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: September 30, 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: 000-49842

CEVA, Inc.

(Exact Name of Registrant as Specified in Its Charter)

Delaware	**77-0556376**
(State or Other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification No.)**
15245 Shady Grove Road, Suite 400, Rockville, MD 20850	**20850**
(Address of Principal Executive Offices)	**(Zip Code)**

(240)-308-8328
(Registrant's Telephone Number, Including Area Code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $.001 per share	CEVA	The NASDAQ Stock Market LLC

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 definition of "large accelerated filer", "accelerated filer", "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act. (Check one).

Large accelerated filer ☒ Accelerated filer ☐

Non-accelerated filer ☐ Smaller reporting company ☐

Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act).

Yes ☐ No ☒

Indicate the number of shares outstanding of each of the issuer's classes of common stock as of the latest practicable date: 23,187,653 of common stock, $0.001 par value, as of November 4, 2022.

TABLE OF CONTENTS

FORWARD-LOOKING STATEMENTS

FORWARD-LOOKING STATEMENTS AND INDUSTRY DATA

This Quarterly Report contains forward-looking statements that involve risks and uncertainties, as well as assumptions that if they materialize or prove incorrect, could cause the results of CEVA to differ materially from those expressed or implied by such forward-looking statements and assumptions. All statements other than statements of historical fact are statements that could be deemed forward-looking statements. Forward-looking statements are generally written in the future tense and/or are preceded by words such as "will," "may," "should," "could," "expect," "suggest," "believe," "anticipate," "intend," "plan," or other similar words. Forward-looking statements include the following:

- Our belief that our IP licensing business and chip design expertise are solid with a diverse customer base and myriad target markets;
- Our belief that the adoption of our wireless connectivity and smart sensing IP products beyond our incumbency in the handset baseband market continues to progress, and the concluded agreements for our connectivity and sensing products during the recent period illustrates the industry demand for our diverse IP portfolio;
- Our belief that our PentaG platform for 5G handsets and 5G IoT endpoints is the most comprehensive baseband processor IP in the industry today and provides newcomers and incumbents with a comprehensive solution to address the need for 5G processing for smartphones, fixed wireless and a range of connected devices such as robots, cars, smart cities and other devices for industrial applications;
- Our belief that our specialization and technological edge in signal processing platforms for 5G base station RAN and our PentaG platform put us in a strong position to capitalize on the growing 5G RAN demand and the its disintegration toward new architecture and form factors;
- Our belief that the growing market for TWS ear buds and smartwatches, and AR and VR headsets and other wearable assisted devices, offers an incremental growth segment for us;
- Our belief that our SensPro™ scalable DSP architecture strengthens our market positions and enables us to expand our content in smartphones, drones, consumer cameras, surveillance, automotive ADAS, voice-enabled devices and industrial IoT applications;
- Our belief that our unique capability to combine our Bluetooth IP, audio DSP IP and software for contextual aware user experience puts us in a strong position to capitalize on the fast-growing True Wireless Stereo (TWS) markets of earbuds, smartwatches, hearing aids, device speakers, PCs, and more;
- Statements regarding third-party estimates of industry growth and future market conditions, including the expectation that camera-enabled devices incorporating computer vision and AI will exceed 1 billion units and devices incorporating voice AI will reach 600 million units by 2025;
- Our belief that the Hillcrest Labs sensor fusion business unit allows us to address an important technology piece used in personal computers, robotics, TWS earbuds, smart TVs and many other smart sensing IP products;
- Our belief that our Bluetooth, Wi-Fi, UWB, cellular IoT and 5G IPs allow us to expand further into IoT applications and substantially increase our value-add and overall addressable market, which is expected to be more than 15 billion devices annually by 2026 based on ABI Research;
- Our beliefs regarding the impact of the Intrinsix acquisition, including it providing new growth vectors, new market reach and a broader revenue base, it allowing us to expand into the lucrative aerospace and defense market, and our ability to offer customers co-creation solutions that combine the CEVA IP portfolio and Intrinsix's broad chip design competencies;

- Our expectation that significant growth in royalty revenues will be derived from base station and IoT applications over the next few years, including from a range of different products at different royalty ASPs, spanning from high volume Bluetooth to high value sensor fusion and base station RAN;

- Our efforts with respect to managing demand, supply chain disruptions and shortages;

- Our expectations regarding competition;

- Our expectations with respect to future customers, contracts and revenues, including expectations regarding our customer pipeline, our expectation that a significant portion of our future revenues will continue to be generated by a limited number of customers, and that international customers will continue to account for a significant portion of our revenues for the foreseeable future, that an increasing portion of our new customers and revenues will be derived from China and the remainder of the APAC region, including for automotive and industrial activities in Japan and RAN deployment in India, and that we will experience another growth year in royalty revenues;

- Our anticipation that our cash and cash equivalents, short-term bank deposits and marketable securities, along with cash from operations, will provide sufficient capital to fund our operations for at least the next 12 months;

- Our belief that changes in interest rates within our investment portfolio will not have a material effect on our financial position on an annual or quarterly basis; and

- Our expectations regarding the impact of COVID-19 and the Russian military action against Ukraine on our business, operations, customers and the economy.

Forward-looking statements are not guarantees of future performance and involve risks and uncertainties. The forward-looking statements contained in this report are based on information that is currently available to us and expectations and assumptions that we deem reasonable at the time the statements were made. We do not undertake any obligation to update any forward-looking statements in this report or in any of our other communications, except as required by law. All such forward-looking statements should be read as of the time the statements were made and with the recognition that these forward-looking statements may not be complete or accurate at a later date.

Many factors may cause actual results to differ materially from those expressed or implied by the forward-looking statements contained in this report. These factors include, but are not limited to, those risks set forth in Part II – Item 1A – “Risk Factors” of this Form 10-Q.

This report contains market data prepared by third party research firm. Actual market results may differ from their projections.

PART I. FINANCIAL INFORMATION

Item 1. FINANCIAL STATEMENTS

INTERIM CONDENSED CONSOLIDATED BALANCE SHEETS

U.S. dollars in thousands, except share and per share data

	September 30, 2022	December 31, 2021
	Unaudited	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 29,510	$ 33,153
Short-term bank deposits	6,062	31,410
Marketable securities	100,701	90,298
Trade receivables (net of allowance for credit losses of $288 as of September 30, 2022 and December 31, 2021)	26,763	27,449
Prepaid expenses and other current assets	8,133	6,670
Total current assets	171,169	188,980
Long-term assets:		
Bank deposits	8,128	—
Severance pay fund	8,431	10,175
Deferred tax assets, net	4,669	15,850
Property and equipment, net	7,370	6,765
Operating lease right-of-use assets	8,116	8,827
Goodwill	74,777	74,777
Intangible assets, net	7,549	14,607
Investments in marketable equity securities	648	2,919
Other long-term assets	3,957	5,759
Total long-term assets	123,645	139,679
Total assets	$ 294,814	$ 328,659
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Trade payables	$ 1,721	$ 1,464
Deferred revenues	3,540	8,661
Accrued expenses and other payables	5,941	4,030
Accrued payroll and related benefits	14,625	18,011
Operating lease liabilities	2,235	3,274
Total current liabilities	28,062	35,440
Long-term liabilities:		
Accrued severance pay	9,018	10,551
Operating lease liabilities	4,940	5,130
Other accrued liabilities	497	806
Total long-term liabilities	14,455	16,487
Stockholders' equity:		
Preferred Stock: $0.001 par value: 5,000,000 shares authorized; none issued and outstanding	—	—
Common Stock: $0.001 par value: 45,000,000 shares authorized; 23,595,160 shares issued at September 30, 2022 and December 31, 2021. 23,187,495 and 22,984,552 shares outstanding at September 30, 2022 and December 31, 2021, respectively	23	23
Additional paid in-capital	239,445	235,386
Treasury stock at cost (407,665 and 610,608 shares of common stock at September 30, 2022 and December 31, 2021, respectively)	(10,633)	(13,790)
Accumulated other comprehensive loss	(6,761)	(372)
Retained earnings	30,223	55,485
Total stockholders' equity	252,297	276,732
Total liabilities and stockholders' equity	$ 294,814	$ 328,659

The accompanying notes are an integral part of the unaudited interim condensed consolidated financial statements.

INTERIM CONDENSED CONSOLIDATED STATEMENTS OF LOSS (UNAUDITED)

U.S. dollars in thousands, except per share data

	Nine months ended September 30, 2022	Nine months ended September 30, 2021	Three months ended September 30, 2022	Three months ended September 30, 2021
Revenues:				
Licensing, NRE and related revenue	$ 66,784	$ 51,500	$ 22,268	$ 21,568
Royalties	34,462	37,149	11,392	11,222
Total revenues	101,246	88,649	33,660	32,790
Cost of revenues	21,177	10,904	7,948	4,830
Gross profit	80,069	77,745	25,712	27,960
Operating expenses:				
Research and development, net	58,217	53,810	18,469	18,760
Sales and marketing	9,056	9,357	3,410	3,162
General and administrative	10,829	10,534	3,558	3,495
Amortization of intangible assets	2,250	2,092	750	849
Impairment of assets	3,556	—	3,556	—
Total operating expenses	83,908	75,793	29,743	26,266
Operating income (loss)	(3,839)	1,952	(4,031)	1,694
Financial income (loss), net	803	345	108	(47)
Remeasurement of marketable equity securities	(2,271)	—	(455)	—
Income (loss) before taxes on income	(5,307)	2,297	(4,378)	1,647
Taxes on income	19,816	5,779	17,926	1,814
Net loss	$ (25,123)	$ (3,482)	$ (22,304)	$ (167)
Basic net loss per share	$ (1.08)	$ (0.15)	$ (0.96)	$ (0.01)
Diluted net loss per share	$ (1.08)	$ (0.15)	$ (0.96)	$ (0.01)
Weighted-average shares used to compute net loss per share (in thousands):				
Basic	23,163	22,766	23,211	22,925
Diluted	23,163	22,766	23,211	22,925

The accompanying notes are an integral part of the unaudited interim condensed consolidated financial statements.

INTERIM CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS (UNAUDITED)

U.S. dollars in thousands

	Nine months ended September 30,		Three months ended September 30,	
	2022	**2021**	**2022**	**2021**
Net loss	$ (25,123)	$ (3,482)	$ (22,304)	$ (167)
Other comprehensive loss before tax:				
Available-for-sale securities:				
Changes in unrealized gains (losses)	(6,551)	(513)	(1,919)	(229)
Reclassification adjustments for (gains) losses included in net loss	25	(13)	4	2
Net change	(6,526)	(526)	(1,915)	(227)
Cash flow hedges:				
Changes in unrealized gains (losses)	(1,623)	65	(223)	29
Reclassification adjustments for (gains) losses included in net loss	1,140	(65)	398	(29)
Net change	(483)	—	175	—
Other comprehensive loss before tax	(7,009)	(526)	(1,740)	(227)
Income tax expense (benefit) related to components of other comprehensive loss	(620)	(112)	496	(52)
Other comprehensive loss, net of taxes	(6,389)	(414)	(2,236)	(175)
Comprehensive loss	$ (31,512)	$ (3,896)	$ (24,540)	$ (342)

The accompanying notes are an integral part of the unaudited interim condensed consolidated financial statements.

INTERIM CONDENSED CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS’ EQUITY (UNAUDITED)

U.S. dollars in thousands, except share data

Nine months ended September 30, 2022	Common stock: Number of shares outstanding	Common stock: Amount	Additional paid-in capital	Treasury stock	Accumulated other comprehensive income (loss)	Retained earnings	Total stockholders’ equity
Balance as of January 1, 2022	22,984,552	$ 23	$ 235,386	$ (13,790)	$ (372)	$ 55,485	$ 276,732
Net loss	—	—	—	—	—	(25,123)	(25,123)
Other comprehensive loss	—	—	—	—	(6,389)	—	(6,389)
Equity-based compensation	—	—	10,383	—	—	—	10,383
Purchase of treasury stock	(218,809)	—	—	(6,785)	—	—	(6,785)
Issuance of treasury stock upon exercise of stock-based awards	421,752	—	(6,324)	9,942	—	(139)	3,479
Balance as of September 30, 2022	23,187,495	$ 23	$ 239,445	$ (10,633)	$ (6,761)	$ 30,223	$ 252,297

Three months ended September 30, 2022	Common stock: Number of shares outstanding	Common stock: Amount	Additional paid-in capital	Treasury stock	Accumulated other comprehensive income (loss)	Retained earnings	Total stockholders’ equity
Balance as of July 1, 2022	23,137,757	$ 23	$ 237,379	$ (11,691)	$ (4,525)	$ 52,529	$ 273,715
Net loss	—	—	—	—	—	(22,304)	(22,304)
Other comprehensive loss	—	—	—	—	(2,236)	—	(2,236)
Equity-based compensation	—	—	3,691	—	—	—	3,691
Purchase of treasury stock	(82,718)	—	—	(2,328)	—	—	(2,328)
Issuance of treasury stock upon exercise of stock-based awards	132,456	—	(1,625)	3,386	—	(2)	1,759
Balance as of September 30, 2022	23,187,495	$ 23	$ 239,445	$ (10,633)	$ (6,761)	$ 30,223	$ 252,297

Nine months ended September 30, 2021	Common stock: Number of shares outstanding	Common stock: Amount	Additional paid-in capital	Treasury stock	Accumulated other comprehensive income (loss)	Retained earnings	Total stockholders’ equity
Balance as of January 1, 2021	22,260,917	$ 22	$ 233,172	$ (30,133)	$ 478	$ 57,350	$ 260,889
Net loss	—	—	—	—	—	(3,482)	(3,482)
Other comprehensive loss	—	—	—	—	(414)	—	(414)
Equity-based compensation	—	—	9,507	—	—	—	9,507
Issuance of treasury stock upon exercise of stock-based awards	707,637	1	(10,530)	15,982	—	(2,211)	3,242
Balance as of September 30, 2021	22,968,554	$ 23	$ 232,149	$ (14,151)	$ 64	$ 51,657	$ 269,742

Three months ended September 30, 2021	Common stock: Number of shares outstanding	Common stock: Amount	Additional paid-in capital	Treasury stock	Accumulated other comprehensive income	Retained earnings	Total stockholders’ equity
Balance as of July 1, 2021	22,833,120	$ 23	$ 230,083	$ (17,210)	$ 239	$ 51,881	$ 265,016
Net loss	—	—	—	—	—	(167)	(167)
Other comprehensive loss	—	—	—	—	(175)	—	(175)
Equity-based compensation	—	—	3,403	—	—	—	3,403
Issuance of treasury stock upon exercise of stock-based awards	135,434	—(*)	(1,337)	3,059	—	(57)	1,665
Balance as of September 30, 2021	22,968,554	$ 23	$ 232,149	$ (14,151)	$ 64	$ 51,657	$ 269,742

The accompanying notes are an integral part of the interim condensed consolidated financial statements.

INTERIM CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS (UNAUDITED)

U.S. dollars in thousands

	Nine months ended September 30,	
	2022	**2021**
Cash flows from operating activities:		
Net loss	$ (25,123)	$ (3,482)
Adjustments required to reconcile net loss to net cash provided by operating activities:		
Depreciation	2,325	2,417
Amortization of intangible assets	3,502	2,302
Impairment of intangible assets	3,556	—
Equity-based compensation	10,383	9,507
Realized loss (gain), net on sale of available-for-sale marketable securities	25	(13)
Amortization of premiums on available-for-sale marketable securities	335	319
Unrealized foreign exchange loss	695	693
Remeasurement of marketable equity securities	2,271	—
Changes in operating assets and liabilities:		
Trade receivables	686	6,595
Prepaid expenses and other assets	(1,330)	1,873
Operating lease right-of-use assets	711	(702)
Accrued interest on bank deposits	273	(14)
Deferred tax, net	11,801	(3,551)
Trade payables	264	725
Deferred revenues	(5,121)	2,609
Accrued expenses and other payables	908	(990)
Accrued payroll and related benefits	(2,757)	(3,608)
Operating lease liability	(729)	691
Income taxes payable	567	(218)
Accrued severance pay, net	286	(317)
Net cash provided by operating activities	3,528	14,836
Cash flows from investing activities:		
Acquisition of subsidiary, net of cash acquired	—	(29,891)
Purchase of property and equipment	(2,924)	(1,506)
Investment in bank deposits	(14,000)	(1,500)
Proceeds from bank deposits	30,885	14,489
Investment in available-for-sale marketable securities	(27,260)	(19,855)
Proceeds from maturity of available-for-sale marketable securities	6,796	23,593
Proceeds from sale of available-for-sale marketable securities	3,175	10,035
Net cash used in investing activities	(3,328)	(4,635)
Cash flows from financing activities:		
Purchase of treasury stock	(6,785)	—
Proceeds from exercise of stock-based awards	3,479	3,242
Net cash provided by (used in) financing activities	(3,306)	3,242
Effect of exchange rate changes on cash and cash equivalents	(537)	(308)
Increase (decrease) in cash and cash equivalents	(3,643)	13,135
Cash and cash equivalents at the beginning of the period	33,153	21,143
Cash and cash equivalents at the end of the period	$ 29,510	$ 34,278
Supplemental information of cash-flow activities:		
Cash paid during the period for:		
Income and withholding taxes	$ 8,294	$ 6,682
Non-cash transactions:		
Property and equipment purchases incurred but unpaid at period end	$ 6	$ 54
Right-of-use assets obtained in the exchange for operating lease liabilities	$ 1,591	$ 2,867

The accompanying notes are an integral part of the unaudited interim condensed consolidated financial statements.

NOTE 1: BUSINESS

The financial information in this quarterly report includes the results of CEVA, Inc. and its subsidiaries (the "Company" or "CEVA").

CEVA licenses a family of wireless connectivity and smart sensing technologies and co-creation solutions. The Company's offerings include Digital Signal Processors, AI processors, wireless hardware platforms, security hardware and the related software algorithms including AI for motion sensors, computer vision, voice input and audio, all of which are key enabling technologies for a smarter, more secured and more connected world. These technologies are offered in combination with Intrinsix IP integration services, helping customers address their most complex and time-critical integrated circuit design projects. CEVA's DSP-based solutions address the technology requirements of: 5G baseband processing for mobile, broadband, cellular IoT and Radio Access Network (RAN); computer vision for any camera, 4D and LIDAR-enabled device; audio/voice/sound; and ultra-low-power always-on/sensing applications for wearables, hearables and multiple IoT markets. For motion sensors and sensor fusion, the Hillcrest Labs sensor processing technologies provide a broad range of software and inertial measurement unit ("IMU") solutions for markets including hearables, wearables, AR/VR, PC, robotics, remote controls and IoT. For wireless IoT, the Rivierawaves platforms for Bluetooth (low energy and dual mode), Wi-Fi 4/5/6/6E (802.11n/ac/ax), Ultra-wideband (UWB) are the most broadly licensed connectivity platforms in the industry.

CEVA's Intrinsix Corp. ("Intrinsix") business expands its market reach to the aerospace and defense markets and allows it to offer co-creation solutions that combine CEVA's standardized, off-the-shelf IP together with Intrinsix's non-recurring engineering ("NRE") design capabilities and IP in RF, mixed-signal, security, high complexity digital design, chiplets and more.

CEVA's technologies are licensed to leading semiconductor and original equipment manufacturer ("OEM") companies. These companies design, manufacture, market and sell application-specific integrated circuits ("ASICs") and application-specific standard products ("ASSPs") based on CEVA's technology to mobile, consumer, automotive, robotics, industrial, aerospace & defense and IoT companies for incorporation into a wide variety of end products.

NOTE 2: BASIS OF PRESENTATION AND SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation

The interim condensed consolidated financial statements have been prepared according to U.S. Generally Accepted Accounting Principles ("U.S. GAAP").

The accompanying unaudited interim condensed consolidated financial statements have been prepared in accordance with generally accepted accounting principles in the United States. In the opinion of management, all adjustments considered necessary for a fair presentation have been included. Operating results for the three and nine months ended September 30, 2022, are not necessarily indicative of the results that may be expected for the year ending December 31, 2022. For further information, reference is made to the consolidated financial statements and footnotes thereto included in the Company's Annual Report on Form 10-K for the year ended December 31, 2021.

The significant accounting policies applied in the annual consolidated financial statements of the Company as of December 31, 2021, contained in the Company's Annual Report on Form 10-K filed with the Securities and Exchange Commission on March 1, 2022, have been applied consistently in these unaudited interim condensed consolidated financial statements.

Accounting Standards Recently Adopted by the Company

In October 2021, the FASB issued ASU No. 2021-08, Business Combinations (Topic 805): Accounting for Contract Assets and Contract Liabilities from Contracts with Customers (ASU 2021-08), which clarifies that an acquirer of a business should recognize and measure contract assets and contract liabilities in a business combination in accordance with Accounting Standards Codification (ASC) Topic 606, Revenue from Contracts with Customers (Topic 606). ASU No. 2021-08 is effective for fiscal year beginning after December 15, 2022, and interim periods therein for public business entities, with early adoption permitted. The Company early adopted the new guidance effective January 1, 2022. The adoption of this standard did not have a significant impact on the Company's interim condensed consolidated financial statements.

(in thousands, except share data)

Accounting Standards Recently Issued, Not Yet Adopted by the Company

In June 2022, the FASB issued ASU No. 2022-03, Fair Value Measurement (Topic 820): Fair Value Measurement of Equity Securities Subject to Contractual Sale Restrictions, which clarifies the guidance when measuring the fair value of an equity security subject to contractual restrictions that prohibit the sale of an equity security and introduces new disclosure requirements for equity securities subject to contractual sale restrictions that are measured at fair value in accordance with Topic 820. The guidance is effective for annual periods beginning after December 15, 2023, with early adoption permitted. The adoption of this standard is not expected to result in a significant impact on the Company's interim condensed consolidated financial statements.

Use of Estimates

The preparation of the interim condensed consolidated financial statements in conformity with U.S. GAAP requires management to make estimates, judgments and assumptions. The Company's management believes that the estimates, judgments and assumptions used are reasonable based upon information available at the time they are made. These estimates, judgments and assumptions can affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the dates of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates. The coronavirus disease 2019 ("COVID-19") pandemic has created, and may continue to create, significant uncertainty in macroeconomic conditions, and the extent of its impact on the Company's operational and financial performance will depend on certain developments, including the duration and spread of the outbreak and the impact on the Company's customers and its sales cycles. Further, other global events such as the Russian military action against Ukraine could have an impact on the Company's business. The Company has considered the impact of COVID-19 and other global events on its estimates and assumptions and determined that there were no material adverse impacts on the interim condensed consolidated financial statements for the three and nine months ended September 30, 2022. As events continue to evolve and additional information becomes available, the Company's estimates and assumptions may change materially in future periods.

NOTE 3: REVENUE RECOGNITION

Under ASC 606, "Revenue from Contracts with Customers" ("ASC 606"), an entity recognizes revenue when or as it satisfies a performance obligation by transferring intellectual property ("IP") licenses or services to the customer, either at a point in time or over time. The Company recognizes most of its revenues at a point in time upon delivery when the customer accepts control of the IP. The Company recognizes revenue over time on NRE services or on significant license customization contracts that are in the scope of ASC 606 by using cost inputs to measure progress toward completion of its performance obligations.

The following table includes estimated revenue expected to be recognized in future periods related to performance obligations that are unsatisfied or partially unsatisfied at the end of the reporting period. The estimated revenues do not include amounts of royalties or unexercised contract renewals:

	Remainder of 2022	2023	2024	2025
Licensing, NRE and related revenues	$ 10,032	$ 7,472	$ 424	$ 315

Disaggregation of revenue:

The following table provides information about disaggregated revenue by primary geographical market, major product line and timing of revenue recognition:

	Nine months ended September 30, 2022 (unaudited)			Three months ended September 30, 2022 (unaudited)		
	Licensing, NRE and related revenues	Royalties	Total	Licensing, NRE and related revenues	Royalties	Total
Primary geographical markets						
United States	$ 17,283	$ 5,661	$ 22,944	$ 7,646	$ 1,561	$ 9,207
Europe and Middle East	4,280	2,227	6,507	1,746	887	2,633
Asia Pacific	45,221	26,574	71,795	12,876	8,944	21,820
Total	$ 66,784	$ 34,462	$ 101,246	$ 22,268	$ 11,392	$ 33,660
Major product/service lines						
Connectivity products (baseband for handset and other devices, Bluetooth, Wi-Fi, NB-IoT and SATA/SAS)	$ 46,118	$ 25,582	$ 71,700	$ 13,308	$ 8,320	$ 21,628
Smart sensing products (AI, sensor fusion, audio/sound and imaging and vision)	20,666	8,880	29,546	8,960	3,072	12,032
Total	$ 66,784	$ 34,462	$ 101,246	$ 22,268	$ 11,392	$ 33,660
Timing of revenue recognition						
Products transferred at a point in time	$ 46,046	$ 34,462	$ 80,508	$ 15,270	$ 11,392	$ 26,662
Products and services transferred over	20,738	—	20,738	6,998	—	6,998

time						
Total	$ 66,784	$ 34,462	$ 101,246	$ 22,268	$ 11,392	$ 33,660

(in thousands, except share data)

	Nine months ended September 30, 2021 (unaudited)			Three months ended September 30, 2021 (unaudited)		
	Licensing, NRE and related revenues	Royalties	Total	Licensing, NRE and related revenues	Royalties	Total
Primary geographical markets						
United States	$ 11,602	$ 7,688	$ 19,290	$ 6,308	$ 2,484	$ 8,792
Europe and Middle East	1,430	2,005	3,435	597	833	1,430
Asia Pacific	38,458	27,456	65,914	14,653	7,905	22,558
Other	10	—	10	10	—	10
Total	$ 51,500	$ 37,149	$ 88,649	$ 21,568	$ 11,222	$ 32,790
Major product/service lines						
Connectivity products (baseband for handset and other devices, Bluetooth, Wi-Fi, NB-IoT and SATA/SAS)	$ 38,886	$ 27,692	$ 66,578	$ 16,368	$ 7,500	$ 23,868
Smart sensing products (AI, sensor fusion, audio/sound and imaging and vision)	12,614	9,457	22,071	5,200	3,722	8,922
Total	$ 51,500	$ 37,149	$ 88,649	$ 21,568	$ 11,222	$ 32,790
Timing of revenue recognition						
Products transferred at a point in time	$ 38,458	$ 37,149	$ 75,607	$ 14,406	$ 11,222	$ 25,628
Products and services transferred over time	13,042	—	13,042	7,162	—	7,162
Total	$ 51,500	$ 37,149	$ 88,649	$ 21,568	$ 11,222	$ 32,790

Contract balances:

The following table provides information about trade receivables, unbilled receivables and contract liabilities from contracts with customers:

	September 30, 2022 (unaudited)	December 31, 2021
Trade receivables	$ 11,022	$ 14,644
Unbilled receivables (associated with licensing, NRE and related revenue)	5,888	1,833
Unbilled receivables (associated with royalties)	9,853	10,972
Deferred revenues (short-term contract liabilities)	3,540	8,661

(in thousands, except share data)

The Company receives payments from customers based upon contractual payment schedules; trade receivables are recorded when the right to consideration becomes unconditional, and an invoice is issued to the customer. Unbilled receivables associated with licensing, NRE and other include amounts related to the Company’s contractual right to consideration for completed performance objectives not yet invoiced. Unbilled receivables associated with royalties are recorded as the Company recognizes revenues from royalties earned during the quarter, but not yet invoiced, either by actual sales data received from customers, or, when applicable, by the Company’s estimation. Contract liabilities (deferred revenue) include payments received in advance of performance under the contract, and are realized with the associated revenue recognized under the contract.

During the three and nine months ended September 30, 2022, the Company recognized $617 and $8,248, respectively, that was included in deferred revenues (short-term contract liability) balance at January 1, 2022.

NOTE 4: LEASES

The Company leases substantially all of its office space and vehicles under operating leases. The Company's leases have original lease periods expiring between 2023 and 2034. Many leases include one or more options to renew. The Company does not assume renewals in its determination of the lease term unless the renewals are deemed to be reasonably certain. Lease payments included in the measurement of the lease liability comprise the following: the fixed non-cancelable lease payments, payments for optional renewal periods where it is reasonably certain the renewal period will be exercised, and payments for early termination options unless it is reasonably certain the lease will not be terminated early.

The following is a summary of weighted average remaining lease terms and discount rates for all of the Company’s operating leases:

	September 30, 2022 (Unaudited)
Weighted average remaining lease term (years)	5.72
Weighted average discount rates	2.17%

Total operating lease cost and cash payments for operating leases were as follows:

	Nine months ended September 30,		Three months ended September 30,	
	2022 (unaudited)	2021 (unaudited)	2022 (unaudited)	2021 (unaudited)
Operating lease cost	$ 2,480	$ 2,305	$ 836	$ 806
Cash payments for operating leases	2,455	2,397	840	799

Maturities of lease liabilities are as follows:

The remainder of 2022	$ 816
2023	1,725
2024	1,077
2025	950
2026	892
2027 and thereafter	2,195
Total undiscounted cash flows	7,655
Less imputed interest	480
Present value of lease liabilities	$ 7,175

(in thousands, except share data)

NOTE 5: MARKETABLE SECURITIES

The following is a summary of available-for-sale marketable securities:

	September 30, 2022 (Unaudited)			
	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value
Available-for-sale - matures within one year:				
Corporate bonds	$ 18,390	$ —	$ (722)	$ 17,668
Available-for-sale - matures after one year through four years:				
Corporate bonds	89,396	—	(6,363)	83,033
Total				
	$ 107,786	$ —	$ (7,085)	$ 100,701

	December 31, 2021			
	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value
Available-for-sale - matures within one year:				
Corporate bonds	$ 11,937	$ 39	$ (7)	$ 11,969
Available-for-sale - matures after one year through five years:				
Corporate bonds	78,920	227	(818)	78,329
Total	$ 90,857	$ 266	$ (825)	$ 90,298

The following table presents gross unrealized losses and fair values for those investments that were in an unrealized loss position as of September 30, 2022, and December 31, 2021, and the length of time that those investments have been in a continuous loss position:

	Less than 12 months		12 months or greater	
	Fair value	Gross unrealized loss	Fair value	Gross unrealized loss
As of September 30, 2022 (unaudited)	$ 76,423	$ (4,011)	$ 24,278	$ (3,074)
As of December 31, 2021	$ 53,412	$ (667)	$ 12,039	$ (158)

As of September 30, 2022, the allowance for credit losses was not material.

The following table presents gross realized gains and losses from sale of available-for-sale marketable securities:

	Nine months ended September 30,		Three months ended September 30,	
	2022 (unaudited)	2021 (unaudited)	2022 (unaudited)	2021 (unaudited)
Gross realized gains from sale of available-for-sale marketable securities	$ —	$ 43	$ —	$ —
Gross realized losses from sale of available-for-sale marketable securities	$ (25)	$ (30)	$ (4)	$ (2)

(in thousands, except share data)

NOTE 6: FAIR VALUE MEASUREMENT

FASB ASC No. 820, "Fair Value Measurements and Disclosures" defines fair value, establishes a framework for measuring fair value. Fair value is an exit price, representing the amount that would be received for selling an asset or paid for the transfer of a liability in an orderly transaction between market participants. As such, fair value is a market-based measurement that should be determined based on assumptions that market participants would use in pricing an asset or a liability. A three-tier fair value hierarchy is established as a basis for considering such assumptions and for inputs used in the valuation methodologies in measuring fair value:

Level I	Unadjusted quoted prices in active markets that are accessible on the measurement date for identical, unrestricted assets or liabilities;
Level II	Quoted prices in markets that are not active, or inputs that are observable, either directly or indirectly, for substantially the full term of the asset or liability; and
Level III	Prices or valuation techniques that require inputs that are both significant to the fair value measurement and unobservable (supported by little or no market activity).

The Company measures its marketable securities, investment in marketable equity securities and foreign currency derivative contracts at fair value. The carrying amount of cash, cash equivalents, short-term bank deposits, trade receivables, other accounts receivable, trade payables and other accounts payables approximate fair value due to the short-term maturity of these instruments. Investment in marketable equity securities are classified within Level I as the securities are traded in an active market. Marketable securities and foreign currency derivative contracts are classified within Level II as the valuation inputs are based on quoted prices and market observable data of similar instruments.

The table below sets forth the Company's assets and liabilities measured at fair value by level within the fair value hierarchy. Assets and liabilities are classified in their entirety based on the lowest level of input that is significant to the fair value measurement.

Description	September 30, 2022 (unaudited)	Level I (unaudited)	Level II (unaudited)	Level III (unaudited)
Assets:				
Marketable securities:				
Corporate bonds	$ 100,701	$ —	$ 100,701	$ —
Investments in marketable equity securities	648	648	—	—
Liabilities:				
Foreign exchange contracts	420	—	420	—

Description	December 31, 2021	Level I	Level II	Level III
Assets:				
Marketable securities:				
Corporate bonds	$ 90,298	—	$ 90,298	—
Foreign exchange contracts	63	—	63	—
Investments in marketable equity securities	2,919	2,919	—	—

(in thousands, except share data)

NOTE 7: INTANGIBLE ASSETS, NET

		Nine months ended September 30, 2022 (unaudited)				Year ended December 31, 2021		
	Weighted average amortization period (years)	Gross carrying amount	Accumulated amortization	Impairment	Net	Gross carrying amount	Accumulated amortization	Net
Intangible assets –amortizable:								
Intangible assets related to the acquisition of Intrinsix								
Customer relationships	5.5	$ 3,604	$ 874	$ —	$ 2,730	$ 3,604	$ 382	$ 3,222
Customer backlog	1.5	421	374	—	47	421	164	257
Patents	5.0	218	58	—	160	218	26	192
Core technologies	3.0	3,329	1,479	—	1,850	3,329	647	2,682
Intangible assets related to the acquisition of Hillcrest Labs business								
Customer relationships	4.4	3,518	2,781	—	737	3,518	2,130	1,388
Customer backlog	0.5	72	72	—	—	72	72	—
R&D Tools	7.5	2,475	1,057	—	1,418	2,475	810	1,665
Intangible assets related to Immervision assets acquisition								
R&D Tools	6.4	7,063	3,507	3,556	—	7,063	2,679	4,384
Impairment loss (*)								
Intangible assets related to an investment in NB-IoT technologies								
NB-IoT technologies (**)	7.0	1,961	1,354	—	607	1,961	1,144	817
Total intangible assets		$ 22,661	$ 11,556	$ 3,556	$ 7,549	$ 22,661	$ 8,054	$ 14,607

(*) See Note 14 for more information about the impairment loss.

(**) During the first quarter of 2018, the Company entered into an agreement to acquire certain NB-IoT technologies in the amount of $2,800, of which technologies valued at $600 have not been received and have been written off during the third quarter of 2022 (see Note 14 for more information). Of the $2,200 received, $210 has not resulted in cash outflows as of September 30, 2022. In addition, the Company participated in programs sponsored by the Hong Kong government for the support of the above investment, and as a result, the Company received during 2019 an amount of $239 related to the NB-IoT technologies, which was reduced from the gross carrying amount of intangible assets. The Company recorded the amortization cost of the NB-IoT technologies in “cost of revenues” on the Company’s interim condensed consolidated statements of income (loss).

Future estimated annual amortization charges are as follows:

2022	870
2023	2,610
2024	1,909
2025	1,189
2026	956
2027 and thereafter	15
	$ 7,549

(in thousands, except share data)

NOTE 8: GEOGRAPHIC INFORMATION AND MAJOR CUSTOMER DATA

a. Summary information about geographic areas:

The Company manages its business on the basis of one reportable segment: the licensing of intellectual property and co-creation solutions to semiconductor companies and electronic equipment manufacturers (see Note 1 for a brief description of the Company's business). The following is a summary of revenues within geographic areas:

	Nine months ended September 30,		Three months ended September 30,	
	2022 (unaudited)	2021 (unaudited)	2022 (unaudited)	2021 (unaudited)
Revenues based on customer location:				
United States	$ 22,944	$ 19,290	$ 9,207	$ 8,792
Europe and Middle East	6,507	3,435	2,633	1,430
Asia Pacific (1)	71,795	65,914	21,820	22,558
Other	—	10	—	10
	$ 101,246	$ 88,649	$ 33,660	$ 32,790
(1) China	$ 57,731	$ 54,489	$ 16,159	$ 18,041

b. Major customer data as a percentage of total revenues:

The following table sets forth the customers that represented 10% or more of the Company's total revenues in each of the periods set forth below.

	Nine months ended September 30,		Three months ended September 30,	
	2022 (unaudited)	2021 (unaudited)	2022 (unaudited)	2021 (unaudited)
Customer A	11%	25%	*)	32%
Customer B	*)	*)	11%	*)

*) Less than 10%

(in thousands, except share data)

NOTE 9: NET INCOME (LOSS) PER SHARE OF COMMON STOCK

Basic net income (loss) per share is computed based on the weighted average number of shares of common stock outstanding during each period. Diluted net income (loss) per share is computed based on the weighted average number of shares of common stock outstanding during each period, plus dilutive potential shares of common stock considered outstanding during the period, in accordance with FASB ASC No. 260, "Earnings Per Share."

	Nine months ended September 30,		Three months ended September 30,	
	2022 (unaudited)	2021 (unaudited)	2022 (unaudited)	2021 (unaudited)
Numerator:				
Net loss	$ (25,123)	$ (3,482)	$ (22,304)	$ (167)
Denominator (in thousands):				
Basic weighted-average common stock outstanding	23,163	22,766	23,211	22,925
Effect of stock -based awards	—	—	—	—
Diluted weighted average common stock outstanding	23,163	22,766	23,211	22,925
Basic net loss per share	$ (1.08)	$ (0.15)	$ (0.96)	$ (0.01)
Diluted net loss per share	$ (1.08)	$ (0.15)	$ (0.96)	$ (0.01)

The total number of shares related to outstanding equity-based awards was 966,748 for both the three and nine months ended September 30, 2022, and in each case was excluded from the calculation of diluted net loss per share. The total number of shares related to outstanding equity-based awards was 830,384 for both the three and nine months ended September 30, 2021, and in each case was excluded from the calculation of diluted net loss per share.

NOTE 10: COMMON STOCK AND STOCK-BASED COMPENSATION PLANS

The Company grants a mix of stock options, stock appreciation rights ("SARs") capped with a ceiling and restricted stock units ("RSUs") to employees and non-employee directors of the Company and its subsidiaries under the Company's equity plans and provides the right to purchase common stock pursuant to the Company's 2002 employee stock purchase plan to employees of the Company and its subsidiaries.

The SAR unit confers the holder the right to stock appreciation over a preset price of the Company's common stock during a specified period of time. When the unit is exercised, the appreciation amount is paid through the issuance of shares of the Company's common stock. The ceiling limits the maximum income for each SAR unit. SARs are considered an equity instrument as it is a net share settled award capped with a ceiling (400% for all SAR grants made in years prior to 2016, when the Company ceased to grant SAR units). The options and SARs granted under the Company's stock incentive plans have been granted at the fair market value of the Company's common stock on the grant date. Options and SARs granted to employees under stock incentive plans vest at a rate of 25% of the shares underlying the option after one year and the remaining shares vest in equal portions over the following 36 months, such that all shares are vested after four years. Options granted to non-employee directors vest 25% of the shares underlying the option on each anniversary of the option grant.

A summary of the Company's stock option and SAR activities and related information for the nine months ended September 30, 2022, are as follows:

	Number of options and SAR units (1)	Weighted average exercise price	Weighted average remaining contractual term	Aggregate intrinsic value
Outstanding as of December 31, 2021	126,000	$ 20.06	2.6	$ 2,921
Granted	—	—		
Exercised	(17,000)	18.08		
Forfeited or expired	—	—		
Outstanding as of September 30, 2022 (2)	109,000	$ 20.37	2.2	$ 664
Exercisable as of September 30, 2022 (3)	109,000	$ 20.37	2.2	$ 664

(1) The SAR units are convertible for a maximum number of shares of the Company's common stock equal to 75% of the SAR units subject to the grant.

(2) Due to the ceiling imposed on the SAR grants, the outstanding amount equals a maximum of 108,250 shares of the Company's common stock issuable upon exercise.

(3) Due to the ceiling imposed on the SAR grants, the exercisable amount equals a maximum of 108,250 shares of the Company's common stock issuable upon exercise.

(in thousands, except share data)

As of September 30, 2022, there were no unrecognized compensation expenses related to unvested stock options and SARs.

An RSU award is an agreement to issue shares of the Company's common stock at the time the award or a portion thereof vests. RSUs granted to employees generally vest in three equal annual installments starting on the first anniversary of the grant date. Until the end of 2017, RSUs granted to non-employee directors would generally vest in full on the first anniversary of the grant date. Starting in 2018, RSUs granted to non-employee directors would generally vest in two equal annual installments starting on the first anniversary of the grant date.

On February 14, 2022, the Compensation Committee (the "Committee") of the Board of Directors (the "Board") of the Company granted 9,935, 5,961, 7,451 and 5,961 time-based RSUs, effective as of February 17, 2022, to each of the Company's CEO, Executive Vice President, Worldwide Sales, Chief Financial Officer and Chief Operating Officer, respectively, pursuant to the Company's Amended and Restated 2011 Stock Incentive Plan (the "2011 Plan"). The RSU grants vest 33.4% on February 17, 2023, 33.3% on February 17, 2024 and 33.3% on February 17, 2025.

Also, on February 14, 2022, the Committee granted 14,903, 3,974, 4,969 and 3,974 performance-based stock units ("PSUs"), effective as of February 17, 2022, to each of the Company's CEO, Executive Vice President, Worldwide Sales, Chief Financial Officer and Chief Operating Officer, respectively, pursuant to 2011 Plan (collectively, the "Short-Term Executive PSUs"). The performance goals for the Short-Term Executive PSUs with specified weighting are as follows:

Weighting	Goals
50%	Vesting of the full 50% of the PSUs occurs if the Company achieves the 2022 license, NRE and related revenue target approved by the Board (the "2022 License Revenue Target"). The vesting threshold is achievement of 90% of 2022 License Revenue Target. If the Company's actual result exceeds 90% of the 2022 License Revenue Target, every 1% increase of the 2022 License Revenue Target, up to 110%, would result in an increase of 2% of the eligible PSUs.
50%	Vesting of the full 50% of the PSUs occurs if the Company achieves positive total shareholder return whereby the return on the Company's stock for 2022 is greater than the S&P500 index. The vesting threshold is if the return on the Company's stock for 2022 is at least 90% of the S&P500 index. If the return on the Company's stock, in comparison to the S&P500, is above 90% but less than 99% of the S&P500 index, 91% to 99% of the eligible PSUs would be subject to vesting. If the return on the Company's stock exceeds 100% of the S&P500 index, every 1% increase in comparison to the S&P500 index, up to 110%, would result in an increase of 2% of the eligible PSUs.

Additionally, PSUs representing an additional 20%, meaning an additional 2,981, 795, 994 and 795, would be eligible for vesting for each of the Company's CEO, Executive Vice President, Worldwide Sales, Chief Financial Officer and Chief Operating Officer, respectively, if the performance goals set forth above are exceeded.

Subject to achievement of the thresholds the above performance goals for 2022 and continuing employment, the Short-Term Executive PSUs vest 33.4% on February 17, 2023, 33.3% on February 17, 2024, and 33.3% on February 17, 2025.

(in thousands, except share data)

A summary of the Company's RSU and PSU activities and related information for the nine months ended September 30, 2022, are as follows:

	Number of RSUs and PSUs	Weighted Average Grant-Date Fair Value
Unvested as of December 31, 2021	688,073	$ 41.18
Granted	564,443	35.23
Vested	(302,425)	37.03
Forfeited or expired	(92,343)	44.23
Unvested as of September 30, 2022 (unaudited)	857,748	$ 38.52

As of September 30, 2022, there was $25,658 of unrecognized compensation expense related to unvested RSUs and PSUs. This amount is expected to be recognized over a weighted-average period of 1.6 years.

The following table shows the total equity-based compensation expense included in the interim condensed consolidated statements of income (loss):

	Nine months ended September 30,		Three months ended September 30,	
	2022 (unaudited)	2021 (unaudited)	2022 (unaudited)	2021 (unaudited)
Cost of revenue	$ 1,076	$ 509	$ 393	$ 247
Research and development, net	6,181	5,435	2,180	2,007
Sales and marketing	1,065	1,185	392	400
General and administrative	2,061	2,378	726	749
Total equity-based compensation expense	$ 10,383	$ 9,507	$ 3,691	$ 3,403

The fair value for rights to purchase shares of common stock under the Company's employee stock purchase plan was estimated on the date of grant using the following assumptions:

	Nine months ended September 30		Three months ended September 30	
	2022 (unaudited)	2021 (unaudited)	2022 (unaudited)	2021 (unaudited)
Expected dividend yield	0%	0%	0%	0%
Expected volatility	38% - 50%	39% - 60%	40% - 50%	39% - 60%
Risk-free interest rate	0.5% - 3.0%	0.1% - 1.7%	0.8% - 3.0%	0.1% - 1.3%
Contractual term of up to (months)	00	24	24	24

NOTE 11: DERIVATIVES AND HEDGING ACTIVITIES

The Company follows the requirements of FASB ASC No. 815," Derivatives and Hedging" which requires companies to recognize all of their derivative instruments as either assets or liabilities in the statement of financial position at fair value. The accounting for changes in fair value (i.e., gains or losses) of a derivative instrument depends on whether it has been designated and qualifies as part of a hedging transaction and further, on the type of hedging transaction. For those derivative instruments that are designated and qualify as hedging instruments, a company must designate the hedging instrument, based upon the exposure being hedged, as a fair value hedge, cash flow hedge, or a hedge of a net investment in a foreign operation. Due to the Company's global operations, it is exposed to foreign currency exchange rate fluctuations in the normal course of its business. The Company's treasury policy allows it to offset the risks associated with the effects of certain foreign currency exposures through the purchase of foreign exchange forward or option contracts ("Hedging Contracts"). The policy, however, prohibits the Company from speculating on such Hedging Contracts for profit. To protect against the increase in value of forecasted foreign currency cash flow resulting from salaries paid in currencies other than the U.S. dollar during the year, the Company instituted a foreign currency cash flow hedging program. The Company hedges portions of the anticipated payroll of its non-U.S. employees denominated in the currencies other than the U.S. dollar for a period of one to twelve months with Hedging Contracts. Accordingly, when the dollar strengthens against the foreign currencies, the decline in present value of future foreign currency expenses is offset by losses in the fair value of the Hedging Contracts. Conversely, when the dollar weakens, the increase in the present value of future foreign currency expenses is offset by gains in the fair value of the Hedging Contracts. These Hedging Contracts are designated as cash flow hedges.

(in thousands, except share data)

For derivative instruments that are designated and qualify as a cash flow hedge (i.e., hedging the exposure to variability in expected future cash flows that is attributable to a particular risk), the gain or loss on the derivative instrument is reported as a component of other comprehensive income (loss) and reclassified into earnings in the same period or periods during which the hedged transaction affects earnings. As of September 30, 2022, and December 31, 2021, the notional principal amount of the Hedging Contracts to sell U.S. dollars held by the Company was $12,980 and $4,500, respectively.

The fair value of the Company's outstanding derivative instruments is as follows:

	September 30, 2022 (unaudited)	December 31, 2021
Derivative assets:		
Derivatives designated as cash flow hedging instruments:		
Foreign exchange forward contracts	$ —	$ 63
Total	$ —	$ 63
Derivative liabilities:		
Derivatives designated as cash flow hedging instruments:		
Foreign exchange option contracts	$ 223	$ —
Foreign exchange forward contracts	197	—
Total	$ 420	$ —

The increase (decrease) in unrealized gains (losses) recognized in "accumulated other comprehensive gain (loss)" on derivatives, before tax effect, is as follows:

	Nine months ended September 30,		Three months ended September 30,	
	2022 (unaudited)	2021 (unaudited)	2022 (unaudited)	2021 (unaudited)
Derivatives designated as cash flow hedging instruments:				
Foreign exchange option contracts	$ (556)	$ —	$ (155)	$ —
Foreign exchange forward contracts	(1,067)	65	(68)	29
	$ (1,623)	$ 65	$ (223)	$ 29

The net (gains) losses reclassified from "accumulated other comprehensive gain (loss)" into income are as follows:

	Nine months ended September 30,		Three months ended September 30,	
	2022 (unaudited)	2021 (unaudited)	2022 (unaudited)	2021 (unaudited)
Derivatives designated as cash flow hedging instruments:				
Foreign exchange option contracts	$ 333	$ —	$ 156	$ —
Foreign exchange forward contracts	807	(65)	242	(29)
	$ 1,140	$ (65)	$ 398	$ (29)

The Company recorded in cost of revenues and operating expenses a net loss of $398 and $1,140 during the three and nine months ended September 30, 2022, respectively, and a net gain of $29 and $65 during the comparable periods of 2021, related to its Hedging Contracts.

(in thousands, except share data)

NOTE 12: ACCUMULATED OTHER COMPREHENSIVE LOSS

The following tables summarize the changes in accumulated balances of other comprehensive income (loss), net of taxes:

	Nine months ended September 30, 2022 (unaudited)			Three months ended September 30, 2022 (unaudited)		
	Unrealized gains (losses) on available-for-sale marketable securities	Unrealized gains (losses) on cash flow hedges	Total	Unrealized gains (losses) on available-for-sale marketable securities	Unrealized gains (losses) on cash flow hedges	Total
Beginning balance	$ (427)	$ 55	$ (372)	$ (4,007)	$ (518)	$ (4,525)
Other comprehensive loss before reclassifications	(5,948)	(1,453)	(7,401)	(2,351)	(232)	(2,583)
Amounts reclassified from accumulated other comprehensive income (loss)	21	991	1,012	4	343	347
Net current period other comprehensive loss	(5,927)	(462)	(6,389)	(2,347)	111	(2,236)
Ending balance	$ (6,354)	$ (407)	$ (6,761)	$ (6,354)	$ (407)	$ (6,761)

	Nine months ended September 30, 2021 (unaudited)			Three months ended September 30, 2021 (unaudited)		
	Unrealized gains (losses) on available-for-sale marketable securities	Unrealized gains (losses) on cash flow hedges	Total	Unrealized gains (losses) on available-for-sale marketable securities	Unrealized gains (losses) on cash flow hedges	Total
Beginning balance	$ 478	$ —	$ 478	$ 239	$ —	$ 239
Other comprehensive income (loss) before reclassifications	(401)	57	(344)	(177)	25	(152)
Amounts reclassified from accumulated other comprehensive income (loss)	(13)	(57)	(70)	2	(25)	(23)
Net current period other comprehensive income (loss)	(414)	—	(414)	(175)	—	(175)
Ending balance	$ 64	$ —	$ 64	$ 64	$ —	$ 64

(in thousands, except share data)

The following table provides details about reclassifications out of accumulated other comprehensive income (loss):

Details about Accumulated Other Comprehensive Income (Loss) Components	Amount Reclassified from Accumulated Other Comprehensive Income (Loss)				Affected Line Item in the Statements of Income (Loss)
	Nine months ended September 30,		Three months ended September 30,		
	2022 (unaudited)	2021 (unaudited)	2022 (unaudited)	2021 (unaudited)	
Unrealized gains (losses) on cash flow hedges	$ (18)	$ 1	$ (5)	$ —	Cost of revenues
	(1,000)	58	(353)	26	Research and development
	(28)	1	(10)	—	Sales and marketing
	(94)	5	(30)	3	General and administrative
	(1,140)	65	(398)	29	Total, before income taxes
	(149)	8	(55)	4	Income tax expense (benefit)
	(991)	57	(343)	25	Total, net of income taxes
Unrealized gains (losses) on available-for-sale marketable securities	(25)	13	(4)	(2)	Financial income (loss), net
	(4)	—	—	—	Income tax benefit
	(21)	13	(4)	(2)	Total, net of income taxes
	$ (1,012)	$ 70	$ (347)	$ 23	Total, net of income taxes

NOTE 13: SHARE REPURCHASE PROGRAM

During the three months ended September 30, 2022, the Company repurchased 82,718 shares of common stock at an average purchase price of $28.14 per share for an aggregate purchase price of $2,328. During the nine months ended September 30, 2022, the Company repurchased 218,809 shares of common stock at an average purchase price of $31.01 per share for an aggregate purchase price of $6,785. The Company did not repurchase any shares of common stock during the three and nine months ended September 30, 2021. As of September 30, 2022, 278,799 shares of common stock remained available for repurchase pursuant to the Company's share repurchase program.

The repurchases of common stock are accounted for as treasury stock, and result in a reduction of stockholders' equity. When treasury shares are reissued, the Company accounts for the reissuance in accordance with FASB ASC No. 505-30, "Treasury Stock" and charges the excess of the repurchase cost over issuance price using the weighted average method to retained earnings. The purchase cost is calculated based on the specific identified method. In the case where the repurchase cost over issuance price using the weighted average method is lower than the issuance price, the Company credits the difference to additional paid-in capital.

NOTE 14: IMPAIRMENT OF ASSETS

During both the three and nine months ended September 30, 2022, the Company recorded an impairment charge of $3,556 in operating expenses with respect to Immervision technology acquired in August 2019, as the Company has decided to cease the development of this product line. During the same periods, the Company also recorded in cost of revenues an impairment charge of prepaid expenses as follows: (1) an impairment charge of $479 relating to an agreement to acquire certain NB-IoT technologies, and (2) an impairment charge of $1,479 relating to an agreement to purchase certain assets and services from Immervision.

NOTE 15: INCOME TAXES

During both the three and nine months ended September 30, 2022, the Company recorded a tax expense of $15,573 as a result of a valuation allowance for certain deferred tax assets due to a change in the estimation for taxable income of its Israeli operations for future years.

In assessing the recoverability of its deferred tax assets, including withholding tax assets that the Company will be able to utilize, the Company evaluates the available objective positive and negative evidence to estimate whether it is more likely than not that sufficient future taxable income will be generated to permit use of existing deferred tax assets in each taxpaying jurisdiction. For any deferred tax asset in excess of the amount for which it is more likely than not that the Company will realize a benefit, the Company establishes a valuation allowance.

As of September 30, 2022, based on the weight of available positive and negative evidence, the Company recorded a valuation allowance for certain deferred tax assets (including withholding tax assets) of its Israeli subsidiary due to uncertainty regarding its future taxable income. In assessing the realizability of deferred tax assets, the key assumptions used to determine positive and negative evidence included the Company's cumulative taxable loss for the past three years, current trends related to actual taxable earnings or losses, and expected future reversals of existing taxable temporary differences, as well as projections for future annual results. Accordingly, the Company recorded a charge of $15,573 during the third quarter and first nine months of 2022 as a reserve against its deferred tax assets.

(in thousands, except share data)

The amount of the deferred tax assets considered realizable, and the associated valuation allowance, could be adjusted in a future period if estimates of future taxable income change or if objective negative evidence in the form of cumulative losses is no longer present and additional weight is given to subjective evidence such as projections for future growth.

During the three and nine months ended September 30, 2022, the change in the gross amount of unrecognized tax benefits and accrued interest and penalties was not significant.

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

You should read the following discussion together with the unaudited financial statements and related notes appearing elsewhere in this quarterly report. This discussion contains forward-looking statements that involve risks and uncertainties. Any or all of our forward-looking statements in this quarterly report may turn out to be wrong. These forward-looking statements can be affected by inaccurate assumptions we might make or by known or unknown risks and uncertainties. We undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise. Factors which could cause actual results to differ materially include those set forth under in Part II – Item 1A – "Risk Factors," as well as those discussed elsewhere in this quarterly report. See "Forward-Looking Statements."

Management is actively monitoring the impact of the pandemic on the company's financial condition, liquidity, operations, suppliers, industry, and workforce. Given the continual evolution of the COVID-19 pandemic and the global responses to curb its spread, we are not able to estimate the full effect of the pandemic on the company's financial results for fiscal year 2022. The following discussions are subject to the future effects of the pandemic.

The financial information presented in this quarterly report includes the results of CEVA, Inc. and its subsidiaries.

BUSINESS OVERVIEW

Headquartered in Rockville, Maryland, CEVA is the leading licensor of wireless connectivity and smart sensing technologies and a provider of chip design services for a smarter, more secure and more connected world. We offer Digital Signal Processors, AI processors and its related tool chain, wireless platforms, and software IP including spatial audio, noise cancelation, motion sensing and voice recognition. During 2021, we acquired Intrinsix Corp. (Intrinsix), which provides chip design expertise and a range of additional IP in the areas of mixed signal, RF, security and heterogeneous System-on-Chip (SoC) interfaces, and which specializes in designing chips for customers in the aerospace and defense industry.

Our hardware IP products and solutions are licensed to customers who embed them into their SoC designs to create power-efficient, intelligent, secure and connected devices. Our customers include many of the world's leading semiconductor and original equipment manufacturer (OEM) companies targeting a wide variety of cellular and IoT end markets, including mobile, PC, consumer, automotive, robotics, industrial, aerospace and defense and medical. Our software IP is licensed primarily to OEMs who embed in SoC interfaces they choose to use.

Our ultra-low-power hardware IP offerings are deployed in devices for wireless connectivity and smart sensing workloads. Our wireless portfolio includes 5G baseband processing platforms for mobile broadband , cellular IoT and base station RAN, UWB for high-precision localization and Bluetooth and Wi-Fi technologies for a range of connectivity devices. Our smart sensing portfolio includes advanced DSP and AI technologies for cameras, radars, microphones, and other sensors, which via software technologies enable computer vision, audio, voice, motion sensing and other applications. We also offer processor-agnostic sensor IP processing of accelerometers, gyroscopes, magnetometers and optical flow, as well as spatial audio, noise cancellation and voice recognition.

Our Intrinsix chip design business unit enables us to offer our customers SoC design services, which we refer to as co-creation, that take advantage of our IP portfolio, Intrinsix's designed to deliver (D2D) and security IP and Intrinsix's design capabilities for digital, mix signal and RF. We believe this co-creation business proposition strengthens our relationships with customers, generates recurrent royalties and more. Furthermore, Intrinsix's experience and customer base in the growing chip development programs with the U.S. Department of Defense and the Defense Advanced Research Projects Agency (DARPA) together with its IP offerings for processor security and chiplets extends CEVA's serviceable market and revenue base.

CEVA is a sustainability and environmentally conscious company. We have adopted both a Code of Business Conduct and Ethics and a Sustainability Policy, in which we emphasize and focus on environmental preservation, recycling, the welfare of our employees and privacy – which we promote on a corporate level. At CEVA, we are committed to social responsibility, values of preservation and consciousness towards these purposes.

We believe that our IP licensing business and chip design expertise are solid with a diverse customer base and myriad target markets. Our state-of-the-art technology has shipped in more than 15 billion chips to date for a wide range of end markets. Every second, more than fifty devices sold worldwide are powered by CEVA.

We believe the adoption of our wireless connectivity and smart sensing IP products beyond our incumbency in the handset baseband market continues to progress. In particular, we are currently experiencing exceptional interest for our wireless connectivity platforms, in both traditional and new areas. Reflecting this trend, in the third quarter of 2022, eleven of the eighteen IP licensing and non-recurring engineering (NRE) deals concluded were for wireless connectivity.

We believe the following key elements represent significant growth drivers for the company:

- CEVA is a player in mobile handsets, the largest space of the semiconductor industry. Our customers use our technologies for baseband and voice processing. Our key customer currently has a strong foothold in low- and mid-tier LTE and 5G smartphones and feature phones markets.

- We believe our PentaG2 platform for 5G handsets and 5G IoT endpoints is the most comprehensive baseband processor IP in the industry today and provides newcomers and incumbents with a comprehensive solution to address the need for 5G processing for smartphones, fixed wireless access, satellite communications and a range of connected devices such as robots, cars, smart cities and other devices for industrial applications.

- Our specialization and technological edge in signal processing platforms for 5G base station RAN, and our PentaG RAN platform put us in a strong position to capitalize on the growing 5G RAN demand and its disintegration toward new architecture and form factors, including V-RAN, O-RAN, Active Antennas (AAU, RRU), private networks and small cells. We believe our PentaG RAN platform for 5G RAN settings is the most comprehensive baseband processor IP in the industry today and provides newcomers and incumbents with a comprehensive solution to address the need for 5G.

- Our broad Bluetooth, Wi-Fi, Ultra Wide Band (UWB) and cellular IoT IPs allow us to expand further into the high volume IoT applications and substantially increase our value-add. Our addressable market size for Bluetooth, Wi-Fi, UWB and cellular IoT is expected to be more than 15 billion devices annually by 2026 based on ABI Research. In the third quarter of 2022, a customer started shipments of a cellular IoT chip for new high-profile wearable that is enabled by our cellular technology. For the first nine months of 2022, shipments of devices enabled by our Bluetooth, Wi-Fi and cellular IoT IPs increased 19% year-over-year to 945 million units.

- The growing market for True Wireless Stereo (TWS) earbuds, smartwatches, AR and VR headsets, and other wearable assisted devices, offers an incremental growth segment for us for our software IP. To better address this market, our spatial audio, MotionEngine for inertial measurement units (IMU), WhisPro speech recognition technology and ClearVox voice input software are offered in conjunction with our audio/voice DSPs.

- Our unique capability to combine our Bluetooth IP, audio DSP IP and software for contextual aware user experience puts us in a strong position to capitalize on the fast-growing True Wireless Stereo (TWS) markets of earbuds, smartwatches, Over the Counter (OTC) hearing aids, wireless speakers, PCs and more. Our recently announced BlueBud platform integrates all of these technologies, lowering the entry barriers for semiconductors and OEMs to develop differentiated, high-performance solution for TWS devices.

- Our second generation SensPro2 sensor hub DSP family provides highly compelling offerings for any sensor-enabled device and application such as smartphones, automotive safety (ADAS), autonomous driving (AD), drones, robotics, security and surveillance, augmented reality (AR) and virtual reality (VR), Natural Language Processing (NLP) and voice recognition. Per research from Yole Développement, camera-enabled devices incorporating computer vision and AI are expected to exceed 1 billion units, and devices incorporating voice AI are expected to reach 600 million units by 2025. This new DSP architecture enables us to address the transformation in devices enabled by these applications, and expand our footprint and content in smartphones, drones, consumer cameras, surveillance, automotive ADAS, voice-enabled devices and industrial IoT applications.

- Neural networks are increasingly being deployed in a wide range of camera-based devices in order to make these devices “smarter.” Our newest generation family of AI processors for deep learning at the edge, the NeuPro-M represents new IP licensing and royalty drivers for us in the coming years.

- Our Hillcrest Labs sensor fusion business unit allows us to address an important technology piece used in personal computers, robotics, TWS earbuds, smart TVs and many other smart sensing IP products, for smart sensing, in addition to our existing portfolio for camera-based computer vision and AI processing, and microphone-based sound processing. MEMS-based inertial and environmental sensors are used in an increasing number of devices, including robotics, smartphones, laptops, tablets, TWS earbuds, headsets, remote controls and many other consumer and industrial devices. Hillcrest Labs’ innovative and proven MotionEngine™ software supports a broad range of merchant sensor chips and is licensed to OEMs and semiconductor companies that can run the software on CEVA DSPs or a variety of RISC CPUs. The MotionEngine software expands and complements CEVA’s smart sensing technology. Hillcrest Labs’ technology has already shipped in more than 200 million devices, indicative of its market traction and excellence. Along with our SensPro sensor fusion processors, our licensees can now benefit from our capabilities as a complete, one-stop-shop for processing all classes and types of sensors.

As a result of our diversification strategy beyond baseband for handsets, and our progress in addressing those new markets under the base station and IoT umbrella, we continue to experience significant growth in shipments and royalty revenues derived from base station and IoT product category (formerly referred to as non-handset products). Unit shipments for this category were up 14% year-over-year for the first nine months of 2022 to 1.06 billion units. We expect royalty growth to continue in this product category for the next few years. These devices are comprised of a range of different products at different royalty ASPs, spanning from high volume Bluetooth and Wi-Fi to high value sensor fusion and base station RAN. The royalty ASP of our other products will be in between the two ranges.

RESULTS OF OPERATIONS

Total Revenues

Total revenues were $33.7 million and $101.2 million for the third quarter and first nine months of 2022, respectively, representing an increase of 3% and 14%, as compared to the corresponding periods in 2021. We delivered year- over- year growth, both in licensing and royalties, during a difficult economic climate. This highlights our diverse product portfolio and resilient business model. We continue to gain momentum with our wireless and Edge AI adoptions across an expanding customer base, as can be seen by our licensing revenue achievements. Our royalty composition shows notable strength in 5G RAN, while lower handset baseband royalties reflect adjustments of inventory levels and lower demand.

Our five largest customers accounted for 38% and 32% of our total revenues for the third quarter and first nine months of 2022, respectively, as compared to 51% and 47% for the comparable periods in 2021. One customer accounted for 11% of our total revenues for the third quarter of 2022, as compared to one customer that accounted for 32% of our total revenues for the third quarter of 2021. One customer accounted for 11% of our total revenues for the first nine months of 2022, as compared to one customer that accounted for 25% of our total revenues for the first nine months of 2021. Sales to UNISOC (formerly Spreadtrum Communications, Inc. and RDA Corporation) represented 11% of our total revenues for the first nine months of 2022. Generally, the identity of our other customers representing 10% or more of our total revenues varies from period to period, especially with respect to our IP licensing customers as we generate licensing revenues generally from new customers on a quarterly basis. With respect to our royalty revenues, three royalty paying customers represented 10% or more of our total royalty revenues for the third quarter of 2022, and two royalty paying customers represented 10% or more of our total royalty revenues for the first nine months of 2022, and collectively represented 58% and 46% of our total royalty revenues for the third quarter and first nine months of 2022, respectively. Three royalty paying customers represented 10% or more of our total royalty revenues for both the third quarter and first nine months of 2021, and collectively represented 44% and 57% of our total royalty revenues for the third quarter and first nine months of 2021, respectively. We expect that a significant portion of our future revenues will continue to be generated by a limited number of customers. The concentration of our customers is explainable in part by consolidation in the semiconductor industry.

The following table sets forth the products and services as percentages of our total revenues for each of the periods set forth below:

	Nine months 2022	Nine months 2021	Third Quarter 2022	Third Quarter 2021
Connectivity products	71%	75%	64%	73%
Smart sensing products	29%	25%	36%	27%

Licensing, NRE and Related Revenues

Licensing, NRE and related revenues were $22.3 million and $66.8 million for the third quarter and first nine months of 2022, respectively, representing an increase of 3% and 30%, respectively, as compared to the corresponding periods in 2021. In the first nine months of 2022, we experienced growth for our WiFi IP as an emerging technology, as well as revenues from Intrinsix NRE related services (which were not incurred for the first five months of 2021, as the acquisition of Intrinsix was consummated on May 31, 2021), partially offset by lower licensing revenues from our Bluetooth IP.

Eighteen IP license and NRE agreements were concluded during the third quarter of 2022. Five of the eighteen deals were with first time customers. Customer agreements this quarter are for a broad of range market segments among which are ADAS, Wi-Fi devices and access points, wireless audio devices satellite communication and more. We are also increasing our design pipeline resulting from the unique specialty and focus of our Intrinsix business unit in the defense and RF design space. China and the U.S. were the larger drivers for our business in the quarter, while Japan is also becoming an important market for us due to its large automotive and industrial activities there. Geographically, nine of the deals signed were in China, seven in the U.S., and two were in Japan. CEVA has become the wireless anchor to more than 300 semiconductor companies as they shape the Intelligent IoT eco system. By being at the forefront of wireless standard and offering it under the IP business model, CEVA lowers the entry barriers for embedding wireless connectivity in SoCs and enabling many semiconductor companies to come out with more cost-effective and power-efficient chips than the repurposed smartphone connectivity chips.

Licensing and related revenues accounted for 66% of our total revenues for both the third quarter and first nine months of 2022, as compared to 66% and 58% for the comparable periods of 2021.

Royalty Revenues

Royalty revenues were $11.4 million and $34.5 million for the third quarter and first nine months of 2022, respectively, representing an increase of 2% and a decrease of 7%, respectively, as compared to the corresponding periods in 2021. Royalty revenues accounted for 34% of our total revenues for both the third quarter and first nine months of 2022, as compared to 34% and 42%, respectively, for the comparable periods of 2021. The third quarter and first nine months of 2022 included revenue of $1.0 million and $1.2 million, respectively, following the resolution of royalty audits. The first nine months of 2021 included revenue of $3.3 million following the resolution of a disagreement on royalty rates with a customer. Excluding these amounts, the third quarter of 2022 would have been down by 7% and the first nine months of 2022 would have been down 2% as compared to the comparable periods of 2021. Handset baseband royalties were up 16% year over year, but down 20% sequentially, reflecting the consumer environment. Our base station and IoT royalties, on the other hand, were down 3% year-over over-year, but up 16% sequentially, driven by growing 5G RAN shipments as our two larger OEMs are benefiting from share gain in China and continued 5G capex investment in the U.S. Also of note, an OEM customer of ours recently won the majority share of a very sizable RAN deployment in India, which will further contribute to our royalties starting from next year. Overall, the diversity of products and customers we have under the base station and IoT category led us to report our second highest royalty revenue quarter of $8.2 million for this category and helps us to mitigate the headwinds in the consumer and mobile spaces.

Our customers reported sales of 357 million and 1,320 million chipsets incorporating our technologies for the third quarter and first nine months of 2022, respectively, a decrease of 19% and an increase of 7%, respectively, from the corresponding periods in 2021 for actual shipments reported.

The five largest royalty-paying customers accounted for 66% and 65% of our total royalty revenues for the third quarter and first nine months of 2022, respectively, as compared to 59% and 69% for the comparable periods of 2021.

Geographic Revenue Analysis

	Nine months 2022		**Nine months 2021**		**Third Quarter 2022**		**Third Quarter 2021**	
	(in millions, except percentages)				**(in millions, except percentages)**			
United States	$ 22.9	*23%*	$ 19.3	*22%*	$ 9.2	*27%*	$ 8.8	*27%*
Europe and Middle East	$ 6.5	*6%*	$ 3.4	*4%*	$ 2.6	*8%*	$ 1.4	*4%*
Asia Pacific (1)	$ 71.8	*71%*	$ 65.9	*74%*	$ 21.8	*65%*	$ 22.6	*69%*
(1) China	$ 57.7	*57%*	$ 54.5	*61%*	$ 16.2	*48%*	$ 18.0	*55%*

Due to the nature of our license agreements and the associated potential large individual contract amounts, the geographic split of revenues both in absolute dollars and percentage terms generally varies from quarter to quarter.

Cost of Revenues

Cost of revenues was $7.9 million and $21.2 million for the third quarter and first nine months of 2022, respectively, as compared to $4.8 million and $10.9 million for the comparable periods of 2021. Cost of revenues accounted for 24% and 21% of our total revenues for the third quarter and first nine months of 2022, respectively, as compared to 15% and 12% for the comparable periods of 2021. The increase for the third quarter of 2022 principally reflected impairment charges of prepaid assets with respect to (1) Immervision-related assets and services, and (2) certain non-performing assets related to NB-IoT technology, as well as higher electronic design automation (EDA) tools associated with the Intrinsix business and higher cost of chips sold. The increase for the first nine months of 2022 principally reflected impairment charges of prepaid assets with respect to (1) Immervision-related assets and services, and (2) certain non-performing assets related to NB-IoT technology, as well as higher service costs and customization work for our customers, mainly due to the inclusion of salary and related NRE costs and EDA tools associated with the Intrinsix business for the first nine months of 2022, which costs were not incurred for the first five months of 2021 as the acquisition of Intrinsix was consummated in May 2021. Included in cost of revenues for the third quarter and first nine months of 2022 was a non-cash equity-based compensation expense of $393,000 and $1,076,000, respectively, as compared to $247,000 and $509,000 for the comparable periods of 2021.

Gross Margin

Gross margin for the third quarter and first nine months of 2022 was 76% and 79%, respectively, as compared to 85% and 88% for the comparable periods of 2021. The decrease for the third quarter of 2022 mainly reflected higher cost of revenues as set forth above, mainly due to the impairment charges. The decrease for the first nine months of 2022 mainly reflected higher cost of revenues as set forth above due to the impairment charges and NRE-related Intrinsix costs, offset by higher total revenues.

Operating Expenses

Total operating expenses were $29.7 million and $83.9 million for the third quarter and first nine months of 2022, respectively, as compared to $26.3 million and $75.8 million for the comparable periods of 2021. The net increase for the third quarter of 2022 principally reflected an impairment charge of $3.6 million with respect to Immervision technology acquired in August 2019, as we decided to cease the development of this product line. The net increase for the first nine months of 2022 principally reflected: (1) an impairment charge of $3.6 million with respect to Immervision technology acquired in August 2019, as we decided to cease the development of this product line; (2) higher salary and employee-related costs, mainly due to the inclusion of salary and related costs associated with Intrinsix employees for the first nine months of 2022, and higher computer-aided design (CAD) tools costs related to the Intrinsix business (costs related to the Intrinsix business were not incurred for the first five months of 2021 as the acquisition of Intrinsix was consummated in May 2021); and (3) higher outsourcing personal and services costs, partially offset with higher research grants received, mainly from the Israeli Innovation Authority of the Ministry of Economy and Industry in Israel (IIA).

Research and Development Expenses, Net

Our research and development expenses, net, were $18.5 million and $58.2 million for the third quarter and first nine months of 2022, respectively, as compared to $18.8 million and $53.8 million for the comparable periods of 2021. The decrease for the third quarter of 2022 principally reflected higher research grants received, mainly from the IIA. The net increase for the first nine months of 2022 principally reflected higher salary and employee-related costs, mainly due to the inclusion of salary and related costs associated with Intrinsix employees for the first nine months of 2022, and higher CAD tools costs related to the Intrinsix business (costs related to the Intrinsix business were not incurred for the first five months of 2021 as the acquisition of Intrinsix was consummated in May 2021), as well as higher outsourcing personal and services costs and higher non-cash equity-based compensation expenses, partially offset by higher research grants received, mainly from the IIA. Included in research and development expenses for the third quarter and first nine months of 2022 were non-cash equity-based compensation expenses of $2,180,000 and $6,181,000, respectively, as compared to $2,007,000 and $5,435,000 for the comparable periods of 2021. Research and development expenses as a percentage of our total revenues were 55% and 58% for the third quarter and first nine months of 2022, respectively, as compared to 57% and 61% for the comparable periods of 2021. The percentage decrease for the first nine months of 2022, as compared to the comparable period of 2021, was due to higher revenues, offset with the same reasons as set forth above for the increase in research and development expenses in absolute dollars for the comparable period of 2022 and 2021.

The number of research and development personnel was 331 at September 30, 2022, as compared to 318 at September 30, 2021.

Sales and Marketing Expenses

Our sales and marketing expenses were $3.4 million and $9.1 million for the third quarter and first nine months of 2022, respectively, as compared to $3.2 million and $9.4 million for the comparable periods of 2021. The net increase for the third quarter of 2022 principally reflected higher marketing and trade shows events. The net decrease for the first nine months of 2022 principally reflected lower salaries and related costs and lower commission expenses. Included in sales and marketing expenses for the third quarter and first nine months of 2022 were non-cash equity-based compensation expenses of $392,000 and $1,065,000, respectively, as compared to $400,000 and $1,185,000 for the comparable periods of 2021. Sales and marketing expenses as a percentage of our total revenues were 10% and 9% for the third quarter and first nine months of 2022, respectively, as compared to 10% and 11% for the comparable periods of 2021.

The total number of sales and marketing personnel was 35 at September 30, 2022, as compared to 36 at September 30, 2021.

General and Administrative Expenses

Our general and administrative expenses were $3.6 million and $10.8 million for the third quarter and first nine months of 2022, respectively, as compared to $3.5 million and $10.5 million for the comparable periods of 2021. The slight increase for the third quarter of 2022 primarily reflected higher professional services cost. The increase for the first nine months of 2022 primarily reflected higher salaries and related costs, partially offset with lower professional services cost mainly associated with the Intrinsix transaction. Included in general and administrative expenses for the third quarter of 2022 were non-cash equity-based compensation expenses of $726,000 and $2,061,000, as compared to $749,000 and $2,378,000 for the comparable periods of 2021. General and administrative expenses as a percentage of our total revenues were 11% for both the third quarter and first nine months of 2022, as compared to 11% and 12% for the comparable periods of 2021.

The number of general and administrative personnel was 48 at September 30, 2022, as compared to 46 at September 30, 2021.

Amortization of Intangible Assets

Our amortization charges were $0.8 million and $2.3 million for the third quarter and first nine months of 2022, respectively, as compared to $0.8 million and $2.1 million for the comparable periods of 2021. The amortization charges were incurred in connection with the amortization of intangible assets associated with (1) the acquisition of Intrinsix in May 2021, (2) the acquisition of the Hillcrest Labs business, and (3) the strategic investment in Immervision. For more information about our intangible assets, see Note 7 to the interim condensed consolidated financial statements for the three and nine months ended September 30, 2022.

Impairment of Assets

During both the three and nine months ended September 30, 2022, we recorded an impairment charge of $3.6 million with respect to Immervision technology acquired in August 2019, as we decided to cease the development of this product line.

Financial Income, Net (in millions)

	Nine months 2022	Nine months 2021	Third Quarter 2022	Third Quarter 2021
Financial income, net *of which:*	$ 0.80	$ 0.34	$ 0.11	$ (0.05)
Interest income and gains and losses from marketable securities, net	$ 1.76	$ 1.13	$ 0.81	$ 0.32
Foreign exchange loss	$ (0.96)	$ (0.79)	$ (0.70)	$ (0.37)

Financial income, net, consists of interest earned on investments, gains and losses from sale of marketable securities, accretion (amortization) of discounts (premiums) on marketable securities and foreign exchange movements.

The increase in interest income and gains and losses from marketable securities, net, during the third quarter and first nine months of 2022, principally reflected higher yields.

We review our monthly expected major non-U.S. dollar denominated expenditures and look to hold equivalent non-U.S. dollar cash balances to mitigate currency fluctuations. However, our Euro cash balances increase significantly on a quarterly basis beyond our Euro liabilities, mainly from the French research tax benefits applicable to CIR, which is generally refunded every three years. This has resulted in a foreign exchange loss of $0.70 million and $0.96 million for the third quarter and first nine months of 2022, respectively, as compared to foreign exchange loss of $0.37 million and $0.79 million for the comparable periods of 2021.

Remeasurement of Marketable Equity Securities

For the third quarter and first nine months of 2022, we recorded a loss of $0.5 million and $2.3 million, respectively, related to remeasurement of marketable equity securities, which we hold at cost. Over time, other income (expense), net, may be affected by market dynamics and other factors. Equity values generally change daily for marketable equity securities and upon the occurrence of observable price changes or upon impairment of marketable equity securities. In addition, volatility in the global economic climate and financial markets, including the effects of COVID-19, could result in a significant change in the value of our investments.

Provision for Income Taxes

Our income tax expenses was $17.9 million and $19.8 million for the third quarter and first nine months of 2022, respectively, as compared to $1.8 million and $5.8 million for the comparable periods of 2021. The increase for both the third quarter and first nine months of 2022 primarily reflected the impact of a charge to record a valuation allowance in the third quarter and first nine months of 2022 due to a change in the estimation for taxable income for future years of our Israeli operations (as further described below), offset with a reduced tax rate of 10% applied to specific revenues in our French subsidiary in the third quarter and first nine months of 2022 (under the French IP Box regime, as further described below), as compared to a corporate tax rate of 26.5% for the comparable periods of 2021.

In assessing the recoverability of our deferred tax assets, including withholding tax assets that we will be able to utilize, we evaluate the available objective positive and negative evidence to estimate whether it is more likely than not that sufficient future taxable income will be generated to permit use of existing deferred tax assets in each taxpaying jurisdiction. For any deferred tax asset in excess of the amount for which it is more likely than not that we will realize a benefit, we establish a valuation allowance.

As of September 30, 2022, based on the weight of available positive and negative evidence, we recorded a valuation allowance for certain deferred tax assets (including withholding tax assets) of our Israeli subsidiary due to uncertainty regarding its future taxable income. In assessing the realizability of deferred tax assets, the key assumptions used to determine positive and negative evidence included the Company's cumulative taxable loss for the past three years, current trends related to actual taxable earnings or losses, and expected future reversals of existing taxable temporary differences, as well as projections for future annual results. Accordingly, we recorded a charge of $15.6 million during the third quarter and first nine months of 2022 as a reserve against our deferred tax assets.

The amount of the deferred tax assets considered realizable, and the associated valuation allowance, could be adjusted in a future period if estimates of future taxable income change or if objective negative evidence in the form of cumulative losses is no longer present and additional weight is given to subjective evidence such as projections for future growth.

We are subject to income and other taxes in the United States and in numerous foreign jurisdictions. Our domestic and foreign tax liabilities are dependent on the jurisdictions in which profits are determined to be earned and taxed. Additionally, the amount of taxes paid is subject to our interpretation of applicable tax laws in the jurisdictions in which we operate. A number of factors influence our effective tax rate, including changes in tax laws and treaties as well as the interpretation of existing laws and rules. Federal, state, and local governments and administrative bodies within the United States, and other foreign jurisdictions have implemented, or are considering, a variety of broad tax, trade, and other regulatory reforms that may impact us. For example, the Tax Cuts and Jobs Act enacted on December 22, 2017 resulted in changes in our corporate tax rate, our deferred income taxes, and the taxation of foreign earnings. It is not currently possible to accurately determine the potential comprehensive impact of these or future changes, but these changes could have a material impact on our business and financial condition.

We have significant operations in Israel and operations in France and the Republic of Ireland. A substantial portion of our taxable income is generated in Israel and France. Although our Israeli and Irish subsidiaries, and, from 2022 onward, our French subsidiary, are taxed at rates substantially lower than U.S. tax rates, the tax rates in these jurisdictions could nevertheless result in a substantial increase as a result of withholding tax expenses with respect to which we are unable to obtain a refund from the relevant tax authorities.

Our French subsidiary is now entitled to a new tax benefit of 10% applied to specific revenues under the French IP Box regime. The French IP Box regime applies to net income derived from the licensing, sublicensing or sale of several IP rights such as patents and copyrighted software, including royalty revenues. This new elective regime requires a direct link between the income benefiting from the preferential treatment and the R&D expenditures incurred and contributing to that income. Qualifying income may be taxed at a favorable 10% CIT rate (plus social surtax, hence 10.3% in total).

Our Irish subsidiary qualified for a 12.5% tax rate on its trade. Interest income generated by our Irish subsidiary is taxed at a rate of 25%.

Our Israeli subsidiary is entitled to various tax benefits as a technological enterprise. In December 2016, the Economic Efficiency Law (Legislative Amendments for Applying the Economic Policy for the 2017 and 2018 Budget Years), 2016, which includes the Amendment to the Law for the Encouragement of Capital Investments, 1959 (Amendment 73) (the "Amendment"), was published. The Amendment, among other things, prescribes special tax tracks for technological enterprises, which are subject to rules that were issued by the Minister of Finance in April 2017.

The new tax track under the Amendment, which is applicable to our Israeli subsidiary, is the "Technological Preferred Enterprise." Technological Preferred Enterprise is an enterprise for which total consolidated revenues of its parent company and all subsidiaries are less than 10 billion New Israeli Shekel (NIS). A Technological Preferred Enterprise, as defined in the Amendment, that is located in the center of Israel (where our Israeli subsidiary is currently located), is taxed at a rate of 12% on profits deriving from intellectual property. Any dividends distributed to "foreign companies," as defined in the Amendment, deriving from income from technological enterprises will be taxed at a rate of 4%. We are applying the Technological Preferred Enterprise tax track for our Israeli subsidiary from tax year 2020 and onwards.

Critical Accounting Policies and Estimates

Our consolidated financial statements are prepared in accordance with generally accepted accounting principles in the United States. The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues, expenses and related disclosures. We evaluate our estimates and assumptions on an ongoing basis. Our estimates are based on historical experience and various other assumptions that we believe to be reasonable under the circumstances. Our actual results could differ from these estimates.

We believe that the assumptions and estimates associated with revenue recognition, fair value of financial instruments, equity-based compensation and income taxes have the greatest potential impact on our consolidated financial statements. Therefore, we consider these to be our critical accounting policies and estimates.

See our Annual Report on Form 10-K for the year ended December 31, 2021, filed with the SEC on March 1, 2022, for a discussion of additional critical accounting policies and estimates. There have been no changes in our critical accounting policies as compared to what was previously disclosed in the Annual Report on Form 10-K for the year ended December 31, 2021.

LIQUIDITY AND CAPITAL RESOURCES

As of September 30, 2022, we had approximately $29.5 million in cash and cash equivalents, $6.1 million in short-term bank deposits, $100.7 million in marketable securities, and $8.1 million in long-term bank deposits, totaling $144.4 million, as compared to $154.9 million at December 31, 2021. The decrease for the first nine months of 2022 principally reflected unrealized investment loss on marketable securities of approximately $6.5 million, and funds used to repurchase 218,809 shares of common stock for an aggregate consideration of approximately $6.8 million, partially offset by cash proceeds from exercise of stock-based awards of approximately $3.5 million.

Out of total cash, cash equivalents, bank deposits and marketable securities of $144.4 million, $135.3 million was held by our foreign subsidiaries. Our intent is to permanently reinvest earnings of our foreign subsidiaries and our current operating plans do not demonstrate a need to repatriate foreign earnings to fund our U.S. operations. However, if these funds were needed for our operations in the United States, we would be required to accrue and pay taxes to repatriate these funds. The determination of the amount of additional taxes related to the repatriation of these earnings is not practicable, as it may vary based on various factors such as the location of the cash and the effect of regulation in the various jurisdictions from which the cash would be repatriated.

During the first nine months of 2022, we invested $41.3 million of cash in bank deposits and marketable securities with maturities up to 48 months from the balance sheet date. In addition, during the same period, bank deposits and marketable securities were sold or redeemed for cash amounting to $40.9 million. All of our marketable securities are classified as available-for-sale. The purchase and sale or redemption of available-for-sale marketable securities are considered part of investing cash flow. Available-for-sale marketable securities are stated at fair value, with unrealized gains and losses reported in accumulated other comprehensive income (loss), a separate component of stockholders’ equity, net of taxes. Realized gains and losses on sales of investments, as determined on a specific identification basis, are included in the interim condensed consolidated statements of income (loss). The amount of credit losses recorded for the first nine months of 2022 was immaterial. For more information about our marketable securities, see Note 5 to the interim condensed consolidated financial statements for the three and nine months ended September 30, 2022.

Bank deposits are classified as short-term bank deposits and long-term bank deposits. Short-term bank deposits are deposits with maturities of more than three months but no longer than one year from the balance sheet date, whereas long-term bank deposits are deposits with maturities of more than one year as of the balance sheet date. Bank deposits are presented at their cost, including accrued interest, and purchases and sales are considered part of cash flows from investing activities.

Operating Activities

Cash provided by operating activities for the first nine months of 2022 was $3.5 million and consisted of net loss of $25.1 million, adjustments for non-cash items of $23.1 million, and changes in operating assets and liabilities of $5.5 million. Adjustments for non-cash items primarily consisted of $5.8 million of depreciation and amortization of intangible assets, $10.4 million of equity-based compensation expenses, $2.3 million of remeasurement of marketable equity securities, $3.6 million of impairment of intangible assets with respect to Immervision technology acquired in August 2019, as we decided to cease the development of this product line, and $0.7 million of unrealized foreign exchange loss. The increase in operating assets and liabilities primarily consisted of a decrease in deferred taxes, net of $11.8 million (primarily reflect the impact of a charge to record a valuation allowance in the first nine months of 2022), a decrease in trade receivables of $0.7 million, and an increase in accrued expenses and other payables, including income taxes payable, of $1.5 million, partially offset by a decrease in deferred revenues of $5.1 million, a decrease in accrued payroll and related benefits of $2.8 million and an increase in prepaid expenses and other assets of $1.3 million.

Cash provided by operating activities for the first nine months of 2021 was $14.8 million and consisted of net loss of $3.5 million, adjustments for non-cash items of $15.2 million, and changes in operating assets and liabilities of $3.1 million. Adjustments for non-cash items primarily consisted of $4.7 million of depreciation and amortization of intangible assets and $9.5 million of equity-based compensation expenses. The increase in operating assets and liabilities primarily consisted of a decrease in trade receivables of $6.6 million, a decrease in prepaid expenses and other assets of $1.9 million, and an increase in deferred revenues of $2.6 million, partially offset by an increase in deferred taxes, net of $3.6 million (mainly due to an increase in withholding tax assets which can be utilized in future years), a decrease in accrued payroll and related benefits of $3.6 million, and a decrease in accrued expenses and other payables of $1.0 million.

Cash flows from operating activities may vary significantly from quarter to quarter depending on the timing of our receipts and payments. Our ongoing cash outflows from operating activities principally relate to payroll-related costs and obligations under our property leases and design tool licenses. Our primary sources of cash inflows are receipts from our accounts receivable, to some extent, funding from research and development government grants and French research tax credits, and interest earned from our cash, deposits and marketable securities. The timing of receipts of accounts receivable from customers is based upon the completion of agreed milestones or agreed dates as set out in the contracts.

Investing Activities

Net cash used in investing activities for the first nine months of 2022 was $3.3 million, compared to $4.6 million of net cash used in investing activities for the comparable period of 2021. We had a cash outflow of $27.3 million and a cash inflow of $10.0 million with respect to investments in marketable securities during the first nine months of 2022, as compared to a cash outflow of $19.9 million and a cash inflow of $33.6 million with respect to investments in marketable securities during the first nine months of 2021. For the first nine months of 2022, we had net proceeds of $16.9 million from bank deposits, as compared to net proceeds of $13.0 million from bank deposits for the comparable period of 2021. We had a cash outflow of $2.9 million and $1.5 million during the first nine months of 2022 and 2021, respectively, from purchase of property and equipment. For the first nine months of 2021, we had a cash outflow, net of cash acquired, of $29.9 million for the acquisition of Intrinsix.

Financing Activities

Net cash used in financing activities for the first nine months of 2022 was $3.3 million, as compared to $3.2 million of net cash provided by financing activities for the comparable period of 2021.

In August 2008, we announced that our board of directors approved a share repurchase program for up to one million shares of common stock which was further extended collectively by an additional 6,400,000 shares in 2010, 2013, 2014, 2018 and 2020. During the first nine months of 2022, we repurchased 218,809 shares of common stock pursuant to our share repurchase program at an average purchase price of $31.01 per share, for an aggregate purchase price of $6.8 million. We did not repurchase any shares of common stock during the first nine months of 2021. As of September 30, 2022, we had 278,799 shares available for repurchase.

During the first nine months of 2022, we received $3.5 million from the exercise of stock-based awards, as compared to $3.2 million received for the comparable period of 2021.

We believe that our cash and cash equivalents, short-term bank deposits and marketable securities, along with cash from operations, will provide sufficient capital to fund our operations for at least the next 12 months. We cannot provide assurances, however, that the underlying assumed levels of revenues and expenses will prove to be accurate. We believe the company has the financial resources to weather the expected short-term impacts of COVID-19. However, we have limited insight into the extent to which our business may be impacted by COVID-19, and there are many uncertainties, including the length and severity of the pandemic. An extended and severe pandemic may materially and adversely affect our future operations, financial position and liquidity.

In addition, as part of our business strategy, we occasionally evaluate potential acquisitions of businesses, products and technologies and minority equity investments. Accordingly, a portion of our available cash may be used at any time for the acquisition of complementary products or businesses or minority equity investments. Such potential transactions may require substantial capital resources, which may require us to seek additional debt or equity financing. We cannot assure you that we will be able to successfully identify suitable acquisition or investment candidates, complete acquisitions or investments, integrate acquired businesses into our current operations, or expand into new markets. Furthermore, we cannot provide assurances that additional financing will be available to us in any required time frame and on commercially reasonable terms, if at all. See “Risk Factors—We may seek to expand our business in ways that could result in diversion of resources and extra expenses.” for more detailed information.

Item 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

A majority of our revenues and a portion of our expenses are transacted in U.S. dollars and our assets and liabilities together with our cash holdings are predominately denominated in U.S. dollars. However, the majority of our expenses are denominated in currencies other than the U.S. dollar, principally the NIS and the Euro. Increases in volatility of the exchange rates of currencies other than the U.S. dollar versus the U.S. dollar could have an adverse effect on the expenses and liabilities that we incur when remeasured into U.S. dollars. We review our monthly expected non-U.S. dollar denominated expenditures and look to hold equivalent non-U.S. dollar cash balances to mitigate currency fluctuations. However, our Euro cash balances increase significantly on a quarterly basis beyond our Euro liabilities, mainly from French research tax benefits applicable to the CIR, which is generally refunded every three years. This has resulted in a foreign exchange loss of $696,000 and $956,000 for the third quarter and first nine months of 2022, respectively, and a foreign exchange loss of $367,000 and $783,000 for the comparable periods of 2021.

As a result of currency fluctuations and the remeasurement of non-U.S. dollar denominated expenditures to U.S. dollars for financial reporting purposes, we may experience fluctuations in our operating results on an annual and quarterly basis. To protect against the increase in value of forecasted foreign currency cash flow resulting from salaries paid in currencies other than the U.S. dollar during the year, we follow a foreign currency cash flow hedging program. We hedge portions of the anticipated payroll for our non-U.S. employees denominated in currencies other than the U.S. dollar for a period of one to twelve months with forward and option contracts. During the third quarter and first nine months of 2022, we recorded accumulated other comprehensive gain of $111,000 and accumulated other comprehensive loss of $462,000, respectively, from our forward and option contracts, net of taxes, with respect to anticipated payroll expenses for our non-U.S. employees. During both the third quarter and first nine months of 2021, we recorded accumulated other comprehensive gain of $0 from our forward and option contracts, net of taxes, with respect to anticipated payroll expenses for our non-U.S. employees. As of September 30, 2022, the amount of other comprehensive loss from our forward and option contracts, net of taxes, was $407,000, which will be recorded in the consolidated statements of income (loss) during the following five months. We recognized a net loss of $398,000 and $1,140,000 for the third quarter and first nine months of 2022, respectively, and a net gain of $29,000 and $65,000 for the comparable periods of 2021, related to forward and options contracts. We note that hedging transactions may not successfully mitigate losses caused by currency fluctuations. We expect to continue to experience the effect of exchange rate and currency fluctuations on an annual and quarterly basis.

The majority of our cash and cash equivalents are invested in high-grade certificates of deposits with major U.S., European and Israeli banks. Generally, cash and cash equivalents and bank deposits may be redeemed and therefore minimal credit risk exists with respect to them. Nonetheless, deposits with these banks exceed the Federal Deposit Insurance Corporation (FDIC) insurance limits or similar limits in foreign jurisdictions, to the extent such deposits are even insured in such foreign jurisdictions. While we monitor on a systematic basis the cash and cash equivalent balances in the operating accounts and adjust the balances as appropriate, these balances could be impacted if one or more of the financial institutions with which we deposit our funds fails or is subject to other adverse conditions in the financial or credit markets. To date, we have experienced no loss of principal or lack of access to our invested cash or cash equivalents; however, we can provide no assurance that access to our invested cash and cash equivalents will not be affected if the financial institutions that we hold our cash and cash equivalents fail.

We hold an investment portfolio consisting principally of corporate bonds. We have the ability to hold such investments until recovery of temporary declines in market value or maturity. As of September 30, 2022, the unrealized losses associated with our investments were approximately $7.1 million due to the dramatic changes in the interest rate environment that took place in the first nine months of 2022. As we hold such bonds with unrealized losses to recovery, no credit loss was recognized during the third quarter and first nine months of 2022. However, we can provide no assurance that we will recover present declines in the market value of our investments.

Interest income and gains and losses from marketable securities, net, were $0.81 million and $1.76 million for the third quarter and first nine months of 2022, respectively, as compared to $0.32 million and $1.13 million for the comparable periods of 2021. The increase in interest income, and gains and losses from marketable securities, net, during the third quarter and first nine months of 2022, principally reflected higher yields.

We are exposed primarily to fluctuations in the level of U.S. interest rates. To the extent that interest rates rise, fixed interest investments may be adversely impacted, whereas a decline in interest rates may decrease the anticipated interest income for variable rate investments. We typically do not attempt to reduce or eliminate our market exposures on our investment securities because the majority of our investments are short-term. We currently do not have any derivative instruments but may put them in place in the future. Fluctuations in interest rates within our investment portfolio have not had, and we do not currently anticipate such fluctuations will have, a material effect on our financial position on an annual or quarterly basis.

Item 4. CONTROLS AND PROCEDURES

As of the end of the period covered by this report, we carried out an evaluation, under the supervision and with the participation of our Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of our disclosure controls and procedures. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective as of September 30, 2022.

There has been no change in our internal control over financial reporting that occurred during our most recent fiscal quarter that has materially affected or is reasonably likely to materially affect our internal control over financial reporting.

PART II. OTHER INFORMATION

Item 1. LEGAL PROCEEDINGS

We are not a party to any litigation or other legal proceedings that we believe could reasonably be expected to have a material effect on our business, results of operations and financial condition.

Item 1A. RISK FACTORS

This Form 10-Q contains forward-looking statements concerning our future products, expenses, revenue, liquidity and cash needs as well as our plans and strategies. These forward-looking statements are based on current expectations and we assume no obligation to update this information. Numerous factors could cause our actual results to differ significantly from the results described in these forward-looking statements, including the following risk factors.

There are no material changes to the Risk Factors described under the title "Factors That May Affect Future Performance" in our Annual Report on Form 10-K for the fiscal year ended December 31, 2021 other than changes to the Risk Factors below entitled: (1) "Our quarterly operating results fluctuate from quarter to quarter due to a variety of factors, including our lengthy sales cycle, and may not be a meaningful indicator of future performance;" (2) "We rely significantly on revenues derived from a limited number of customers who contribute to our royalty and license revenues;" (3) "Royalty and other payment rates could decrease for existing and future license agreements, which could materially adversely affect our operating results;" (4) "Because we have significant international operations, we may be subject to political, economic and other conditions relating to our international operations that could increase our operating expenses and disrupt our revenues and business;" (5) "Our success will depend on our ability to manage our geographically dispersed operations;" (6) "Our research and development expenses may increase if the grants we currently receive from the Israeli government are reduced or withheld;" (7) "The Israeli tax benefits that we currently receive and the government programs in which we participate require us to meet certain conditions and may be terminated or reduced in the future, which could increase our tax expenses;" (8) "Our product development efforts are time-consuming and expensive and may not generate an acceptable return, if any;" (9) "If we determine that our goodwill and intangible assets have become impaired, we may incur impairment charges, which would negatively impact our operating results," (10) "Our operating results are affected by the highly cyclical nature of and general economic conditions in the semiconductor industry;" (11) "We may face difficulties in integrating Intrinsix into our business and offering turnkey IP solutions and co-creation projects;" and (12) "Our corporate tax rate may increase, which could adversely impact our cash flow, financial condition and results of operations."

The COVID-19 pandemic, or other outbreak of disease or similar public health threat, could materially and adversely affect our business, financial condition and results of operations.

The COVID-19 pandemic has resulted in government authorities implementing numerous measures to try to contain the virus, and these measures have impacted and may further impact our workforce and operations, the operations of our customers, and those of our respective vendors and suppliers. Furthermore, the outbreak has significantly increased economic and demand uncertainty and negatively impacted consumer confidence. Any shortfall in consumer spending or demand for consumer electronic products, such as due to social distancing and other restrictions, may negatively affect our business and results of operations.

The spread of COVID-19 also has caused us to modify our business practices, and we may take further actions as may be required by government authorities or that we determine are in the best interests of our employees, customers, and communities. Such actions may result in further disruptions to our supply chain, operations and facilities, and workforce. We cannot assure you that such measures will be sufficient to mitigate the risks posed by COVID-19, and our ability to perform critical functions could be harmed.

We cannot at this time quantify or forecast the full short-term and longer-term business impact of COVID-19. The degree to which COVID-19 impacts our business, financial condition, and results of operations will depend on future developments, which are highly uncertain, and to what extent normal economic and operating conditions can resume.

The markets in which we operate are highly competitive, and as a result we could experience a loss of sales, lower prices and lower revenues.

The markets for the products in which our technology is incorporated are highly competitive. Aggressive competition could result in substantial declines in the prices that we are able to charge for our intellectual property or lose design wins to competitors. Many of our competitors are striving to increase their share of the growing signal processing IP markets and are reducing their licensing and royalty fees to attract customers. The following industry players and factors may have a significant impact on our competitiveness:

- we compete directly in the signal processing cores space with Verisilicon, Cadence and Synopsys;
- we compete with CPU IP or configurable CPU IP (offering DSP configured CPU and/or DSP acceleration and/or connectivity capabilities to their IP) providers, such as ARM, Synopsys and Cadence and the RISC-V open source;

- we compete with internal engineering teams at companies such as Mediatek, Qualcomm, Samsung, Huawei and NXP that may design programmable DSP core products and signal processing cores in-house and therefore not license our technologies;
- we compete in the short range wireless markets with Mindtree, Synopsys and internal engineering teams at companies such as Cypress (now part of Infineon), Silicon Labs and NXP;
- we compete in embedded imaging and vision market with Cadence, Synopsys, Videantis, Verislicon, ARM and Verisilicon;
- we compete in AI processor marketing with AI processor and accelerator providers, including AImotive, Arm Limited, Cadence, Synopsys, Cambricon, Digital Media Professionals (DMP), Imagination Technologies, Nvidia open source NVDLA and Verisilicon;
- we compete in the audio and voice applications market with ARM, Cadence, Synopsys and Verisilicon; and
- we compete for chip design services in our main markets with WiPro and Cyient, and in the aerospace and defense markets with Marvel, ASIC North and First Pass Engineering.

In addition, we may face increased competition from smaller, niche semiconductor design companies in the future. Some of our customers also may decide to satisfy their needs through in-house design. We compete on the basis of signal processing IP performance, Intrinsix's IP and NRE capabilities, overall chip cost, power consumption, flexibility, reliability, communication and multimedia software availability, design cycle time, tool chain, customer support, name recognition, reputation and financial strength. Our inability to compete effectively on these bases could have a material adverse effect on our business, results of operations and financial condition.

Our quarterly operating results fluctuate from quarter to quarter due to a variety of factors, including our lengthy sales cycle, and may not be a meaningful indicator of future performance.

In some quarters our operating results could be below the expectations of securities analysts and investors, which could cause our stock price to fall. Factors that may affect our quarterly results of operations in the future include, among other things:

- the gain or loss of significant licensees, partly due to our dependence on a limited number of customers generating a significant amount of quarterly revenues;
- any delay in execution of any anticipated IP licensing arrangement during a particular quarter;
- delays in revenue recognition for some license agreements based on percentage of completion of customized work or other accounting reasons;
- the timing and volume of orders and production by our customers, as well as fluctuations in royalty revenues resulting from fluctuations in unit shipments by our licensees;
- royalty pricing pressures and reduction in royalty rates due to an increase in volume shipments by customers, end-product price erosion and competitive pressures;
- earnings or other financial announcements by our major customers that include shipment data or other information that implicates expectations for our future royalty revenues;
- the mix of revenues among IP licensing and related revenues, NRE revenues and royalty revenues;
- the timing of the introduction of new or enhanced technologies by us and our competitors, as well as the market acceptance of such technologies;
- the discontinuation, or public announcement thereof, of product lines or market sectors that incorporate our technology by our significant customers;
- our lengthy sales cycle and specifically in the third quarter of any fiscal year during which summer vacations slow down decision-making processes of our customers in executing contracts;
- lengthy and unpredictable project approval and funding timelines characteristic of government agencies and other customers in the aerospace and defense markets, coupled with the ability, and frequent election, of government agencies and their contractors to discontinue programs with little or no advance notice;
- delays in the commercialization of end products that incorporate our technology;
- currency fluctuations, mainly the EURO and the NIS versus the U.S. dollar;
- fluctuations in operating expenses and gross margins associated with the introduction of, and research and development investments in, new or enhanced technologies and adjustments to operating expenses resulting from restructurings;
- the approvals, amounts and timing of Israeli research and development government grants from the Israeli Innovation Authority of the Ministry of Economy and Industry in Israel (the "IIA"), EU grants and French research tax credits;
- the impact of new accounting pronouncements, including the new revenue recognition rules;
- the timing of our payment of royalties to the IIA, which is impacted by the timing and magnitude of license agreements and royalty revenues derived from technologies that were funded by grant programs of the IIA;
- statutory changes associated with research tax benefits applicable to French technology companies;

- our ability to scale our operations in response to changes in demand for our technologies;
- entry into new end markets that utilize our signal processing IPs, software and platforms;
- changes in our pricing policies and those of our competitors;
- restructuring, asset and goodwill impairment and related charges, as well as other accounting changes or adjustments, such as our third quarter 2022 write off of deferred tax assets;
- general political conditions, including global trade wars resulting from tariffs and business restrictions and bans imposed by government entities, like the well publicized 2018 ban associated with ZTE, as well as other regulatory actions and changes that may adversely affect the business environment;
- general economic conditions, including the current economic conditions, and its effect on the semiconductor industry and sales of consumer products into which our technologies are incorporated;
- delays in final product delivery due to unexpected issues introduced by our service or EDA tool providers;
- delays in ratification of standards for Bluetooth, Wi-Fi or NB-IoT that can affect the introduction of new products;
- constraints on chip manufacturing capacity due to high demand or shutdowns of semiconductor fabrication plants and other manufacturing facilities; and
- reductions in demand for consumer and digital devices due to lockdowns or overall financial difficulties resulting from the ongoing COVID-19 pandemic.

Each of the above factors is difficult to forecast and could harm our business, financial condition and results of operations. Also, we license our technology to OEMs and semiconductor companies for incorporation into their end products for consumer markets, including handsets and consumer electronics products. The royalties we generate are reported by our customers.

Our royalty revenues are affected by seasonal buying patterns of consumer products sold by OEMs, partially by our direct customers and partially by semiconductor customers that incorporate our technology into their end products and the market acceptance of such end products. The first quarter in any given year is usually a sequentially down quarter for us in relation to royalty revenues as this period represents lower post-Christmas fourth quarter consumer product shipments. However, the magnitude of this first quarter decrease varies annually and has been impacted by global economic conditions, market share changes, exiting or refocusing of market sectors by our customers and the timing of introduction of new and existing handset devices powered by CEVA technology sold in any given quarter compared to the prior quarter. Furthermore, in 2020 and 2021 the worldwide COVID-19 pandemic and the excepted recovery in economic activities created strong demand for chips that significantly surpasses the supply capacity for digital connectivity and consumer devices, causing long lead times. This environment may continue throughout 2022 and distort more traditional seasonality trends.

Moreover, the semiconductor and consumer electronics industries remain volatile, which makes it extremely difficult for our customers and us to accurately forecast financial results and plan for future business activities. As a result, our past operating results should not be relied upon as an indication of future performance.

We rely significantly on revenues derived from a limited number of customers who contribute to our royalty and license revenues.

We derive a significant amount of revenues from a limited number of customers. Sales to UNISOC (formerly Spreadtrum Communications, Inc.), accounted for 11% of our total revenues for the first nine months of 2022. Sales to UNISOC also accounted for 21%, 14% and 15% of our total revenues for 2021, 2020 and 2019, respectively. With respect to our royalty revenues, three royalty paying customer represented 10% or more of our total royalty revenues for the third quarter of 2022, and two royalty paying customer represented 10% or more of our total royalty revenues for the first nine months of 2022, and collectively represented 58% and 46% of our total royalty revenues for the third quarter and first nine months of 2022, respectively. Three royalty paying customer represented 10% or more of our total royalty revenues for both the third quarter and first nine months of 2021, and collectively represented 44% and 57% of our total royalty revenues for the third quarter and first nine months of 2021, respectively. In addition, three royalty paying customers each represented 10% or more of our total royalty revenues for 2021, and collectively represented 57% of our total royalty revenues for 2021. Four royalty paying customers each represented 10% or more of our total royalty revenues for 2020, and collectively represented 72% of our total royalty revenues for 2020, and three royalty paying customers each represented 10% or more of our total royalty revenues for 2019, and collectively represented 73% of our total royalty revenues for 2019. We expect that a significant portion of our future revenues will continue to be generated by a limited number of customers. The loss of any significant royalty paying customer could adversely affect our near-term future operating results. Furthermore, consolidation among our customers may negatively affect our revenue source, increase our existing customers' negotiation leverage and make us further dependent on a limited number of customers. Moreover, the discontinuation of product lines or market sectors that incorporate our technology by our significant customers or a change in direction of their business and our inability to adapt our technology to their new business needs could have material negative implications for our future royalty revenues.

Our business is dependent on IP licensing and NRE revenues, which may vary period to period.

License agreements for our signal processing IP cores and platforms have not historically provided for substantial ongoing license payments, so past IP licensing revenues may not be indicative of the amount of such revenues in any future period. We believe that there is a similar risk with RivieraWaves' operations associated with Bluetooth and Wi-Fi connectivity technologies. Significant portions of our anticipated future revenues, therefore, will likely depend upon our success in attracting new customers or expanding our relationships with existing customers. However, revenues recognized from licensing arrangements vary significantly from period to period, depending on the number and size of deals closed during a quarter, and are difficult to predict. In addition, as we expand our business into the non-handset baseband markets, our licensing deals may be smaller but greater in volume which may further fluctuate our licensing revenues quarter to quarter. Our ability to succeed in our licensing efforts will depend on a variety of factors, including the performance, quality, breadth and depth of our current and future products as well as our sales and marketing skills. In addition, some of our licensees may in the future decide to satisfy their needs through in-house design and production. Our failure to obtain future licensing customers would impede our future revenue growth and could materially harm our business.

In addition, we recently acquired Intrinsix, which derives revenues primarily from non-recurring engineering (NRE) payments as well as retains certain IP assets. We believe significant portions of our anticipated future revenues will likely depend upon our success in attracting new customers to NRE services, monetizing Intrinsix IP assets and expanding our relationships with existing Intrinsix customers. Revenues recognized from such arrangements have historically varied significantly from period to period, depending on the number and size of deals closed during a quarter, as well as the timing of the approval and funding processes of U.S. government agencies and their contractors that can be lengthy and difficult to predict. In addition, some Intrinsix's customers may in the future decide to satisfy their needs through in-house design and production. Our failure to obtain future customers for Intrinsix's NRE business and IP would also impede our future revenue growth and could materially harm our business.

Royalty and other payment rates could decrease for existing and future license agreements and other customer agreements, which could materially adversely affect our operating results.

Royalty payments to us under existing and future license agreements could be lower than currently anticipated for a variety of reasons. Average selling prices for semiconductor products generally decrease over time during the lifespan of a product. In addition, there is increasing downward pricing pressures in the semiconductor industry on end products incorporating our technology, especially end products for the handsets and consumer electronics markets. As a result, notwithstanding the existence of a license agreement, our customers may demand that royalty rates for our products be lower than our historic royalty rates. We have in the past and may be pressured in the future to renegotiate existing license agreements with our customers. In addition, certain of our license agreements provide that royalty rates may decrease in connection with the sale of larger quantities of products incorporating our technology. Furthermore, our competitors may lower the royalty rates for their comparable products to win market share which may force us to lower our royalty rates as well. As a consequence of the above referenced factors, as well as unforeseen factors in the future, the royalty rates we receive for use of our technology could decrease, thereby decreasing future anticipated revenues and cash flow. Royalty revenues were approximately 34% of our total revenues for both the third quarter and first nine months of 2022, respectively, as compared to 34% and 42% for the comparable periods of 2021. In addition, royalty revenues were approximately 41%, 48% and 45% of our total revenues for 2021, 2020 and 2019, respectively. Therefore, a significant decrease in our royalty revenues could materially adversely affect our operating results.

Moreover, royalty rates may be negatively affected by macroeconomic trends (including the recent COVID-19 pandemic and its global impact) or changes in products mix. Furthermore, consolidation among our customers may increase the leverage of our existing customers to extract concessions from us in royalty rates. Moreover, changes in products mix such as an increase in lower royalty bearing products shipped in high volume like low-cost feature phones and Bluetooth-based products in lieu of higher royalty bearing products like LTE phones could lower our royalty revenues.

In addition, Intrinsix's NRE hourly rates under existing and future agreements could be lower than currently anticipated for a variety of reasons, including, for example, U.S. government regulation changes and pricing pressures from competitors in the aerospace and defense markets. As a result, notwithstanding the existence of an agreement, our customers may demand that NRE rates, be lower than our historic rates. A significant decrease in our NRE rates could also materially adversely affect our operating results.

We generate a significant amount of our total revenues, especially royalty revenues, from the handset baseband market (for mobile handsets and for other modem connected devices) and our business and operating results may be materially adversely affected if we do not continue to succeed in these highly competitive markets.

A significant portion of our revenues in general, and in particular our royalty revenues, are derived from baseband for handsets. Any adverse change in our ability to compete and maintain our competitive position in the handset baseband market, including through the introduction by competitors of enhanced technologies that attract customers that target those markets, would harm our business, financial condition and results of operations. Moreover, the handset baseband market is extremely competitive and is facing intense pricing pressures, and we expect that competition and pricing pressures will only increase. Furthermore, it can be very volatile with regards to volume shipments of different phones, standards and connected devices due to inventory build out or consumer demand changes or geographical macroeconomics, pricing changes, product discontinuations due to technical issues and timing of introduction of new phones and products. Our existing OEM or semiconductor customers also may fail to introduce new handset devices that attract consumers, lose a significant design opportunity for a new product introduction, or encounter significant delays in developing, manufacturing or shipping new or enhanced products in those markets or find alternative technological solutions and suppliers. The inability of our customers to compete would result in lower shipments of products powered by our technologies which in turn would have a material adverse effect on our business, financial condition and results of operations. In particular, a customer's loss of a design opportunity may have an adverse effect on our royalty revenues from such customer, which in turn will also have an adverse effect on our overall results of operations and market share. As an example, Intel, one of our customers, did not have its products selected for inclusion in a new smartphone series, and thereafter announced the sale of its 5G smartphone modem, as a result of which, our royalty revenues from Intel will reach record low levels in 2022. Our overall royalty revenues will be negatively impacted if we fail to offset any loss of royalty revenues from Intel, or any other loss of royalty revenues from a customer, with royalty revenues from other emerging products incorporating our technologies. Since a significant portion of our revenues are derived from the handset baseband market, adverse conditions in this market would have a material adverse effect on our business, financial condition and results of operations.

In order to sustain the future growth of our business, we must penetrate new markets and our new products must achieve widespread market acceptance but such additional revenue opportunities may not be implemented and may not be achieved.

In order to expand our business and increase our revenues, we must penetrate new markets and introduce new products, including additional non-baseband related products. We have invested significant resources in pursuing potential opportunities for revenue growth and diversify our revenue streams. Our continued success will depend significantly on our ability to accurately anticipate changes in industry standards and to continue to appropriately fund development efforts to enhance our existing products or introduce new products in a timely manner to keep pace with technological developments. However, there are no assurances that we will develop products relevant for the marketplace or gain significant market share in those competitive markets. Moreover, if any of our competitors implement new technologies before us, those competitors may be able to provide products that are more effective or at lower prices, which could adversely impact our sales and impact our market share. Our inability to penetrate new markets and increase our market share in those markets or lack of customer acceptance of our new products may harm our business and potential growth.

Because our IP solutions are components of end products, if semiconductor companies and electronic equipment manufacturers do not incorporate our solutions into their end products or if the end products of our customers do not achieve market acceptance, we may not be able to generate adequate sales of our products.

We do not sell our IP solutions directly to end-users; we license our technology primarily to semiconductor companies and electronic equipment manufacturers, who then incorporate our technology into the products they sell. As a result, we rely on our customers to incorporate our technology into their end products at the design stage. Once a company incorporates a competitor's technology into its end product, it becomes significantly more difficult for us to sell our technology to that company because changing suppliers involves significant cost, time, effort and risk for the company. As a result, we may incur significant expenditures on the development of a new technology without any assurance that our existing or potential customers will select our technology for incorporation into their own product and without this "design win," it becomes significantly difficult to sell our IP solutions. Moreover, even after a customer agrees to incorporate our technology into its end products, the design cycle is long and may be delayed due to factors beyond our control, which may result in the end product incorporating our technology not reaching the market until long after the initial "design win" with such customer. From initial product design-in to volume production, many factors could impact the timing and/or amount of sales actually realized from the design-in. These factors include, but are not limited to, changes in the competitive position of our technology, our customers' financial stability, and our customers' ability to ship products according to our customers' schedule. Moreover, current economic conditions may further prolong a customer's decision-making process and design cycle.

Further, because we do not control the business practices of our customers, we do not influence the degree to which they promote our technology or set the prices at which they sell products incorporating our technology. We cannot assure you that our customers will devote satisfactory efforts to promote their end products which incorporate our IP solutions.

In addition, our royalties from licenses and therefore the growth of our business, are dependent upon the success of our customers in introducing products incorporating our technology and the success of those products in the marketplace. The primary customers for our products are semiconductor design and manufacturing companies, system OEMs and electronic equipment manufacturers, particularly in the telecommunications field. All of the industries we license into are highly competitive, cyclical and have been subject to significant economic downturns at various times. These downturns are characterized by production overcapacity and reduced revenues, which at times may encourage semiconductor companies or electronic product manufacturers to reduce their expenditure on our technology. If we do not retain our current customers and continue to attract new customers, our business may be harmed.

We depend on market acceptance of third-party semiconductor intellectual property.

The semiconductor intellectual property (SIP) industry is a relatively small and emerging industry. Our future growth will depend on the level of market acceptance of our third-party licensable intellectual property model, the variety of intellectual property offerings available on the market, and a shift in customer preference away from in-house development of proprietary signal processing IP towards licensing open signal processing IP cores and platforms. Furthermore, the third-party licensable intellectual property model is highly dependent on the market adoption of new services and products, such as low cost smartphones in emerging markets, LTE-based smartphones, mobile broadband, small cell base stations and the increased use of advanced audio, voice, computational photography and embedded vision in mobile, automotive and consumer products, as well as in IoT and connectivity applications in general in which we participate. Such market adoption is important because the increased cost associated with ownership and maintenance of the more complex architectures needed for the advanced services and products may motivate companies to license third-party intellectual property rather than design them in-house.

The trends that would enable our growth are largely beyond our control. Semiconductor customers also may choose to adopt a multi-chip, off-the-shelf chip solution versus IP licensing or using highly-integrated chipsets that embed our technologies. If the above referenced market shifts do not materialize or third-party SIP does not achieve market acceptance, our business, results of operations and financial condition could be materially harmed.

Because we have significant international operations, we may be subject to political, economic and other conditions relating to our international operations that could increase our operating expenses and disrupt our revenues and business.

Approximately 77% of our total revenues for the first nine months of 2022, were derived from customers located outside of the United States, and approximately 78% of our total revenues for 2021, 79% for 2020 and 81% for 2019 were derived from customers located outside of the United States. We expect that international customers will continue to account for a significant portion of our revenues for the foreseeable future. As a result, the occurrence of any negative international political, economic or geographic events could result in significant revenue shortfalls. These shortfalls could cause our business, financial condition and results of operations to be harmed. Some of the risks of doing business internationally include:

- unexpected changes in regulatory requirements;
- fluctuations in the exchange rate for the U.S. dollar;
- imposition of tariffs and other barriers and restrictions, including trade tensions such as U.S.-China trade tensions;
- potential negative international community’s reaction to the U.S. Tax Cuts and Jobs Act;
- burdens of complying with a variety of foreign laws, treaties and technical standards;
- uncertainty of laws and enforcement in certain countries relating to the protection of intellectual property;
- multiple and possibly overlapping tax structures and potentially adverse tax consequences;
- political and economic instability, including terrorist attacks and protectionist polices; and
- changes in diplomatic and trade relationships.

Revenues from customers located in the Asia Pacific region, including China, account for a substantial portion of our total revenues. We expect that revenue from international sales generally, and sales to the Asia Pacific region specifically, will continue to be a material part of our total revenues. Therefore, any financial crisis, trade restrictions or disputes or other major event causing business disruption in international jurisdictions generally, and in specific countries in the Asia Pacific region in particular, could negatively affect our future revenues and results of operations. For example, in October 2022, the U.S. Department of Commerce’s Bureau of Industry and Security imposed broad restrictions on the transfer to China of certain advanced semiconductors and supercomputing items, software and technology subject to U.S. export controls, as well as restrictions on U.S. persons’ activities in support of the transfer of certain items not subject to U.S. export controls. We are assessing the potential impact of these restrictions on our operations, and these restrictions are in addition to existing license requirements and company-specific designations affecting trade in the Asia Pacific region. Actions of any nature, including future new trade controls, with respect to such customers may reduce our revenues from them and adversely affect our business and financial results.

New tariffs, trade measures and other geopolitical risks and instability could adversely affect our consolidated results of operations, financial position and cash flows.

Tensions between the U.S. and China have been escalating since 2018 and are not fully resolved yet, and a number of factors may exacerbate these tensions in the future. In addition, the recent movement of Russian military units into provinces in Eastern Ukraine has resulted in increased sanctions against Russia, and could also increase China/Taiwan political tensions and U.S./China trade and other relations. Trade tensions between the U.S. and China and other geopolitical instabilities have resulted, and could in the future result, in significant tariff increases, sanctions against specified entities, and the broadening of restrictions and license requirements for specified uses of products. For example, the ongoing geopolitical and economic uncertainty between the U.S. and China, the unknown impact of current and future U.S. and Chinese trade regulations and other geopolitical risks with respect to China and Taiwan, may cause disruptions in the semiconductor industry and its supply chain, decreased demand from customers for the ultimate products using our IP solutions, or other disruptions which may, directly or indirectly, materially harm our business, financial condition and results of operations. In addition, critical metals and materials used in semiconductors, such as Palladium, are sourced in the Russia, and sanctions against Russia could impact the semiconductor supply chain. In addition, while tariffs and other retaliatory trade measures imposed by other countries on U.S. goods have not yet had a significant impact on our business or results of operations, our revenues are increasingly originated in China and the broader APAC region, and we cannot predict further developments. Thus, existing or future tariffs could have a material adverse effect on our consolidated results of operations, financial position and cash flows. Furthermore, further changes in U.S. trade policy could trigger retaliatory actions by affected countries, which could impose restrictions on our ability to do business in or with affected countries or prohibit, reduce or discourage purchases of our products by foreign customers and higher prices for our products in foreign markets. For example, there are 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. Changes in, and responses to, U.S. trade policy could reduce the competitiveness of our products and cause our sales and revenues to drop, which could materially and adversely impact our business and results of operations.

We depend on a limited number of key personnel who would be difficult to replace.

Our success depends to a significant extent upon certain of our key employees and senior management, the loss of which could materially harm our business. Competition for skilled employees in our field is intense, and in the current environment where many employees have become accustomed to remote work environments and frequent job changes, integration of employees into our company culture and retention of employees is becoming increasingly difficult. We cannot assure you that in the future we will be successful in attracting and retaining the required personnel.

The sales cycle for our IP and NRE solutions is lengthy, and even approved projects may have structured payment terms, which makes forecasting of our customer orders and revenues difficult.

The sales cycle for our IP solutions and NRE services is lengthy, often lasting three to nine months. Our customers generally conduct significant technical evaluations, including customer trials, of our technology as well as competing technologies prior to making a purchasing decision. Purchasing decisions also may be delayed because of a customer’s internal budget approval process or from the involvement of U.S. government agencies for project and budgetary approvals. In addition, given the current market conditions, we have less ability to predict the timing of our customers’ purchasing cycle and potential unexpected delays in such a cycle. Because of the lengthy sales cycle and potential delays, our dependence on a limited number of customers to generate a significant amount of revenues for a particular period and the size of customer orders, if orders forecasted for a specific customer for a particular period do not occur in that period, our revenues and operating results for that particular quarter could suffer. Furthermore, even approved projects may be subject to tranche or milestone-based payment structures, rather than upfront payments, which may cause delays in our performance of the relevant work and revenue recognition. Moreover, a portion of our expenses related to an anticipated order is fixed and difficult to reduce or change, which may further impact our operating results for a particular period.

Because our IP solutions and NRE services are complex, the detection of errors in our products may be delayed, and if we deliver products with defects, our credibility will be harmed, the sales and market acceptance of our products may decrease and product liability claims may be made against us.

Our IP solutions and NRE services are complex and may contain errors, defects and bugs when introduced. If we deliver products with errors, defects or bugs, our credibility and the market acceptance and sales of our products could be significantly harmed. Furthermore, the nature of our products may also delay the detection of any such error or defect. If our products contain errors, defects and bugs, then we may be required to expend significant capital and resources to alleviate these problems. This could result in the diversion of technical and other resources from our other development efforts. Any actual or perceived problems or delays may also adversely affect our ability to attract or retain customers. Furthermore, the existence of any defects, errors or failure in our products could lead to product liability claims or lawsuits against us or against our customers. A successful product liability claim could result in substantial cost and divert management’s attention and resources, which would have a negative impact on our financial condition and results of operations.

Intrinsix’s business relies heavily on contracts with U.S. government prime contractors, which exposes us to business volatility and risks, including government budgeting cycles and appropriations, potential early termination of contracts, procurement regulations, governmental policy shifts, security requirements, audits, investigations, sanctions and penalties.

Historically, Intrinsix has derived a significant portion of its revenues as a subcontractor to U.S. government prime contractors and has had some contracts directly with the U.S. government. U.S. federal government agencies, including the Department of Defense (DoD), are subject to budgetary constraints, and our continued performance under our contracts with these agencies and their prime contractors, or award of additional contracts from these agencies or their prime contractors, could be jeopardized by spending reductions or budget cutbacks at these agencies. The funding of U.S. government programs is uncertain and dependent on continued congressional appropriations and administrative allotment of funds based on an annual budgeting process, which is often responsive to myriad factors, including changes in political or public support for security and defense programs, uncertainties associated with the current global threat environment and other geo-political matters, and adoption of new laws or regulations relating to government contracting or changes to existing laws or regulations. These and other factors could cause governmental agencies to reduce their engagements for Intrinsix products and services under existing contracts, to exercise their rights to terminate contracts at-will or to abstain from renewing contracts, any of which would cause our revenue to decline and could otherwise harm our business, financial condition and results of operations. Given its acquisition by CEVA, Inc., Intrinsix is no longer eligible for certain types of direct government contracts set aside for qualifying small businesses, which also could potentially reduce revenue from government contracts.

In addition, changes in federal law, government procurement policy, priorities, regulations, technology initiatives and/or requirements may also negatively impact our potential for growth in the aerospace and defense space. New laws, regulations or procurement requirements or changes to current ones (including, for example, regulations related to cybersecurity, supply chain integrity, privacy, information protection, and cost accounting) can significantly increase our costs and risks and reduce our profitability.

As a company performing government contracts and subcontracts, we are also subject to additional regulations and compliance obligations, including related to accounting and billing, contract administration, government property, ethics and conflicts of interest, intellectual property, national security, and socioeconomic requirements. As a government contractor and subcontractor, we are and may become subject to audits, investigations, claims, disputes, enforcement actions. These matters could divert financial and management resources and result in administrative, civil or criminal litigation, arbitration or other legal proceedings and across a broad array of matters, and could in administrative, civil or criminal fines, penalties or other sanctions, non-monetary relief or actions such as suspension or debarment from government contracts or suspension of export/import privileges, and otherwise harm our business and our ability to obtain and retain government contract-related awards. An investigation, claim, dispute, enforcement action or litigation, even if unsubstantiated or fully indemnified or insured, could also negatively impact our reputation, thereby making it substantially more difficult to compete successfully for business, obtain and retain awards or obtain adequate insurance in the future, and could have a material adverse effect on our business, financial condition and results of operations.

Our success will depend on our ability to successfully manage our geographically dispersed operations.

Most of our research and development staff is located in Israel. We also have research and development teams in France, Ireland, the United Kingdom and United States (following our acquisitions of Intrinsix in May 2021 and the Hillcrest Labs business from InterDigital in July 2019) and recently we have opened a design center in Serbia. Accordingly, our ability to compete successfully will depend in part on the ability of a limited number of key executives located in geographically dispersed offices to manage our research and development staff and integrate them into our operations to effectively address the needs of our customers and respond to changes in our markets. If we are unable to effectively manage and integrate our remote operations, our business may be materially harmed.

Our operations in Israel may be adversely affected by instability in the Middle East region.

One of our principal research and development facilities is located in Israel, and most of our executive officers and some of our directors are residents of Israel. Although substantially all of our sales currently are made to customers outside Israel, we are nonetheless directly influenced by the political, economic and military conditions affecting Israel. Any major hostilities involving Israel could significantly harm our business, operating results and financial condition.

In addition, certain of our employees are currently obligated to perform annual reserve duty in the Israel Defense Forces and are subject to being called to active military duty at any time. Although we have operated effectively under these requirements since our inception, we cannot predict the effect of these obligations on the company in the future. Our operations could be disrupted by the absence, for a significant period, of one or more of our key employees due to military service.

Terrorist attacks, acts of war or military actions and/or other civil unrest may adversely affect the territories in which we operate, and our business, financial condition and operating results.

Terrorist attacks and attempted terrorist attacks, military responses to terrorist attacks, other military actions, including illegal invasion of sovereign countries, or governmental action in response to or in anticipation of a terrorist attack or civil unrest or foreign invasion, may adversely affect prevailing economic conditions, resulting in work stoppages, reduced consumer spending or reduced demand for end products that incorporate our technologies. These developments subject our worldwide operations to increased risks and, depending on their magnitude, could reduce net sales and therefore could have a material adverse effect on our business, financial condition and operating results.

Our research and development expenses may increase if the grants we currently receive from the Israeli government are reduced or withheld.

We currently receive research grants mainly from programs of the IIA. We recorded an aggregate of $1,278,000 and $4,022,000 in the third quarter and first nine months of 2022, respectively, and we recorded an aggregate of $3,843,000, $3,042,000 and $5,843,000 in 2021, 2020 and 2019, respectively. To be eligible for these grants, we must meet certain development conditions and comply with periodic reporting obligations. Although we have met such conditions in the past, should we fail to meet such conditions in the future our research grants may be repayable, reduced or withheld. The repayment or reduction of such research grants may increase our research and development expenses which in turn may reduce our operating income. Also, the timing of such payments from the IIA may vary from year to year and quarter to quarter, and we have no control on the timing of such payment.

The nature of our business requires the application of complex revenue recognition rules. Significant changes in U.S. generally accepted accounting principles, or GAAP, including the adoption of the new revenue recognition rules, could materially affect our financial position and results of operations.

We prepare our financial statements in accordance with GAAP, which is subject to interpretation or changes by the Financial Accounting Standards Board, or FASB, the SEC, and other various bodies formed to promulgate and interpret appropriate accounting principles. New accounting pronouncements and changes in accounting principles have occurred in the past and are expected to occur in the future, which may have a significant effect on our financial results. For example, pursuant to the new revenue recognition rules, effective as of January 1, 2018, an entity recognizes sales and usage-based royalties as revenue only when the later of the following events occurs: (1) the subsequent sale or usage occurs or (2) the performance obligation to which some or all of the sales-based or usage-based royalty allocated has been satisfied (or partially satisfied). Recognizing royalty revenue on a lag time basis is not permitted. As a result, the royalties we generate from customers is based on royalty of units shipped during the quarter as estimated by our customers, not a quarter in arrears that we previously report. Adoption of this standard and any difficulties in implementation of changes in accounting principles, including uncertainty associated with royalty revenues for the quarter based on estimates provided by our customer, could cause us to fail to meet our financial reporting obligations, which could result in regulatory discipline and harm investors' confidence in us.

The Israeli tax benefits that we currently receive and the government programs in which we participate require us to meet certain conditions and may be terminated or reduced in the future, which could increase our tax expenses.

We enjoy certain tax benefits in Israel, particularly as a result of the "Approved Enterprise" and the "Benefited Enterprise" status of our facilities and programs through 2019, and the "Technological Preferred Enterprise" status of our facilities and programs since 2020. To maintain our eligibility for these tax benefits, we must continue to meet certain conditions, relating principally to adherence to the investment program filed with the Investment Center of the Israeli Ministry of Industry and Trade and to periodic reporting obligations. Should we fail to meet such conditions, these benefits would be cancelled and we would be subject to corporate tax in Israel at the standard corporate rate (23% in 2022) and could be required to refund tax benefits already received. Additionally, if we increase our activities outside of Israel, for example, by acquisitions, our increased activities may not be eligible for inclusion in Israeli tax benefit programs. The termination or reduction of certain programs and tax benefits or a requirement to refund tax benefits already received may seriously harm our business, operating results and financial condition.

We may have exposure to additional tax liabilities as a result of our foreign operations.

We are subject to income taxes in the United States and various foreign jurisdictions. In addition to our significant operations in Israel, we have operations in Ireland, France, the United Kingdom, China and Japan. Significant judgment is required in determining our worldwide provision for income taxes and other tax liabilities. In the ordinary course of a global business, there are many intercompany transactions and calculations where the ultimate tax determination is uncertain. We are regularly under audit by tax authorities. Our intercompany transfer pricing may be reviewed by the U.S. Internal Revenue Service and by foreign tax jurisdictions. Although we believe that our tax estimates are reasonable, due to the complexity of our corporate structure, the multiple intercompany transactions and the various tax regimes, we cannot assure you that a tax audit or tax dispute to which we may be subject will result in a favorable outcome for us. If taxing authorities do not accept our tax positions and impose higher tax rates on our foreign operations, our overall tax expenses could increase.

Our failure to maintain certain research tax benefits applicable to French technology companies may adversely affect the results of operations of our RivieraWaves operations.

Pursuant to our acquisition of the RivieraWaves operations, we will benefit from certain research tax credits applicable to French technology companies, including, for example, the Crédit Impôt Recherche ("CIR"). The CIR is a French tax credit aimed at stimulating research activities. The CIR can be offset against French corporate income tax due and the portion in excess (if any) may be refunded every three years. The French Parliament can decide to eliminate, or reduce the scope or the rate of, the CIR benefit, at any time or challenge our eligibility or calculations for such tax credits, all of which may have an adverse impact on our results of operations and future cash flows.

We are exposed to fluctuations in currency exchange rates.

A significant portion of our business is conducted outside the United States. Although most of our revenues are transacted in U.S. dollars, we may be exposed to currency exchange fluctuations in the future as business practices evolve and we are forced to transact business in local currencies. Moreover, the majority of our expenses are denominated in foreign currencies, mainly New Israeli Shekel (NIS) and the EURO, which subjects us to the risks of foreign currency fluctuations. Our primary expenses paid in currencies other than the U.S. dollar are employee salaries. Increases in the volatility of the exchange rates of currencies other than the U.S. dollar versus the U.S. dollar could have an adverse effect on the expenses and liabilities that we incur in currencies other than the U.S. dollar when remeasured into U.S. dollars for financial reporting purposes. We have instituted a foreign cash flow hedging program to minimize the effects of currency fluctuations. However, hedging transactions may not successfully mitigate losses caused by currency fluctuations, and our hedging positions may be partial or may not exist at all in the future. We also review our monthly expected non-U.S. dollar denominated expenditure and look to hold equivalent non-U.S. dollar cash balances to mitigate currency fluctuations. However, in some cases, we expect to continue to experience the effect of exchange rate currency fluctuations on an annual and quarterly basis. For example, our EURO cash balances increase significantly on a quarterly basis beyond our EURO liabilities from the CIR, which is generally refunded every three years. This has resulted in an increase in foreign exchange loss during 2021 as compared to 2020 due to the devaluation of our Euro cash balances as the U.S. dollar strengthened significantly during this period as compared to the Euro.

We are exposed to the credit risk of our customers, which could result in material losses.

As we diversify and expand our addressable market, we will enter into IP licensing arrangements with first time customers on which we do not have full visibility of their creditworthiness. Furthermore, we have increased business activities in the Asia Pacific region. As a result, our future credit risk exposure may increase. Although we monitor and attempt to mitigate credit risks, there can be no assurance that our efforts will be effective. Although any losses to date relating to the credit exposure of our customers have not been material, future losses, if incurred, could harm our business and have a material adverse effect on our operating results and financial condition.

Our product development efforts are time-consuming and expensive and may not generate an acceptable return, if any.

Our product development efforts require us to incur substantial research and development expense. Our research and development expenses were approximately $58.3 million and $53.8 million for the first nine months of 2022 and 2021, respectively, and approximately $72.5 million, $62.0 million and $52.8 million for 2021, 2020 and 2019, respectively. We may not be able to achieve an acceptable return, if any, on our research and development efforts.

The development of our products is highly complex. We occasionally have experienced delays in completing the development and introduction of new products and product enhancements, and we could experience delays in the future. Unanticipated problems in developing products could also divert substantial engineering resources, which may impair our ability to develop new products and enhancements and could substantially increase our costs. Furthermore, we may expend significant amounts on research and development programs that may not ultimately result in commercially successful products. Our research and development expense levels have increased steadily in the past few years. As a result of these and other factors, we may be unable to develop and introduce new products successfully and in a cost-effective and timely manner, and any new products we develop and offer may never achieve market acceptance. Any failure to successfully develop future products would have a material adverse effect on our business, financial condition and results of operations.

If we are unable to meet the changing needs of our end-users or address evolving market demands, our business may be harmed.

The markets for signal processing IPs are characterized by rapidly changing technology, emerging markets and new and developing end-user needs, and requiring significant expenditure for research and development. We cannot assure you that we will be able to introduce systems and solutions that reflect prevailing industry standards, on a timely basis, meet the specific technical requirements of our end-users or avoid significant losses due to rapid decreases in market prices of our products, and our failure to do so may seriously harm our business. Further, we cannot assure you that the markets we chose to invest in will continue to be significant sources of revenue in the future. For example, while we have acquired Intrinsix in part to enter the aerospace and defense market, we could fail to realize the benefits of the acquisition of the U.S. government reduces spending on defense research.

We may face difficulties in integrating Intrinsix into our business and offering turnkey IP solutions and co-creation projects.

We completed our acquisition of Intrinsix in the second quarter of 2021.Our Intrinsix chip design business unit enables us to offer our customers co-creation SoC design services that take advantage of our IP portfolio, Intrinsix's designed to deliver (D2D) and security IP and Intrinsix's design capabilities for digital, mix signal and RF. We believe this co-creation business proposition strengthens our relationships with customers, generates recurrent royalties and more. However, we may not be able effectively manage the integration of acquired personnel, operations, and technologies successfully, or effectively manage the combined operations following the acquisition, which may prevent us from achieving anticipated benefits from the acquisition. In addition, our efforts to with respect to turnkey IP services and solutions will take longer than normal sales cycles as we move up the management levels of our customers and sell, generally, a more complex product and service combination. Succeeding in these efforts will require additional investment, training and changes that will introduce additional risk, cost and may introduce the possibility to customers that we are now competitors. If we do not succeed in these efforts, we will not reap the anticipated benefits of our acquisition of Intrinsix, which could have a material adverse effect on our business, financial condition and results of operations.

We may seek to expand our business in ways that could result in diversion of resources and extra expenses.

We may in the future pursue acquisitions of businesses, products and technologies, establish joint venture arrangements, make minority equity investments or enhance our existing CEVAnet partner eco-system to expand our business. We are unable to predict whether or when any prospective acquisition, equity investment or joint venture will be completed. The process of negotiating potential acquisitions, joint ventures or equity investments, as well as the integration of acquired or jointly developed businesses, technologies or products may be prolonged due to unforeseen difficulties and may require a disproportionate amount of our resources and management's attention. We cannot assure you that we will be able to successfully identify suitable acquisition or investment candidates, complete acquisitions or investments, or integrate acquired businesses or joint ventures with our operations. If we were to make any acquisition or investment or enter into a joint venture, we may not receive the intended benefits of the acquisition, investment or joint venture or such an acquisition, investment or joint venture may not achieve comparable levels of revenues, profitability or productivity as our existing business or otherwise perform as expected. The expansion of our CEVAnet partner eco-system also may not achieve the anticipated benefits. The occurrence of any of these events could harm our business, financial condition or results of operations. Future acquisitions, investments or joint ventures may require substantial capital resources, which may require us to seek additional debt or equity financing.

Future acquisitions, joint ventures or minority equity investments by us could result in the following, any of which could seriously harm our results of operations or the price of our stock:

- issuance of equity securities that would dilute our current stockholders' percentages of ownership;
- large one-time write-offs or equity investment impairment write-offs;
- incurrence of debt and contingent liabilities;
- difficulties in the assimilation and integration of operations, personnel, technologies, products and information systems of the acquired companies;
- inability to realize cost efficiencies or synergies, thereby incurring higher operating expenditures as a result of the acquisition;
- diversion of management's attention from other business concerns;
- contractual disputes;
- risks of entering geographic and business markets in which we have no or only limited prior experience; and
- potential loss of key employees of acquired organizations.

We may not be able to adequately protect our intellectual property.

Our success and ability to compete depend in large part upon the protection of our proprietary technologies. We rely on a combination of patent, copyright, trademark, trade secret, mask work and other intellectual property rights, confidentiality procedures and IP licensing arrangements to establish and protect our proprietary rights. These agreements and measures may not be sufficient to protect our technology from third-party infringement or protect us from the claims of others. As a result, we face risks associated with our patent position, including the potential need to engage in significant legal proceedings to enforce our patents, the possibility that the validity or enforceability of our patents may be denied, the possibility that third parties will be able to compete against us without infringing our patents and the possibility that our products may infringe patent rights of third parties.

Our trade names or trademarks may be registered or utilized by third parties in countries other than those in which we have registered them, impairing our ability to enter and compete in those markets. If we were forced to change any of our brand names, we could lose a significant amount of our brand identity.

Our business will suffer if we are sued for infringement of the intellectual property rights of third parties or if we cannot obtain licenses to these rights on commercially acceptable terms.

We are subject to the risk of adverse claims and litigation alleging infringement of the intellectual property rights of others. There are a large number of patents held by others, including our competitors, pertaining to the broad areas in which we are active. We have not, and cannot reasonably, investigate all such patents. From time to time, we have become aware of patents in our technology areas and have sought legal counsel regarding the validity of such patents and their impact on how we operate our business, and we will continue to seek such counsel when appropriate in the future. In addition, patent infringement claims are increasingly being asserted by patent holding companies (so-called patent "trolls"), which do not use technology and whose sole business is to enforce patents against companies, such as us, for monetary gain. Because such patent holding companies do not provide services or use technology, the assertion of our own patents by way of counter-claim may be ineffective. Infringement claims may require us to enter into license arrangements or result in protracted and costly litigation, regardless of the merits of these claims. Any necessary licenses may not be available or, if available, may not be obtainable on commercially reasonable terms. If we cannot obtain necessary licenses on commercially reasonable terms, we may be forced to stop licensing our technology, and our business would be seriously harmed.

The future growth of our business depends in part on our ability to license to system OEMs and small-to-medium-sized semiconductor companies directly and to expand our sales geographically.

Historically, a substantial portion of our licensing revenues has been derived in any given period from a relatively small number of licensees. Because of the substantial license fees we charge, our customers tend to be large semiconductor companies or vertically integrated system OEMs. Part of our current growth strategy is to broaden the adoption of our products by small and mid-size companies by offering different versions of our products targeted at these companies. If we are unable to develop and market effectively our intellectual property through these models, our revenues will continue to be dependent on a smaller number of licensees and a less geographically dispersed pattern of licensees, which could materially harm our business and results of operations.

Our operating results are affected by the highly cyclical nature of and general economic conditions in the semiconductor industry, including significant supply chain disruption.

We operate within the semiconductor industry, which experiences significant fluctuations in sales and profitability. Downturns in the semiconductor industry are characterized by diminished product demand, excess customer inventories, accelerated erosion of prices and excess production capacity. Various market data suggests that the semiconductor industry may be facing such a negative cycle presently, especially in the global handset market. The semiconductor industry has also faced significant global supply chain issues as a result of the impact of the COVID-19 pandemic (both on demand for devices to enable wireless connectivity and remote environments and on supply from the related imposition of government restrictions on staffing and facility operations) as well as other trends such as the increasing demand for semiconductors in automobiles, which together have resulted in the inability of fabrication plants to produce sufficient quantities of chips to meet demand, supply chain shortages and other disruptions. Numerous factors, such as the ongoing pandemic or further trade tensions between the U.S. and China, may prolong or deepen these challenges faced by the industry. Volatility or declines in the semiconductor industry could cause substantial fluctuations or declines in our revenues and results of operations.

If we determine that our goodwill and intangible assets have become impaired, we may incur impairment charges, which would negatively impact our operating results.

Goodwill represents the excess of cost over the fair value of net assets acquired in business combinations. Under accounting principles generally accepted in the United States of America, we assess potential impairment of our goodwill and intangible assets at least annually, as well as on an interim basis to the extent that factors or indicators become apparent that could reduce the fair value of any of our businesses below book value. Impairment may result from significant changes in the manner of use of the acquired asset, negative industry or economic trends and significant underperformance relative to historic or projected operating results. For example, in the third quarter of 2022, we recorded $3.6 million of impairment of intangible assets with respect to Immervision technology acquired in August 2019, as we decided to cease the development of this product line. If we determine that our goodwill and intangible assets have become impaired, we may incur impairment charges, which could negatively impact our operating results.

Cybersecurity threats or other security breaches could compromise sensitive information belonging to us or our customers and could harm our business and our reputation.

We store sensitive data, including intellectual property, proprietary business information and our customer and employee information. Despite our security measures, our information technology and infrastructure may be vulnerable to attacks by hackers or breached due to employee error, malfeasance or other disruptions that could result in unauthorized disclosure or loss of sensitive data. Because the techniques used to obtain unauthorized access to networks, or to sabotage systems, change frequently and generally are not recognized until launched against a target, we may be unable to anticipate these techniques or to implement adequate preventative measures. Furthermore, in the operation of our business we also use third-party vendors that store certain sensitive data. Any security breach of our own or a third-party vendor's systems could cause us to be non-compliant with applicable laws or regulations, subject us to legal claims or proceedings, disrupt our operations, damage our reputation, and cause a loss of confidence in our products and services, any of which could adversely affect our business.

Our corporate tax rate may increase, which could adversely impact our cash flow, financial condition and results of operations.

We have significant operations in Israel, as well operations in the United States, Republic of Ireland and France. A substantial portion of our taxable income historically has been generated in Israel, and starting in 2020, also in France. Although our Israeli and Irish subsidiaries historically, and starting in 2022 our French subsidiary as well, are taxed at rates lower than the U.S. tax rates, the tax rates in these jurisdictions could nevertheless result in a substantial increase as a result of withholding tax expenses with respect to which we are unable to obtain a refund from the relevant tax authorities. If our Israeli, French and Irish subsidiaries were no longer to qualify for these lower tax rates or if the applicable tax laws were rescinded or changed, our operating results could be materially adversely affected. Moreover, if U.S. or other authorities were to change applicable tax laws or successfully challenge the manner in which our subsidiaries' profits are currently recognized, our overall tax expenses could increase, and our business, cash flow, financial condition and results of operations could be materially adversely affected. Also our taxes on the Irish interest income may be double taxed both in Ireland and in the U.S. due to U.S. tax regulations and Irish tax restrictions on net operating losses to offset interest income. In addition, our Israeli interest income also may be taxed both in Israel and the U.S. due to different Controlled Foreign Corporation rules. Last, a mix of our revenues in each of these locations may change the mix of our taxable income, and as a result, our overall tax rate may increase, as we encountered in 2021, specifically due to higher taxes in France, and in the third quarter of 2022, due to our write off of deferred tax assets in Israel.

The anti-takeover provisions in our certificate of incorporation and bylaws could prevent or discourage a third party from acquiring us.

Our certificate of incorporation and bylaws contain provisions that may prevent or discourage a third party from acquiring us, even if the acquisition would be beneficial to our stockholders. Our board of directors also has the authority to fix the rights and preferences of shares of our preferred stock and to issue such shares without a stockholder vote. Our bylaws also place limitations on the authority to call a special meeting of stockholders. We have advance notice procedures for stockholders desiring to nominate candidates for election as directors or to bring matters before an annual meeting of stockholders. In addition, these factors may also adversely affect the market price of our common stock, and the voting and other rights of the holders of our common stock.

Our stock price may be volatile so you may not be able to resell your shares of our common stock at or above the price you paid for them.

Announcements of developments related to our business, announcements by competitors, quarterly fluctuations in our financial results, changes in the general conditions of the highly dynamic industry in which we compete or the national economies in which we do business, and other factors could cause the price of our common stock to fluctuate, perhaps substantially. For example, if we fail to achieve our near term financial guidance, or fail to show overall business growth and expansion, our stock price may significantly decline. In addition, in recent years, the stock market has experienced extreme price fluctuations, which have often been unrelated to the operating performance of affected companies. These factors and fluctuations could have a material adverse effect on the market price of our common stock.

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

The table below sets forth the information with respect to repurchases of our common stock during the three months ended September 30, 2022.

Period	(a) Total Number of Shares Purchased	(b) Average Price Paid per Share	(c) Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	(d) Maximum Number of Shares that May Yet Be Purchased Under the Plans or Programs (1)
Month #1 (July 1, 2022 to July 31, 2022)	__	__	__	361,517
Month #2 (August 1, 2022 to August 31, 2022)	__	__	__	361,517
Month #3 (September 1, 2022 to September 30, 2022)	82,718	$ 28.14	82,718	278,799
TOTAL	82,718	$ 28.14	82,718	278,799(2)

(1) In August 2008, we announced that our board of directors approved a share repurchase program for up to one million shares of common stock which was further extended collectively by an additional 6,400,000 shares in 2010, 2013, 2014, 2018 and 2020.

(2) The number represents the number of shares of our common stock that remain available for repurchase pursuant to our share repurchase program.

Item 3. DEFAULTS UPON SENIOR SECURITIES

Not applicable.

Item 4. MINE SAFETY DISCLOSURES

Not applicable.

Item 5. OTHER INFORMATION

Not applicable.

Item 6. EXHIBITS

Exhibit No.	Description
10.1†	Registrant's Amended and Restated 2011 Stock Plan (incorporated by reference to Exhibit 4.5 to the registrant's Registration Statement on Form S-8 filed August 9, 2022)
31.1	Rule 13a14(a)/15d14(a) Certification of Chief Executive Officer
31.2	Rule 13a14(a)/15d14(a) Certification of Chief Financial Officer
32	Section 1350 Certification of Chief Executive Officer and Chief Financial Officer
101	The following materials from CEVA, Inc.'s Quarterly report on Form 10-Q for the quarter ended September 30, 2022, formatted in iXBRL (Inline eXtensible Business Reporting Language): (i) the Condensed Consolidated Statements of Income (Loss), (ii) the Condensed Consolidated Balance Sheet, (iii) the Condensed Consolidated Statements of Cash Flows, (iv) the Condensed Consolidated Statements of Comprehensive Income (Loss), (v) Condensed Consolidated Statements of Changes in Stockholders' Equity, and (vi) Notes to Condensed Consolidated Financial Statements.
104	Cover Page Interactive Data File (embedded within the Inline XBRL document and included in Exhibit 101).

† Indicates management compensatory plan or arrangement.

SIGNATURES

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

CEVA, INC.

Date: November 9, 2022

By: /s/ GIDEON WERTHEIZER
Gideon Wertheizer
Chief Executive Officer
(principal executive officer)

Date: November 9, 2022

By: /s/ YANIV ARIELI
Yaniv Arieli
Chief Financial Officer
(principal financial officer and principal accounting officer)

EXHIBIT 31.1

CERTIFICATION OF CHIEF EXECUTIVE OFFICER PURSUANT TO

SECTION 302(a) OF THE SARBANES-OXLEY ACT OF 2002

I, Gideon Wertheizer, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of CEVA, Inc. (the “Company”);

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

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

4. The registrant’s other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a15(e) and 15d15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a15(f) and 15d15(f)) for the registrant and have:

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

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

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

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

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

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

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

Date: November 9, 2022

/s/ GIDEON WERTHEIZER

Gideon Wertheizer

Chief Executive Officer

EXHIBIT 31.2

CERTIFICATION OF CHIEF FINANCIAL OFFICER PURSUANT TO

SECTION 302(a) OF THE SARBANES-OXLEY ACT OF 2002

I, Yaniv Arieli, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of CEVA, Inc. (the “Company”);

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

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

4. The registrant’s other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a15(e) and 15d15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a15(f) and 15d15(f)) for the registrant and have:

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

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

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

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

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

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

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

Date: November 9, 2022

/s/ YANIV ARIELI

Yaniv Arieli

Chief Financial Officer

Exhibit 32

CERTIFICATION

PURSUANT TO 18 U.S.C. SECTION 1350,

AS ADOPTED PURSUANT TO

SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the quarterly report on Form 10-Q of CEVA, Inc. (the “Company”) for the quarter ended September 30, 2022, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), the undersigned, Gideon Wertheizer, Chief Executive Officer of the Company, and Yaniv Arieli, Chief Financial Officer of the Company, each hereby certifies, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

This certification will not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, or otherwise subject to the liability of that section. This certification will not be deemed to be incorporated by reference into any filing under the Securities Act of 1933 or the Securities Exchange Act of 1934, except to the extent that the Company specifically incorporates it by reference.

Date: November 9, 2022

/s/ GIDEON WERTHEIZER
Gideon Wertheizer
Chief Executive Officer

/s/ YANIV ARIELI
Yaniv Arieli
Chief Financial Officer