damages to our customers. Our customers might consequently seek damages from us for their losses. A product liability claim brought against us, even if unsuccessful, would likely be time consuming and costly to defend.

Each of our SoC solutions is manufactured at a single location. If we experience manufacturing problems at a particular location, we would be required to transfer manufacturing to a new location or supplier. Converting or transferring manufacturing from a primary location or supplier to a backup fabrication facility could be expensive and could take two or more quarters. During such a transition, we would be required to meet customer demand from our then-existing inventory, as well as any partially finished goods that could be modified to the required product specifications. We do not seek to maintain sufficient inventory to address a lengthy transition period because we believe it is uneconomical. As a result, we may not be able to meet customer needs during such a transition, which could delay shipments, cause production delays, result in a decline in our sales and damage our customer relationships.

We rely on third-party vendors to supply software development tools to us for the development of our new products, and we may be unable to obtain the tools necessary to develop or enhance new or existing products.

We rely on third-party software development tools to assist us in the design, simulation and verification of new products or product enhancements. To bring new products or product enhancements to market in a timely manner, or at all, we need software development tools that are sophisticated enough or technologically advanced enough to complete our design, simulations and verifications. In the future, the design requirements necessary to meet consumer demands for more features and greater functionality from our solutions may exceed the capabilities of available software development tools. Unavailability of software development tools may result in our missing design cycles or losing design wins, either of which could result in a loss of market share or negatively impact our operating results.

Because of the importance of software development tools to the development and enhancement of our solutions, our relationships with leaders in the computer-aided design industry, including Cadence Design Systems, Inc., Mentor Graphics Corporation and Synopsys, Inc., are critical to us. If these relationships are not successful, we may be unable to develop new products or product enhancements in a timely manner, which could result in a loss of market share, a decrease in revenue or negatively impact our operating results.

We rely on third parties to provide services and technology necessary for the operation of our business. Any failure of one or more of our vendors, suppliers or licensors to provide such services or technology could harm our business.

We rely on third-party vendors to provide critical services, including, among other things, services related to accounting, human resources, information technology and network monitoring that we cannot or do not create or provide ourselves. We depend on these vendors to ensure that our corporate infrastructure will consistently meet our business requirements. The ability of these third-party vendors to successfully provide reliable and high-quality services is subject to technical and operational uncertainties that are beyond our control. While we may be entitled to damages if our vendors fail to perform under their agreements with us, our agreements with these vendors limit the amount of damages we may receive. In addition, we do not know whether we will be able to collect on any award of damages or that these damages would be sufficient to cover the actual costs we would incur as a result of any vendor’s failure to perform under its agreement with us. Upon expiration or termination of any of our agreements with third-party vendors, we may not be able to replace the services provided to us in a timely manner or on terms and conditions, including service levels and cost, that are favorable to us, and a transition from one vendor to another vendor could subject us to operational delays and inefficiencies until the transition is complete.

Any disruption to the operations of our third-party contractors and their suppliers could cause significant delays in the production or shipment of our products.

Our operations could be harmed if manufacturing, logistics or other operations of our third-party contractors or their suppliers are disrupted for any reason, including natural disasters, high heat events or water shortages, severe storms, other negative impacts from climate change, information technology system failures, military actions or environmental, public health or regulatory issues. The majority of our products are manufactured by or receive components from third-party contractors located in South Korea, Taiwan and Japan. The risk of an earthquake or tsunami in South Korea, Taiwan, Japan and elsewhere in the Pacific Rim region is significant due to the proximity of major earthquake fault lines. A disruption in the availability of image sensors from Sony Corporation as a result of the 2016 Kumamoto, Japan earthquake impacted our customers' ability to build or launch cameras and, as a result, negatively impacted the timing and scope of demand for our SoCs in fiscal year 2017. Similarly, a severe cold storm in Texas in February 2021 disrupted the manufacturing of some of our products at Samsung's Texas facility for several weeks. Any disruption resulting from such events could cause significant delays in the production or shipment of our products until we are able to shift our manufacturing, assembling or testing from the affected contractor to another third-party vendor. We may not be able to obtain alternate capacity on favorable terms, or at all.

Risks Related to Our Legal and Regulatory Environment

Our ability to sell our products to several China customers has been restricted.

In October 2019, our security camera customers Hangzhou Hikvision Digital Technology Co., Ltd, or Hikvision, and Zhejiang Dahua Technology Co., Ltd., or Dahua, were added to the Entity List of the Bureau of Industry and Security, or BIS, of the U.S. Department of Commerce, or Commerce, which imposes limitations on the supply of certain U.S. items to the listed entities. In December 2020, certain affiliated entities of our customer Shenzhen Dajiang Baiwang Technology Co., Ltd., or Dajiang Baiwang, were added to the Entity List. In October 2022, BIS imposed additional restrictions on transactions with Dahua involving items subject to BIS export regulations. These export regulations negatively impact our ability to ship items subject to BIS regulations to these listed entities. Notwithstanding our ability to continue to supply some SoC products to some affiliates of the listed entities, these customers may seek to obtain similar or substitute products from our competitors that are not subject to these limitations, or to develop similar or substitute products themselves. We also cannot be certain what additional actions the U.S. government may take with respect to Hikvision, Dahua and Dajiang Baiwang, or our other China customers, including changes to the Entity List restrictions, export regulations, tariffs or other trade restrictions, or whether the Chinese government may take any actions in response to U.S. government action that may adversely affect our ability to do business with our China customers. Even in the absence of new restrictions, tariffs or trade actions imposed by the U.S. or Chinese government, our China customers may take actions to reduce dependence on the supply of components subject to U.S. trade regulations, including our SoC solutions, which could have a material adverse effect on our operating results. We are unable to predict the duration of the restrictions imposed by the U.S. government or of any additional governmental actions, any of which could have a long-term adverse effect on our business, operating results and financial condition.

Global economic and political conditions, including possible trade tariffs and trade restrictions, may have an impact on our business and financial condition in ways that we currently cannot predict.

Our operations and performance depend significantly on global, regional and U.S. economic and geopolitical conditions. Beyond the BIS actions relating to Hikvision, Dahua and affiliates of Dajiang Baiwang, general trade tensions between the United States and China have been escalating, which has, in our view, created and will perpetuate an uncertain business environment. Additionally, the U.S. government announced new controls restricting the ability to send certain products and technology related to semiconductors, semiconductor manufacturing, advanced computing, and supercomputing to China without an export license. In many cases, these licenses are subject to a policy of denial and will not be issued. While our current products are not restricted by these controls, such controls could impact our ability to export products to China in the future. It also is possible that the Chinese government will retaliate in ways that could impact our business.

If additional tariffs or trade restrictions are imposed on our SoC solutions or the products of our customers, or trade restrictions are imposed on our ability to conduct business with certain customers, there could be a negative impact on our operations and financial performance. For example, H.R. 5515 - John S. McCain National Defense Authorization Act for Fiscal Year 2019 negatively impacts Hikvision and Dahua's ability to sell products into the U.S. security camera market and decreases their demand for our solutions. Similarly, changes in export classification requirements, such as those proposed by U.S. Congress, could impact our ability to supply our solutions to certain companies or in certain countries. Even in the absence of new restrictions, tariffs or changes in export classifications, it is possible that foreign customers could take actions to reduce dependence on the supply of components, including our solutions, that could be subject to new export classifications or trade restrictions. There are also risks that the Chinese government may, among other things, require the use of local suppliers, compel companies that do business in China to partner with local companies to conduct business and provide incentives to government-backed local customers to buy from local suppliers. The materialization of these risks could have a material adverse effect on our business and financial condition. Further, our business and performance are subject to economic conditions, and our suppliers, distributors, and customers may suffer their own financial and economic challenges. Inflation or other deteriorations in global economic conditions may impact our operating expenses and third parties may demand pricing accommodations, which could harm our ability to meet customer demands or collect revenue or otherwise could harm our business and financial results.

Russia's ongoing conflict with Ukraine has triggered significant sanctions from U.S. and European leaders. Resulting changes in U.S. trade policy could trigger retaliatory actions by Russia, its allies and other affected countries, including China, resulting in a trade war. For example, in addition to controls imposed on China discussed above, following Russia's invasion of Ukraine, the United States and other countries imposed certain economic sanctions and severe export control restrictions against Russia and Belarus, as well as certain Russian nationals, which caused us to terminate certain business relationships in those countries. These sanctions and restrictions have continued to increase as the conflict has further escalated, and the United States and other countries could impose wider sanctions and export restrictions and take other actions in the future that could impact our business. Furthermore, if the conflict between Russia and Ukraine continues for a long period of time, or if other countries, including the U.S., become further involved in the conflict, we could face significant adverse effects to our business and financial condition. In addition, some of our customers and third-party partners have engineering teams located in Russian and/or Ukraine, whose operations have been and may continue to be disrupted by the ongoing conflict between the countries. If such disruption were to continue for an extended period, our customers could face delays in the launch of new products containing our solutions, resulting in delayed or decreased demand for our solutions.

We have significant business operations in Taiwan, including approximately 360 employees, and many of our third-party manufacturing suppliers are located in Taiwan. Accordingly, our business, financial condition and results of operations may be affected by changes in governmental and economic policies in Taiwan, social instability and diplomatic and social developments in or affecting Taiwan due to its international political status. Although significant economic and cultural relations have been established between Taiwan and China, we cannot assure that relations between Taiwan and China will not face political or economic uncertainties in the future. Any deterioration in the relations between Taiwan and China, and other factors affecting military, political or economic conditions in Taiwan, could disrupt our business operations and materially and adversely affect our results of operations.

We are subject to governmental export and import controls that could subject us to liability or impair our ability to compete in international markets.

The U.S. and various foreign governments have imposed controls, export license requirements and restrictions on the import or export of certain products, technologies and software. We must export our products in compliance with U.S. export controls, including the Commerce's Export Administration Regulations. We may not always be successful in obtaining necessary export licenses, and our failure to obtain required import or export approval for our products or limitations on our ability to export or sell our products imposed by these laws may harm both our international and domestic sales and adversely affect our revenue. Noncompliance with these laws could have negative consequences, including government investigations, penalties and reputational harm.

Changes in our products or changes in export, import and economic sanctions laws and regulations may delay our introduction of new products in international markets, prevent our customers from deploying our products internationally or, in some cases, prevent the export or import of our products to or from certain countries altogether. Any change in export or import regulations or legislation, shift or change in enforcement, or change in the countries, persons or technologies targeted by these regulations, could result in decreased use of our products by, or in our decreased ability to export or sell our products to, existing or potential customers with international operations. In such event, our business and results of operations could be adversely affected.

We are subject to warranty and product liability claims and to product recalls.

From time to time, we are subject to warranty claims that may require us to make significant expenditures to defend these claims or pay damage awards. In the future, we may also be subject to product liability claims resulting from failure of our solutions or if products we design, manufacture, or sell, cause personal injury or property damage, even where the cause is unrelated to product defects. These risks will likely increase as our products are introduced into new devices, markets, or applications, including autonomous and semi-autonomous automotive, drone and robotic applications. In the event of a warranty claim, we may also incur costs if we compensate the affected customer. We maintain product liability insurance, but this insurance is limited in amount and subject to significant deductibles. There is no guarantee that our insurance will be available or adequate to protect against all claims. We also may incur costs and expenses relating to a recall of one of our customers' products containing one of our devices. The process of identifying a recalled product in consumer devices that have been widely distributed may be lengthy and require significant resources, and we may incur significant replacement costs, contract damage claims from our customers and reputational harm. Costs or payments made in connection with warranty and product liability claims and product recalls could harm our financial condition and results of operations, as well as harm our reputation and cause the market value of our ordinary shares to decline.

We are subject to governmental laws, regulations and other legal obligations related to privacy, data protection and cybersecurity.

The legislative and regulatory framework for privacy, data protection and cybersecurity issues worldwide is rapidly evolving and is likely to remain uncertain for the foreseeable future. We collect and otherwise process personally identifiable information, or PII, and other data as part of our business processes and activities. This data is subject to a variety of U.S. and international laws and regulations, including oversight by various regulatory or other governmental bodies. Many foreign countries and governmental bodies, including China, the European Union and other relevant jurisdictions where we conduct business, have laws and regulations concerning the collection and use of PII and other data obtained from their residents or by businesses operating within their jurisdictions that are currently more restrictive than those in the U.S. For example, effective May 2018, the European Union adopted the General Data Protection Regulation, or GDPR, that imposed more stringent data protection requirements and provided for greater penalties for noncompliance. The United Kingdom has adopted legislation that substantially implements the GDPR and provides for a similar penalty structure. Similarly, California has adopted the California Consumer Privacy Act of 2018, or CCPA, which took effect in 2020. California has adopted a new law, the California Privacy Rights Act of 2020, or CPRA, that will substantially expand the CCPA effective January 1, 2023. The CCPA gives California residents the right to access, delete and opt out of certain sharing of their information, and imposes penalties for failure to comply. In 2021, the National People's Congress passed the Data Security Law of the People's Republic of China (Data Security Law). The Data Security Law is the first comprehensive data security legislation in China and aims to regulate a wide range of issues in relation to the collection, storage, processing, use, provision, transaction and publication of any kind of data. There is significant uncertainty in how regulators will interpret and enforce the law, but it contains provisions that allow substantial government oversight and include fines for failure to obtain required approval from China's cyber and data protection regulators for cross-border personal information-related data transfers. Aspects of these laws remain unclear, resulting in further uncertainty and potentially requiring us to modify our data practices and policies and to incur substantial additional costs and expenses in an effort to comply. Because the interpretation and application of many laws and regulations relating to privacy, data protection, and data security, along with industry standards, are uncertain, it is possible that these laws and regulations may be interpreted and applied in a manner that is inconsistent with our data management practices or the features of our products or solutions, and we could face fines, lawsuits, regulatory investigations, and other claims and penalties, and we could be required to fundamentally change our products or our business practices, which could have an adverse effect on our business. Any inability, or perceived inability, to adequately address privacy and data protection concerns, or to comply with applicable laws, regulations, policies, industry standards, contractual obligations or other legal obligations, even if unfounded, could result in additional cost and liability to us, inhibit sales, damage our reputation and adversely affect our business.

Failure to comply with the U.S. Foreign Corrupt Practices Act, or FCPA, and similar laws associated with our activities outside of the United States could subject us to penalties and other adverse consequences.

We face significant risks if we fail to comply with the FCPA and other anti-corruption laws that prohibit improper payments or offers of payment to foreign governments and political parties by us for the purpose of obtaining or retaining business. In many foreign countries, particularly in countries with developing economies, it may be a local custom that businesses operating in such countries engage in business practices that are prohibited by the FCPA or other applicable laws and regulations. Although we implemented an FCPA compliance program, we cannot assure you that all of our employees and agents, as well as those companies to which we outsource certain of our business operations, will not take actions in violation of our policies and applicable law, for which we may be ultimately held responsible. Any violation of the FCPA or other applicable anti-corruption laws could result in severe criminal or civil sanctions and, in the case of the FCPA, suspension or debarment from U.S. government contracting, which could have a material and adverse effect on our reputation, business, financial condition, operating results and cash flows.

We, our customers and third-party contractors are subject to increasingly complex environmental regulations and compliance with these regulations may delay or interrupt our operations and adversely affect our business.

We face increasing complexity in our procurement, design, and research and development operations as a result of requirements relating to the materials composition of our products, including the European Union's, or EU's, Restriction on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, or RoHS, directive, which restricts the content of lead and certain other hazardous substances in specified electronic products put on the market in the EU and similar Chinese legislation relating to marking of electronic products which became effective in March 2007. Failure to comply with these and similar laws and regulations could subject us to fines, penalties, civil or criminal sanctions, contract damage claims, and take-back of non-compliant products, which could harm our business, reputation and operating results. The passage of similar requirements in additional jurisdictions or the tightening of these standards in jurisdictions where our products are already subject to such requirements could cause us to incur significant expenditures to make our products compliant with new requirements, or could limit the markets into which we may sell our products.

Our failure to comply with present and future environmental, health and safety laws could cause us to incur substantial costs, result in civil or criminal fines and penalties and decreased revenue, which could adversely affect our operating results. Failure by our foundry vendors or other suppliers to comply with applicable environmental laws and requirements could cause disruptions and delays in our product shipments, which could adversely affect our relations with our ODMs and OEMs and adversely affect our business and results of operations.

Regulations related to "conflict minerals" may force us to incur additional expenses, may make our supply chain more complex and may result in damage to our reputation with customers.

Pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, or the Dodd-Frank Act, the Securities and Exchange Commission, or the SEC, has adopted requirements for companies that use certain minerals and metals, known as conflict minerals, in their products, whether or not these products are manufactured by third parties. These requirements require companies to perform due diligence, disclose and report whether or not such minerals originate from the Democratic Republic of the Congo and adjoining countries. These requirements could adversely affect the sourcing, availability and pricing of minerals used in the manufacture of semiconductor devices, including our products. While these requirements continue to be subject to administrative uncertainty, we have incurred, and may continue to incur, costs to comply with the disclosure requirements, including costs related to determining the source of any of the relevant minerals and metals used in our products. Since our supply chain is complex, we may not be able to sufficiently verify the origins for these minerals and metals used in our products through the due diligence procedures that we implement, which may harm our reputation. In such event, we may also face difficulties in satisfying customers who require that all of the components of our products are certified as conflict mineral free.

We are subject to regulatory compliance requirements, including Section 404 of the Sarbanes-Oxley Act of 2002, which are costly to comply with, and our failure to comply with these requirements could harm our business and operating results.

We are subject to disclosure and compliance requirements associated with being a public company, including but not limited to compliance with Section 404 of the Sarbanes-Oxley Act of 2002. For example, Section 404 of the Sarbanes-Oxley Act requires that our management report on, and our independent auditors attest to, the effectiveness of our internal control structure and procedures for financial reporting. Compliance with Section 404 requires a significant amount of time, expenses and diversion of internal resources. If we or our auditors discover a material weakness in our internal controls, the disclosure of that fact, even if quickly remedied, could reduce the market's confidence in our financial statements and harm our stock price. In addition, if we fail to maintain effective controls over financial reporting, we could be subject to sanctions or investigations by The NASDAQ Stock Market, the SEC, or other regulatory authorities. Irrespective of compliance with Section 404, any failure of our internal controls could have a material adverse effect on our stated results of operations and harm our reputation. Furthermore, investor perceptions of our company may suffer, and this could cause a decline in the market price of our ordinary shares.

Changes in effective tax rates or adverse outcomes resulting from examination of our income tax returns could adversely affect our results.

Our future effective tax rates could be adversely affected if our earnings are lower than anticipated in countries where we have lower statutory rates and higher than anticipated in countries where we have higher statutory rates, by changes in the valuation of our deferred tax assets and liabilities, transfer pricing adjustments, including the effect of acquisitions on our legal structure, by tax costs related to intercompany realignments, tax effects of share-based compensation, expiration of or lapses in tax incentives, or by changes in tax laws, regulations, accounting principles or interpretations thereof. For example, changes in tax laws, including the U.S. federal tax legislation commonly referred to as the Tax Cuts and Jobs Act of 2017, or Tax Act, as well as other factors, could cause us to experience fluctuations in our tax obligations and effective tax rates and otherwise adversely affect our tax positions and/or our tax liabilities. In August 2022, the U.S. enacted the Inflation Reduction Act of 2022 ("IRA") which includes a new 15% corporate minimum tax as well as a 1% excise tax on fair value of corporate stock repurchases made after December 31, 2022. We do not expect it to have a material impact on our financial statements.

The Tax Act requires complex computations not previously provided in U.S. tax law. The U.S. Department of Treasury has broad authority to issue regulations and interpretative guidance that may significantly impact how we will apply the law and impact our results of operations in the period issued. As such, the application of accounting guidance for such items is currently uncertain. Further, compliance with the Tax Act and the accounting for such provisions require accumulation of information not previously required or regularly produced. While we have completed our accounting for the effects of the Tax Act, additional regulatory guidance may still be issued by the applicable taxing authorities which could materially affect our tax obligations and effective tax rate.

In addition, our income tax returns are subject to continuous examination by the Internal Revenue Service, or IRS, and other tax authorities. We regularly assess the likelihood of adverse outcomes resulting from these examinations to determine the adequacy of our provision for income taxes. We cannot assure you that the outcomes from these continuous examinations will not have an adverse effect on our operating results and financial condition.

Unfavorable tax law changes, an unfavorable governmental review of our tax returns, changes in our geographical earnings mix or imposition of withholding taxes on repatriated earnings could adversely affect our effective tax rate and our operating results.

Our operations are subject to certain taxes, such as income and transaction taxes, in the Cayman Islands, the United States, China, Hong Kong, Japan, Italy, Germany, South Korea, Taiwan and other jurisdictions in which we do business. A change in the tax laws in the jurisdictions in which we do business, including an increase in tax rates or an adverse change in the treatment of an item of income or expense, possibly with retroactive effect, could result in a material increase in the amount of taxes we incur. In particular, past proposals have been made to change certain U.S. tax laws relating to foreign entities with U.S. connections, which may include us. For example, previously proposed legislation has considered treating certain foreign corporations as U.S. domestic corporations (and therefore taxable on all of their worldwide income) if the management and control of the foreign corporation occurs, directly or indirectly, primarily within the United States. If such legislation were enacted, we could, depending on the precise form, be subject to U.S. taxation notwithstanding our domicile outside the United States. In addition, over the last several years, the Organization for Economic Cooperation and Development (OECD) has been working on a Base Erosion and Profit Shifting Project and has been issuing guidelines and proposals covering a number of issues, including country-by-country reporting, permanent establishment rules, transfer pricing rules and tax treaties. Many of these changes have been or are in the process of being adopted by numerous countries and could materially and adversely affect our provision for income taxes. In 2021, more than 140 countries tentatively signed on to a framework that imposes a global minimum tax of 15%. Additional changes to global tax laws are likely to occur, and such changes may adversely affect our effective tax rate, operating results, and cash flow.

In December 2018, the Cayman Islands passed the International Tax Co-Operation (Economic Substance) Law, 2018, which requires Cayman Islands companies carrying one or more relevant activity to maintain a substantial economic presence in the Cayman Islands. Effective from December 31, 2019, we have structured our activities to comply with the new law. However, the legislation remains subject to further clarification and interpretation and accordingly, there is no guarantee that we will be deemed to be compliant. Furthermore, this legislation may require us to make additional changes to the activities we carry on in the Cayman Islands, which could increase our cost of operations, and we could be subject to penalties for lack of compliance. As a result, we are not able to determine the impact on our operations and net income as of the current period.

We are subject to periodic audits or other reviews by tax authorities in the jurisdictions in which we conduct our activities. Any such audit, examination or review requires management's time, diverts internal resources and, in the event of an unfavorable outcome, may result in additional tax liabilities or other adjustments to our historical results.

Because we conduct operations in multiple jurisdictions, our effective tax rate is influenced by the amounts of income and expense attributed to each such jurisdiction. If such amounts were to change so as to increase the amounts of our net income subject to taxation in higher-tax jurisdictions, or if we were to commence operations in jurisdictions assessing relatively higher tax rates, our effective tax rate could be adversely affected. In addition, we may determine that it is advisable from time to time to repatriate earnings from subsidiaries under circumstances that could give rise to imposition of potentially significant withholding taxes by the jurisdictions in which such amounts were earned, without our receiving the benefit of any offsetting tax credits, which could also adversely impact our effective tax rate.

We may be classified as a passive foreign investment company which could result in adverse U.S. federal income tax consequences for U.S. holders of our ordinary shares.

Based on the current and anticipated valuation of our assets and the composition of our income and assets, we do not expect to be considered a passive foreign investment company, or PFIC, for U.S. federal income tax purposes for our 2022 fiscal year or the foreseeable future. However, a separate determination must be made at the close of each taxable year as to whether we are a PFIC for that taxable year, and we cannot assure you that we will not be a PFIC for our 2023 fiscal year or any future taxable year. Under current law, a non-U.S. corporation will be considered a PFIC for any taxable year if either (a) at least 75% of its gross income is passive income or (b) at least 50% of the value of its assets, generally based on an average of the quarterly values of the assets during a taxable year, is attributable to assets that produce or are held for the production of passive income. PFIC status depends on the composition of our assets and income and the value of our assets (which may be based in part on the value of our ordinary shares which may fluctuate), including, among others, a pro rata portion of the income and assets of each subsidiary in which we own, directly or indirectly, at least 25% by value of the subsidiary's equity interests, from time to time. Because we currently hold, and expect to continue to hold, a substantial amount of cash or cash equivalents, and because the calculation of the value of our assets may be based in part on the value of our ordinary shares which may fluctuate and may fluctuate considerably given that market prices of technology companies historically often have been volatile, we may be a PFIC for any taxable year. If we were treated as a PFIC for any taxable year during which a U.S. holder held ordinary shares, certain adverse U.S. federal income tax consequences could apply for such U.S. holder.

Changes in our United States federal income tax classification, or that of our subsidiaries, could result in adverse tax consequences to our 10% or greater U.S. shareholders.

The Tax Act may have changed the consequences to U.S. shareholders that own, or are considered to own, as a result of the attribution rules, ten percent or more of the voting power or value of the stock of a non-U.S. corporation (a 10% U.S. shareholder) under the U.S. federal income tax law applicable to owners of U.S. controlled foreign corporations, or CFCs.

Prior to the Tax Act, we did not believe that we, or any of our non-U.S. subsidiaries, were considered a CFC, which is a determination made daily based on whether the 10% U.S. shareholders together own, or are considered to own under the attribution rules, more than fifty percent of the voting power or value of a non-U.S. corporation. Under the Tax Act, however, certain of the Company's foreign subsidiaries may be classified as CFCs with respect to any single 10% U.S. shareholder, even without regard to whether 10% U.S. shareholders together own, directly or indirectly, more than fifty percent of the voting power or value of the Company.

Risks Related to Our Intellectual Property

Our failure to adequately protect our intellectual property rights could impair our ability to compete effectively or defend ourselves from litigation, which could harm our business, financial condition and results of operations.

Our success depends, in part, on our ability to protect our intellectual property. We rely primarily on patent, copyright, trademark and trade secret laws, as well as confidentiality and non-disclosure agreements and other contractual protections, to protect our proprietary technologies and know-how, all of which offer only limited protection. The steps we have taken to protect our intellectual property rights may not be adequate to prevent misappropriation of our proprietary information or infringement of our intellectual property rights, and our ability to prevent such misappropriation or infringement is uncertain, particularly in countries outside of the United States. The failure of our patents to adequately protect our technology might make it easier for our competitors to offer similar products or technologies, which would harm our business. For example, our patents and patent applications could be opposed, contested, circumvented, designed around by our competitors or be declared invalid or unenforceable in judicial or administrative proceedings. Our foreign patent protection is generally not as comprehensive as our U.S. patent protection and may not protect our intellectual property in some countries where our products are sold or may be sold in the future. Many U.S.-based companies have encountered substantial intellectual property infringement in foreign countries, including countries where we sell products. Even if foreign patents are granted, effective enforcement in foreign countries may not be available. For example, the legal environment relating to intellectual property protection in certain emerging market countries where we operate is relatively weaker, often making it difficult to create and enforce such rights. We may not be able to effectively protect our intellectual property rights in these emerging markets or elsewhere. If such an impermissible use of our intellectual property or trade secrets were to occur, our ability to sell our solutions at competitive prices may be adversely affected and our business, financial condition, operating results and cash flows could be materially and adversely affected.

We may in the future need to initiate infringement claims or litigation in order to try to protect our intellectual property rights. Litigation, whether we are a plaintiff or a defendant, can be expensive, time-consuming and may divert the efforts of our technical staff and management, which could harm our business, whether or not such litigation results in a determination favorable to us. Litigation also puts our patents at risk of being invalidated or interpreted narrowly and our patent applications at risk of not being issued. Additionally, any enforcement of our patents or other intellectual property may provoke third parties to assert counterclaims against us. If we are unable to protect our proprietary rights or if third parties independently develop or gain access to our or similar technologies, our business, revenue, reputation and competitive position could be harmed.

Third parties' assertions of infringement of their intellectual property rights could result in our having to incur significant costs and cause our operating results to suffer.

The semiconductor industry is characterized by vigorous protection and pursuit of intellectual property rights and positions, which has resulted in protracted and expensive litigation for many companies. We and certain of our customers have received, and in the future may receive, communications from others alleging our infringement of their patents, trade secrets or other intellectual property rights. In addition, certain of our end customers have been the subject of lawsuits alleging infringement of intellectual property rights by products incorporating our solutions, including the assertion that the alleged infringement may be attributable, at least in part, to our technology. Lawsuits resulting from such allegations could subject us to significant liability for damages and invalidate our proprietary rights, though this has not occurred to date. Any potential intellectual property litigation also could force us to do one or more of the following:

- stop selling products or using technology that contain the allegedly infringing intellectual property;
- incur significant legal expenses;
- pay substantial damages to the party whose intellectual property rights we may be found to be infringing;
- redesign those products that contain the allegedly infringing intellectual property;
- attempt to obtain a license to the relevant intellectual property from third parties, which may not be available on reasonable terms or at all; or
- lose the opportunity to license our technology to others or to collect royalty payments based upon successful protection and assertion of our intellectual property against others.

Any significant impairment of our intellectual property rights from any litigation we face could harm our business and our ability to compete.

Any potential dispute involving our patents or other intellectual property could affect our customers, which could trigger our indemnification obligations to them and result in substantial expense to us.

In any potential dispute involving our patents or other intellectual property, our customers could also become the target of litigation. Certain of our customers have received notices from third parties claiming to have patent rights in certain technology and inviting our customers to license this technology, and certain of our end customers have been the subject of lawsuits alleging infringement of patents by products incorporating our solutions, including the assertion that the alleged infringement may be attributable, at least in part, to our technology. Because we generally indemnify our customers for intellectual property claims made against them for products incorporating our technology, any litigation could trigger technical support and indemnification obligations under some of our license agreements, which could result in substantial expense to us. Because some of our ODMs and OEMs are larger than we are and have greater resources than we do, they may be more likely to be the target of an infringement claim by third parties than we would be, which could increase our chances of becoming involved in a future lawsuit. If any such claims were to succeed, we might be forced to pay damages on behalf of our ODMs or OEMs that could increase our expenses, disrupt our ability to sell our solutions and reduce our revenue. In addition to the time and expense required for us to supply support or indemnification to our customers, any such litigation could severely disrupt or shut down the business of our customers, which in turn could hurt our relations with our customers and cause the sale of our products to decrease.

The use of open source software in our products, processes and technology may expose us to additional risks and compromise our proprietary intellectual property.

Our products, processes and technology sometimes utilize and incorporate software that is subject to an open source license. Open source software is typically freely accessible, usable and modifiable. Certain open source software licenses, such as the GNU General Public License, require a user who intends to distribute the open source software as a component of the user's software to disclose publicly part or all of the source code to the user's software. In addition, certain open source software licenses require the user of such software to make any derivative works of the open source code available to others on terms unfavorable to us or at no cost. This can subject previously proprietary software to open source license terms.

While we monitor the use of open source software in our products, processes and technology and try to ensure that no open source software is used in such a way as to require us to disclose the source code to the related product, processes or technology when we do not wish to do so, such use could inadvertently occur. Additionally, if a third-party software provider has incorporated certain types of open source software into software we license from such third-party for our products, processes or technology, we could, under certain circumstances, be required to disclose the source code to our products, processes or technology. This could harm our intellectual property position and our business, results of operations and financial condition.

Risks Related to Ownership of Our Ordinary Shares

The market price of our ordinary shares may be volatile, which could cause the value of your investment to decline.

Since our initial public offering in October 2012, the market price of our ordinary shares has been highly volatile. The market price of our stock has been particularly volatile since the onset of the COVID-19 pandemic. For example, since February 1, 2020, the trading price of our common stock ranged from a low of $36.02 to a high of $227.59. The trading price of our ordinary shares is likely to remain volatile and could be subject to wide fluctuations in price in response to various factors, some of which are beyond our control. These factors include:

- changes in financial estimates, including our ability to meet our future revenue and operating profit or loss projections;
- fluctuations in our operating results or those of other semiconductor or comparable companies;
- fluctuations in the economic performance or market valuations of companies perceived by investors to be comparable to us;
- economic developments in the semiconductor industry as a whole;
- general economic conditions, including conditions caused by pandemics, and slow or negative growth of related markets;
- trade and other geopolitical activities affecting markets we address;
- announcements by us or our competitors of acquisitions, new products, significant contracts or orders, commercial relationships or capital commitments;
- our ability to develop and market new and enhanced solutions on a timely basis;
- changes in the demand for our customers' products;

- commencement of or our involvement in litigation;
- disruption to our operations;
- any major change in our board of directors or management;
- political or social conditions in the markets where we sell our products;
- changes in governmental regulations; and
- changes in earnings estimates or recommendations by securities analysts.

In addition, the stock market in general, and the market for semiconductor and other technology companies in particular, have experienced extreme price and volume fluctuations that have often been unrelated or disproportionate to the operating performance of those companies. These broad market and industry factors may cause the market price of our ordinary shares to decrease, regardless of our actual operating performance. These trading price fluctuations may also make it more difficult for us to use our ordinary shares as a means to make acquisitions or to use options to purchase our ordinary shares to attract and retain employees. If the market price of our ordinary shares declines, you may not realize any return on your investment in us and may lose some or all of your investment. In addition, in the past, following periods of volatility in the overall market and the market price of a company's securities, securities class action litigation has often been instituted against these companies. This litigation, if instituted against us, could result in substantial costs and a diversion of our management's attention and resources.

Our actual operating results may not meet or exceed our guidance and investor expectations, which would likely cause our stock price to decline.

From time to time, we may release guidance in our earnings releases, earnings conference calls or otherwise, regarding our future performance that represent our management's estimates as of the date of release. If given, this guidance, which will include forward-looking statements, will be based on projections prepared by our management. Projections are based upon a number of assumptions and estimates that, while presented with numerical specificity, are inherently subject to significant business, economic and competitive uncertainties and contingencies, many of which are beyond our control. The principal reason that we expect to release guidance is to provide a basis for our management to discuss our business outlook with analysts and investors. With or without our guidance, analysts and other investors may publish expectations regarding our business, financial performance and results of operations. We do not accept any responsibility for any projections or reports published by any such third persons.

Guidance is necessarily speculative in nature, and it can be expected that some or all of the assumptions of the guidance furnished by us will not materialize or will vary significantly from actual results. If our actual performance does not meet or exceed our guidance or investor expectations, the trading price of our ordinary shares is likely to decline. Similarly, if our guidance does not meet or exceed expectations or investors or securities analysts, the trading price of our ordinary shares is likely to decline.

The price of our ordinary shares could decrease as a result of shares being sold in the market.

Sales of a substantial number of our ordinary shares in the public market, or the perception that these sales might occur, could cause the market price of our ordinary shares to decline. In the past, we have issued stock options to employees and we regularly issue restricted stock units (RSUs) to employees, which settle as ordinary shares upon vesting. These shares can be freely sold in the public market upon issuance and vesting, subject to restrictions provided under the terms of the applicable plan and/or the option agreements entered into with option holders. We may also issue ordinary shares or securities convertible into ordinary shares from time to time in connection with a financing, acquisition or otherwise. Any such issuance could result in substantial dilution to our existing shareholders and cause the trading price of our stock to decline.

We do not intend to pay dividends on our ordinary shares and, consequently, a shareholder's ability to achieve a return on its investment will depend on appreciation in the price of our ordinary shares.

We have never declared or paid any cash dividends on our ordinary shares and do not currently intend to do so for the foreseeable future. We currently intend to invest our future earnings, if any, to fund our growth. Therefore, shareholders are not likely to receive any dividends on their ordinary shares for the foreseeable future and the success of an investment in our ordinary shares will depend upon any future appreciation in their value. There is no guarantee that our ordinary shares will appreciate in value or even maintain the price at which our shareholders have purchased their shares. Investors seeking cash dividends should not purchase our ordinary shares.

Provisions of our memorandum and articles of association and Cayman Islands corporate law may discourage or prevent an acquisition of us which could adversely affect the value of our ordinary shares.

Provisions of our memorandum and articles of association and Cayman Islands law may have the effect of delaying or preventing a change of control or changes in our management. These provisions include the following:

- the division of our board of directors into three classes;
- the right of our board of directors to elect a director to fill a vacancy created by the expansion of our board of directors or due to the resignation or departure of an existing board member;
- prohibition of cumulative voting in the election of directors which would otherwise allow less than a majority of shareholders to elect director candidates;
- the requirement for the advance notice of nominations for election to our board of directors or for proposing matters that can be acted upon at a shareholders' meeting;
- the ability of our board of directors to issue, without shareholder approval, such amounts of preference shares as the board of directors deems necessary and appropriate with terms set by our board of directors, which rights could be senior to those of our ordinary shares;
- the elimination of the rights of shareholders to call a special meeting of shareholders and to take action by written consent in lieu of a meeting; and
- the required approval of a special resolution of the shareholders, being a two-thirds vote of shares held by shareholders present and voting at a shareholder meeting, to alter or amend the provisions of our post-offering memorandum and articles of association.

Holders of our ordinary shares may face difficulties in protecting their interests because we are incorporated under Cayman Islands law.

Our corporate affairs are governed by our amended and restated memorandum and articles of association, by the Companies Law (as the same may be supplemented or amended from time to time) of the Cayman Islands and by the common law of the Cayman Islands. The rights of our shareholders and the fiduciary responsibilities of our directors under Cayman Islands law are not as clearly established as under statutes or judicial precedent in existence in jurisdictions in the United States. In particular, the Cayman Islands has a less developed body of securities laws than the United States and provides significantly less protection to investors. There is no legislation specifically dedicated to the rights of investors in securities and thus no statutorily defined private cause of action specific to investors such as those provided under the Securities Act or the Securities Exchange Act of 1934, as amended. In addition, shareholders of Cayman Islands companies may not have standing to initiate shareholder derivative actions in U.S. federal courts. Therefore, you may have more difficulty in protecting your interests in the face of actions by our management, directors or controlling shareholders than would shareholders of a corporation incorporated in a jurisdiction in the United States due to the comparatively less developed nature of Cayman Islands law in this area.

Shareholders of Cayman Islands exempted companies, such as our company, have no general rights under Cayman Islands law to inspect corporate records and accounts or to obtain copies of lists of shareholders of the company. Our directors have discretion under our articles of association to determine whether or not, and under what conditions, our corporate records may be inspected by our shareholders, but are not obliged to make them available to our shareholders. This may make it more difficult for you to obtain the information needed to establish any facts necessary for a shareholder motion or to solicit proxies from other shareholders in connection with a proxy contest.

Subject to limited exceptions, under Cayman Islands law, a minority shareholder may not bring a derivative action against the board of directors.

Holders of our ordinary shares may have difficulty obtaining or enforcing a judgment against us because we are incorporated under the laws of the Cayman Islands.

It may be difficult or impossible for you to bring an action against us in the Cayman Islands if you believe your rights have been infringed under U.S. securities laws. There is no statutory recognition in the Cayman Islands of judgments obtained in the United States, although the courts of the Cayman Islands will in certain circumstances recognize and enforce a non-penal judgment of a foreign court of competent jurisdiction without retrial on the merits. While there is no binding authority on this point, this is likely to include, in certain circumstances, a non-penal judgment of a United States court imposing a monetary award based on the civil liability provisions of the U.S. federal securities laws. The Grand Court of the Cayman Islands may stay proceedings if concurrent proceedings are being brought elsewhere. There is uncertainty as to whether the Grand Court of the Cayman Islands would recognize or enforce judgments of United States courts obtained against us predicated upon the civil liability provisions of the securities laws of the United States or any state thereof and whether the Grand Court of the Cayman Islands would hear original actions brought in the Cayman Islands against us predicated upon the securities laws of the United States or any state thereof.

General Risk Factors

If our operations are interrupted, our business and reputation could suffer.

Our operations and those of our manufacturers are vulnerable to interruption caused by technical breakdowns, computer hardware and software malfunctions, software viruses, infrastructure failures, regional health issues and pandemics, earthquakes, fires, severe storms, floods and other negative impacts from climate change, power losses, telecommunications failures, terrorist attacks, wars, Internet failures and other events beyond our control. Our operations could also be disrupted by geopolitical conditions, particularly in Taiwan or China, where the majority of our employees are located. Any disruption in our services or operations could result in a reduction in revenue or a claim for substantial damages against us, regardless of whether we are responsible for that failure. The outbreak of COVID-19 has resulted in significant governmental measures being implemented to control the spread of the virus, including, among others, restrictions on travel, manufacturing and the movement of employees in many regions of the world, and the imposition of remote or work from home conditions in many of our offices, including the United States and Italy. If the remote or work from home conditions continue for an extended period of time, or similar restrictions and measures are implemented in more of the locations where we have offices, we may experience delays in product development, a decreased ability to support our customers, reduced design win activity, and overall lack of productivity. We rely on our computer equipment, database storage facilities and other office equipment, which are located primarily in the seismically active San Francisco Bay Area and Taiwan. If we suffer a significant database or network facility outage, our business could experience disruption until we fully implement our back-up systems.

If securities analysts or industry analysts downgrade our ordinary shares, publish negative research or reports or fail to publish reports about our business, our stock price and trading volume could decline.

The trading market for our ordinary shares will be influenced by the research and reports that industry or securities analysts publish about us, our business and our market. If one or more analysts adversely changes their recommendation regarding our stock or our competitors' stock, our stock price would likely decline. If one or more analysts cease coverage of us or fail to regularly publish reports on us, we could lose visibility in the financial markets which in turn could cause our stock price or trading volume to decline.

ITEM 6. Exhibits

The exhibits listed in the accompanying Exhibit Index are filed or incorporated by reference as part of this Quarterly Report.

EXHIBIT INDEX

Exhibit Number	Description
3.1(1)	Amended and Restated Memorandum of Association and Second Amended and Restated Articles of Association of the Registrant.
31.1	Certification of Principal Executive Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.
31.2	Certification of Principal Financial Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.
32.1±	Certification of Principal Executive Officer and Principal Financial Officer Required Under Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. §1350.
101.INS	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data file because its XBRL tags are embedded within the Inline XBRL document
101.SCH	Inline XBRL Taxonomy Schema Linkbase Document
101.CAL	Inline XBRL Taxonomy Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Labels Linkbase Document
101.PRE	Inline XBRL Taxonomy Presentation Linkbase Document
104	The cover page from the Company's Quarterly Report on Form 10-Q for the quarter ended October 31, 2022, has been formatted in Inline XBRL and included in Exhibit 101.

(1) Incorporated by reference to the Registrant's registration statement on Form S-1 (No. 333-174838) Amendment No. 3 as filed with the Securities and Exchange Commission on September 12, 2012.

± In accordance with Item 601(b)(32)(ii) of Regulation S-K and SEC Release No. 33-8238 and 34-47986, Final Rule: Management's Reports on Internal Control Over Financial Reporting and Certification of Disclosure in Exchange Act Periodic Reports, the certifications furnished in Exhibits 32.1 hereto are deemed to accompany this Form 10-Q and will not be deemed "filed" for purposes of Section 18 of the Exchange Act. Such certifications will not be deemed to be incorporated by reference into any filings under the Securities Act or the Exchange Act, except to the extent that the registrant specifically incorporates it by reference.

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.

AMBARELLA, INC.

Date: December 9, 2022	By:	/s/ Feng-Ming Wang **Feng-Ming Wang** **President and Chief Executive Officer**
Date: December 9, 2022	By:	/s/ Brian C. White **Brian C. White** **Chief Financial Officer**

Exhibit 31.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
Certification of Principal Executive Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.

I, Feng-Ming Wang, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Ambarella, 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(s) 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(s) 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.

Date: December 9, 2022

/s/ Feng-Ming Wang
Feng-Ming Wang
President and Chief Executive Officer
(Principal Executive Officer)

Exhibit 31.2

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
Certification of Principal Financial Officer Required Under Rule 13a-14(a) and 15d-14(a) of the Securities Exchange Act of 1934, as amended.

I, Brian C. White, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Ambarella, 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(s) 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(s) 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.

Date: December 9, 2022

/s/ Brian C. White
Brian C. White
Chief Financial Officer
(Principal Financial and Accounting Officer)

Exhibit 32.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER AND PRINCIPAL FINANCIAL OFFICER PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

I, Feng-Ming Wang, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Quarterly Report of Ambarella, Inc. on Form 10-Q for the fiscal quarter ended October 31, 2022 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, and that the information contained in such Quarterly Report on Form 10-Q fairly presents in all material respects the financial condition and results of operations of Ambarella, Inc.

Date: December 9, 2022

By:	/s/ Feng-Ming Wang
Name:	Feng-Ming Wang
Title:	President and Chief Executive Officer

I, Brian C. White, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Quarterly Report of Ambarella, Inc. on Form 10-Q for the fiscal quarter ended October 31, 2022 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended, and that the information contained in such Quarterly Report on Form 10-Q fairly presents in all material respects the financial condition and results of operations of Ambarella, Inc.

Date: December 9, 2022

By:	/s/ Brian C. White
Name:	Brian C. White
Title:	Chief Financial Officer