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 March 31, 2022

OR

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

For the transition period from to
Commission File Number: 000-22339

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

Delaware	**94-3112828**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
4453 North First Street **Suite 100** **San Jose , California**	**95134**
(Address of principal executive offices)	(ZIP Code)

Registrant's telephone number, including area code:
(408) 462-8000

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

Title of Each Class	Trading Symbol	Name of Each Exchange on Which Registered
Common Stock, $.001 Par Value	RMBS	The NASDAQ Stock Market LLC (The NASDAQ Global Select Market)

Securities registered pursuant to Section 12(g) of the Act:
None

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
Emerging growth company	☐		

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

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

The number of shares outstanding of the registrant’s Common Stock, par value $.001 per share, was 110,235,608 as of March 31, 2022.

RAMBUS INC.
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NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q ("Quarterly Report") contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. These forward-looking statements include, without limitation, predictions regarding the following aspects of our future:

- Success in the markets of our products and services or our customers' products;
- Sources of competition;
- Research and development costs and improvements in technology;
- Sources, amounts and concentration of revenue, including royalties;
- Success in signing and renewing license agreements;
- Terms of our licenses and amounts owed under license agreements;
- Technology product development;
- Dispositions, acquisitions, mergers or strategic transactions and our related integration efforts;
- Impairment of goodwill and long-lived assets;
- Pricing policies of our customers;
- Changes in our strategy and business model, including the expansion of our portfolio of inventions, products, software, services and solutions to address additional markets in memory, chip and security;
- Deterioration of financial health of commercial counterparties and their ability to meet their obligations to us;
- Effects of security breaches or failures in our or our customers' products and services on our business;
- Engineering, sales and general and administration expenses;
- Contract revenue;
- Operating results;
- Continued product revenue growth;
- International licenses, operations and expansion;
- Effects of changes in the economy and credit market on our industry and business;
- Impact of the ongoing COVID-19 pandemic, including its most recent variants, on our business operations and financial results;
- Ability to identify, attract, motivate and retain qualified personnel, especially in light of a hyper-competitive compensation environment;
- Effects of government regulations on our industry and business;
- Manufacturing, shipping and supply partners, supply chain availability and/or sale and distribution channels;
- Growth in our business;
- Methods, estimates and judgments in accounting policies;
- Adoption of new accounting pronouncements;
- Effective tax rates, including as a result of recent U.S. tax legislation;
- Restructurings and plans of termination;
- Realization of deferred tax assets/release of deferred tax valuation allowance;
- Trading price of our common stock;
- Internal control environment;
- The level and terms of our outstanding debt and the repayment or financing of such debt;
- Protection of intellectual property ("IP");
- Any changes in laws, agency actions and judicial rulings that may impact the ability to enforce our IP rights;
- Indemnification and technical support obligations;
- Equity repurchase programs;

- Issuances of debt or equity securities, which could involve restrictive covenants or be dilutive to our existing stockholders;
- Effects of fluctuations in interest rates and currency exchange rates;
- Effects of a rising rate of inflation;
- Management of supply chain risks; and
- Outcome and effect of potential future IP litigation and other significant litigation.

You can identify these and other forward-looking statements by the use of words such as “may,” “future,” “shall,” “should,” “expects,” “plans,” “anticipates,” “believes,” “estimates,” “predicts,” “intends,” “potential,” “continue,” “projecting” or the negative of such terms, or other comparable terminology. Forward-looking statements also include the assumptions underlying or relating to any of the foregoing statements.

Actual results could differ materially from those anticipated in these forward-looking statements as a result of various factors, including those set forth under Part II, Item 1A, “Risk Factors.” All forward-looking statements included in this document are based on our assessment of information available to us at this time. We assume no obligation to update any forward-looking statements.

PART I—FINANCIAL INFORMATION

Item 1. Financial Statements

RAMBUS INC.
CONDENSED CONSOLIDATED BALANCE SHEETS
(Unaudited)

(In thousands, except shares and par value)	March 31, 2022	December 31, 2021
ASSETS		
Current assets:		
Cash and cash equivalents	$ 179,129	$ 107,891
Marketable securities	164,562	377,718
Accounts receivable	51,232	44,065
Unbilled receivables	131,748	135,608
Inventories	6,164	8,482
Prepaids and other current assets	12,277	10,600
Total current assets	545,112	684,364
Intangible assets, net	57,634	58,420
Goodwill	279,793	278,810
Property, plant and equipment, net	54,965	56,035
Operating lease right-of-use assets	22,714	23,712
Deferred tax assets	3,986	4,047
Unbilled receivables	93,367	123,018
Other assets	3,304	4,240
Total assets	$ 1,060,875	$ 1,232,646
LIABILITIES & STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 15,540	$ 11,279
Accrued salaries and benefits	17,402	20,945
Convertible notes	73,860	163,687
Deferred revenue	20,624	24,755
Income taxes payable	21,015	20,607
Operating lease liabilities	5,854	5,992
Other current liabilities	14,107	20,002
Total current liabilities	168,402	267,267
Long-term operating lease liabilities	27,939	29,099
Long-term income taxes payable	16,681	21,424
Deferred tax liabilities	24,572	23,985
Other long-term liabilities	30,155	28,475
Total liabilities	267,749	370,250
Commitments and contingencies (Notes 9, 11 and 15)		
Stockholders' equity:		
Convertible preferred stock, $.001 par value:		
Authorized: 5,000,000 shares; Issued and outstanding: no shares at March 31, 2022 and December 31, 2021	—	—
Common stock, $.001 par value:		
Authorized: 500,000,000 shares; Issued and outstanding: 110,235,608 shares at March 31, 2022 and 109,292,235 shares at December 31, 2021	110	109
Additional paid-in capital	1,272,353	1,298,966
Accumulated deficit	(475,024)	(435,227)
Accumulated other comprehensive loss	(4,313)	(1,452)
Total stockholders' equity	793,126	862,396
Total liabilities and stockholders' equity	$ 1,060,875	$ 1,232,646

Refer to Notes to Unaudited Condensed Consolidated Financial Statements

RAMBUS INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(Unaudited)

(In thousands, except per share amounts)	Three Months Ended March 31, 2022	Three Months Ended March 31, 2021
Revenue:		
Product revenue	$ 47,969	$ 30,781
Royalties	30,464	28,859
Contract and other revenue	20,617	10,742
Total revenue	99,050	70,382
Cost of revenue:		
Cost of product revenue	18,397	11,410
Cost of contract and other revenue	624	1,556
Amortization of acquired intangible assets	3,378	4,386
Total cost of revenue	22,399	17,352
Gross profit	76,651	53,030
Operating expenses:		
Research and development	39,815	32,354
Sales, general and administrative	26,906	23,562
Amortization of acquired intangible assets	409	229
Restructuring charges	—	368
Change in fair value of earn-out liability	1,200	—
Total operating expenses	68,330	56,513
Operating income (loss)	8,321	(3,483)
Interest income and other income (expense), net	1,360	2,981
Loss on extinguishment of debt	(66,497)	—
Loss on fair value adjustment of derivatives, net	(8,283)	—
Interest expense	(605)	(2,614)
Interest and other income (expense), net	(74,025)	367
Loss before income taxes	(65,704)	(3,116)
Provision for (benefit from) income taxes	514	(503)
Net loss	$ (66,218)	$ (2,613)
Net loss per share:		
Basic	$ (0.60)	$ (0.02)
Diluted	$ (0.60)	$ (0.02)
Weighted-average shares used in per share calculation:		
Basic	109,889	112,211
Diluted	109,889	112,211

Refer to Notes to Unaudited Condensed Consolidated Financial Statements

RAMBUS INC.
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(Unaudited)

(In thousands)	Three Months Ended March 31, 2022	Three Months Ended March 31, 2021
Net loss	$ (66,218)	$ (2,613)
Other comprehensive loss:		
Foreign currency translation adjustment	(293)	(21)
Unrealized loss on marketable securities, net of tax	(2,568)	(31)
Total comprehensive loss	$ (69,079)	$ (2,665)

Refer to Notes to Unaudited Condensed Consolidated Financial Statements

RAMBUS INC.
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(Unaudited)

	For the Three Months Ended March 31, 2022					
	Common Stock					
(In thousands)	Shares	Amount	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total
Balances at December 31, 2021	109,292	$ 109	$ 1,298,966	$ (435,227)	$ (1,452)	$ 862,396
Net loss	—	—	—	(66,218)	—	(66,218)
Foreign currency translation adjustment	—	—	—	—	(293)	(293)
Unrealized loss on marketable securities, net of tax	—	—	—	—	(2,568)	(2,568)
Issuance of common stock upon exercise of options, equity stock and employee stock purchase plan	943	1	(15,501)	—	—	(15,500)
Stock-based compensation	—	—	7,778	—	—	7,778
Retirement of convertible senior note hedges	—	—	62,011	—	—	62,011
Retirement of warrants	—	—	(46,356)	—	—	(46,356)
Cumulative effect adjustment from adoption of ASU 2020-06	—	—	(34,545)	26,421	—	(8,124)
Balances at March 31, 2022	110,235	$ 110	$ 1,272,353	$ (475,024)	$ (4,313)	$ 793,126

	For the Three Months Ended March 31, 2021					
	Common Stock					
(In thousands)	Shares	Amount	Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total
Balances at December 31, 2020	111,698	$ 112	$ 1,270,426	$ (357,751)	$ (81)	$ 912,706
Net loss	—	—	—	(2,613)	—	(2,613)
Foreign currency translation adjustment	—	—	—	—	(21)	(21)
Unrealized loss on marketable securities, net of tax	—	—	—	—	(31)	(31)
Issuance of common stock upon exercise of options, equity stock and employee stock purchase plan	807	1	(7,137)	—	—	(7,136)
Stock-based compensation	—	—	6,501	—	—	6,501
Balances at March 31, 2021	112,505	$ 113	$ 1,269,790	$ (360,364)	$ (133)	$ 909,406

Refer to Notes to Unaudited Condensed Consolidated Financial Statements

RAMBUS INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)

(In thousands)	Three Months Ended March 31, 2022	Three Months Ended March 31, 2021
Cash flows from operating activities:		
Net loss	$ (66,218)	$ (2,613)
Adjustments to reconcile net loss to net cash provided by operating activities:		
Stock-based compensation	7,778	6,501
Depreciation	7,040	6,198
Amortization of intangible assets	3,786	4,615
Non-cash interest expense and amortization of convertible debt issuance costs	105	1,874
Loss on extinguishment of debt	66,497	—
Loss on fair value adjustment of derivatives, net	8,283	—
Deferred income taxes	648	416
Loss on equity investment	324	200
Realized loss from sale of marketable securities	688	—
Gain on disposal of property, plant and equipment	(6)	—
Change in fair value of earn-out liability	1,200	—
Change in operating assets and liabilities:		
Accounts receivable	(7,167)	(8,034)
Unbilled receivables	33,511	30,767
Prepaids and other current assets	(663)	3,589
Inventories	2,318	4,540
Accounts payable	1,104	297
Accrued salaries and benefits and other liabilities	(6,853)	(7,861)
Income taxes payable	(4,311)	(4,786)
Deferred revenue	(4,152)	3,223
Operating lease liabilities	(1,298)	532
Net cash provided by operating activities	42,614	39,458
Cash flows from investing activities:		
Purchases of property, plant, and equipment	(1,683)	(3,517)
Acquisition of intangible assets	(3,000)	—
Purchases of marketable securities	(39,433)	(159,755)
Maturities of marketable securities	44,781	106,475
Proceeds from sales of marketable securities	204,091	8,332
Net cash provided by (used in) investing activities	204,756	(48,465)
Cash flows from financing activities:		
Proceeds received from issuance of common stock under employee stock plans	321	920
Payments of taxes on restricted stock units	(15,821)	(8,057)
Payments under installment payment arrangements	(3,220)	(3,119)
Repurchase of convertible senior notes	(174,454)	—
Proceeds from retirement of convertible senior note hedges	72,415	—
Payments for retirement of warrants	(55,148)	—
Net cash used in financing activities	(175,907)	(10,256)
Effect of exchange rate changes on cash and cash equivalents	(224)	(144)
Net increase (decrease) in cash, cash equivalents and restricted cash	71,239	(19,407)
Cash, cash equivalents and restricted cash at beginning of period	108,264	129,324
Cash, cash equivalents and restricted cash at end of period	$ 179,503	$ 109,917
Non-cash investing and financing activities:		
Property, plant and equipment received and accrued in accounts payable and other liabilities	$ 14,238	$ 15,210

Reconciliation of the cash, cash equivalents and restricted cash balances as of March 31, 2022 and December 31, 2021:

	March 31, 2022	December 31, 2021
Cash and cash equivalents	$ 179,129	$ 107,891
Restricted cash	374	373
Cash, cash equivalents and restricted cash	$ 179,503	$ 108,264

Refer to Notes to Unaudited Condensed Consolidated Financial Statements

RAMBUS INC.

NOTES TO UNAUDITED CONDENSED CONSOLIDATED FINANCIAL STATEMENTS

1. Basis of Presentation

The accompanying unaudited condensed consolidated financial statements include the accounts of Rambus Inc. (“Rambus” or the “Company”) and its wholly-owned subsidiaries. All intercompany accounts and transactions have been eliminated in the accompanying unaudited condensed consolidated financial statements.

In the opinion of management, the unaudited condensed consolidated financial statements include all adjustments (consisting only of normal recurring items) necessary to state fairly the financial position and results of operations for each interim period presented. Interim results are not necessarily indicative of results for a full year.

The unaudited condensed consolidated financial statements have been prepared in accordance with the rules and regulations of the Securities and Exchange Commission (the “SEC”) applicable to interim financial information. Certain information and Note disclosures included in the financial statements prepared in accordance with generally accepted accounting principles have been omitted in these interim statements pursuant to such SEC rules and regulations. The information included in this Form 10-Q should be read in conjunction with the consolidated financial statements and notes thereto in Form 10-K for the year ended December 31, 2021.

2. Recent Accounting Pronouncements

Recent Accounting Pronouncements Adopted

In August 2020, the Financial Accounting Standards Board (“FASB”) issued ASU No. 2020-06, “Debt—Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging - Contracts in Entity's Own Equity (Subtopic 815-40) (“ASU 2020-06”).” The amendments in this ASU simplify the accounting for certain financial instruments with characteristics of liabilities and equity, including convertible instruments and contracts in an entity’s own equity. Among other changes, the guidance removes the liability and equity separation models for convertible instruments. Instead, entities will account for convertible debt instruments wholly as debt unless convertible instruments contain features that require bifurcation as a derivative or that result in substantial premiums accounted for as paid-in capital. The guidance also requires the application of the if-converted method to calculate the impact of convertible instruments on diluted earnings per share. The guidance is effective for fiscal years beginning after December 15, 2021. The Company adopted this guidance on January 1, 2022 on a modified retrospective basis. Upon adoption, the Company reversed approximately $35.2 million of debt discount related to the Company’s 1.375% Convertible Senior Notes due 2023 (the “2023 Notes”) from additional paid-in capital, reversed approximately $8.3 million representing the unamortized debt discount from liabilities, and recorded the net impact of $26.9 million to accumulated deficit. The Company also removed approximately $0.7 million of debt issuance costs related to the 2023 Notes from additional paid-in capital and recorded approximately $0.5 million to accumulated deficit related to the amortization of debt issuance costs that were historically allocated to equity. The Company expects reported interest expense for its convertible notes to decrease in the future.

Recent Accounting Pronouncements Not Yet Adopted

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.” The amendments in this ASU improve the accounting for acquired revenue contracts with customers in a business combination by addressing diversity in practice and inconsistencies related to recognition of an acquired contract liability, and to payment terms and their effect on subsequent revenue recognized by the acquirer. Among other changes, this ASU requires that an acquirer account for acquired revenue contracts in accordance with Topic 606 as if it had originated the contracts. If the acquirer is unable to assess or rely on how the acquiree applied Topic 606, the acquirer should consider the terms of the acquired contracts as of the contract inception or contract modification date in applying Topic 606 to determine what should be recorded at the acquisition date. The amendments also provide certain practical expedients for acquirers when recognizing and measuring acquired contract assets and contract liabilities from revenue contracts in a business combination. The guidance is effective for fiscal years beginning after December 15, 2022, with early adoption permitted. The Company is currently evaluating the impact that the adoption of this guidance will have on its consolidated financial statements.

3. Revenue Recognition

Contract Balances

The contract assets are primarily related to the Company's fixed fee IP licensing arrangements and rights to consideration for performance obligations delivered but not billed as of March 31, 2022.

The Company's contract balances were as follows:

	As of	
(In thousands)	**March 31, 2022**	**December 31, 2021**
Unbilled receivables	$ 225,115	$ 258,626
Deferred revenue	22,045	26,198

During the three months ended March 31, 2022, the Company recognized $11.7 million of revenue that was included in the contract balances as of December 31, 2021. During the three months ended March 31, 2021, the Company recognized $4.6 million of revenue that was included in the contract balances as of December 31, 2020.

Remaining Performance Obligations

Revenue allocated to remaining performance obligations represents the transaction price allocated to the performance obligations that are unsatisfied, or partially unsatisfied, which includes unearned revenue and amounts that will be invoiced and recognized as revenue in future periods. Contracted but unsatisfied performance obligations were approximately $27.0 million as of March 31, 2022, which the Company primarily expects to recognize over the next 2 years.

4. Earnings (Loss) Per Share

Basic earnings (loss) per share is calculated by dividing the net income (loss) by the weighted-average number of common shares outstanding during the period. Diluted earnings per share is calculated by dividing the earnings by the weighted-average number of common shares and potentially dilutive securities outstanding during the period. Potentially dilutive common shares consist of incremental common shares issuable upon exercise of stock options, employee stock purchases, restricted stock and restricted stock units and shares issuable upon the conversion of convertible notes. The dilutive effect of outstanding shares is reflected in diluted earnings per share by application of the treasury stock method. This method includes consideration of the amounts to be paid by the employees and the amount of unrecognized stock-based compensation related to future services. No potential dilutive common shares are included in the computation of any diluted per share amount when a net loss is reported.

The following table sets forth the computation of basic and diluted net loss per share:

	Three Months Ended March 31,	
(In thousands, except per share amounts)	**2022**	**2021**
Net loss per share:		
Numerator:		
Net loss	$ (66,218)	$ (2,613)
Denominator:		
Weighted-average shares outstanding - basic	109,889	112,211
Effect of potential dilutive common shares	—	—
Weighted-average shares outstanding - diluted	109,889	112,211
Basic net loss per share	$ (0.60)	$ (0.02)
Diluted net loss per share	$ (0.60)	$ (0.02)

For both the three months ended March 31, 2022 and 2021, an additional 3.4 million, respectively, were excluded from the weighted-average dilutive shares because there was a net loss position for the periods. During the three months ended March 31, 2022, the Company's stock price exceeded the 2023 Notes' conversion price of $18.93 per share, therefore approximately 0.8 million shares for the three months ended March 31, 2022, respectively, were included in the weighted-average dilutive shares.

As a result of the Company's adoption of ASU No. 2020-06 on January 1, 2022, the dilutive impact of the 2023 Notes on the calculation of diluted net income (loss) per share is considered using the if-converted method. Furthermore, because the principal amount of the 2023 Notes must be settled in cash, the dilutive impact of applying the if-converted method is limited to the in-the-money portion, if any, of the 2023 Notes. For periods prior to the Company's January 1, 2022 adoption of ASU No. 2020-06, the Company applied the treasury stock method to account for the dilutive impact of the 2023 Notes for diluted net income (loss) per share purposes. Under the if-converted method, the cumulative dilutive effect of the 2023 Notes would be approximately 2.6 million shares. Refer to Note 10, "Convertible Notes," for additional information.

5. Intangible Assets and Goodwill

Goodwill

The following tables present goodwill information for the three months ended March 31, 2022:

(In thousands)	As of December 31, 2021	Adjustment to Goodwill [(1)]	As of March 31, 2022
Total goodwill	$ 278,810	$ 983	$ 279,793

[(1)] During the three months ended March 31, 2022, the Company corrected an immaterial error related to an understatement in other current liabilities that originated from the acquisition of AnalogX in 2021.

	As of March 31, 2022		
(In thousands)	Gross Carrying Amount	Accumulated Impairment Losses	Net Carrying Amount
Total goodwill	$ 301,563	$ (21,770)	$ 279,793

Intangible Assets, Net

The components of the Company's intangible assets as of March 31, 2022 and December 31, 2021 were as follows:

		As of March 31, 2022		
(In thousands)	Useful Life	Gross Carrying Amount [(1)]	Accumulated Amortization [(1)]	Net Carrying Amount
Existing technology	3 to 10 years	$ 295,058	$ (250,892)	$ 44,166
Customer contracts and contractual relationships	0.5 to 10 years	37,793	(35,525)	2,268
Non-compete agreements and trademarks	3 years	300	(300)	—
In-process research and development	Not applicable	11,200	—	11,200
Total intangible assets		$ 344,351	$ (286,717)	$ 57,634

[(1)] During the three months ended March 31, 2022, the Company acquired certain intangible assets for $3.0 million in cash. The assets were classified as existing technology and are being amortized over their expected useful life of five years. During the three months ended March 31, 2022, the amortization for the acquired assets was not material.

		As of December 31, 2021		
(In thousands)	Useful Life	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Existing technology	3 to 10 years	$ 292,058	$ (247,422)	$ 44,636
Customer contracts and contractual relationships	0.5 to 10 years	37,793	(35,209)	2,584
Non-compete agreements and trademarks	3 years	300	(300)	—
In-process research and development ("IPR&D")	Not applicable	11,200	—	11,200
Total intangible assets		$ 341,351	$ (282,931)	$ 58,420

Amortization expense for intangible assets for the three months ended March 31, 2022 and 2021 was $3.8 million and $4.6 million, respectively.

The estimated future amortization of intangible assets as of March 31, 2022 was as follows (in thousands):

Years Ending December 31:	Amount
2022 (remaining nine months)	$ 11,221
2023	14,091
2024	11,780
2025	5,780
2026	3,462
Thereafter	100
Total amortizable purchased intangible assets	46,434
IPR&D	11,200
Total intangible assets	$ 57,634

6. Segments and Major Customers

Operating segments are based upon Rambus' internal organization structure, the manner in which its operations are managed, the criteria used by its Chief Operating Decision Maker ("CODM") to evaluate segment performance and availability of separate financial information regularly reviewed for resource allocation and performance assessment.

The Company has determined its CODM to be the Chief Executive Officer ("CEO"). The CEO reviews financial information presented on a consolidated basis for purposes of managing the business, allocating resources, making operating decisions and assessing financial performance. On this basis, the Company is organized and operates as a single segment within the semiconductor space. As of March 31, 2022, the Company has a single operating and reportable segment.

Accounts receivable from the Company's major customers representing 10% or more of total accounts receivable at March 31, 2022 and December 31, 2021, respectively, was as follows:

	As of	
Customer	March 31, 2022	December 31, 2021
Customer 1	18 %	*
Customer 2	17 %	17 %
Customer 3	14 %	19 %

* Customer accounted for less than 10% of total accounts receivable in the period.

Revenue from the Company's major customers representing 10% or more of total revenue for the three months ended March 31, 2022 and 2021, respectively, was as follows:

	Three Months Ended March 31,	
Customer	2022	2021
Customer A	25 %	23 %
Customer B	14 %	*
Customer C	*	14 %

* Customer accounted for less than 10% of total revenue in the period.

Revenue from customers in the geographic regions based on the location of contracting parties was as follows:

(In thousands)	Three Months Ended March 31, 2022	Three Months Ended March 31, 2021
USA	$ 55,684	$ 46,151
Asia-Other	17,792	3,574
Singapore	14,045	6,338
Taiwan	4,960	8,843
Japan	3,535	4,588
Europe	1,564	446
South Korea	1,465	388
Canada	5	54
Total	$ 99,050	$ 70,382

7. Marketable Securities

Rambus invests its excess cash and cash equivalents primarily in U.S. government-sponsored obligations, commercial paper, corporate notes and bonds, money market funds and municipal notes and bonds that mature within three years.

All cash equivalents and marketable securities are classified as available-for-sale. Total cash, cash equivalents and marketable securities are summarized as follows:

	As of March 31, 2022				
(In thousands, except percentages)	Fair Value	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Weighted Rate of Return
Money market funds	$ 6,058	$ 6,058	$ —	$ —	0.21 %
U.S. Government bonds and notes	63,023	64,547	—	(1,524)	0.37 %
Corporate notes, bonds and commercial paper	111,314	113,421	—	(2,107)	0.33 %
Total cash equivalents and marketable securities	180,395	184,026	—	(3,631)	
Cash	163,296	163,296	—	—	
Total cash, cash equivalents and marketable securities	$ 343,691	$ 347,322	$ —	$ (3,631)	

	As of December 31, 2021				
(In thousands, except percentages)	Fair Value	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Weighted Rate of Return
Money market funds	$ 7,402	$ 7,402	$ —	$ —	0.02 %
U.S. Government bonds and notes	102,812	103,113	—	(301)	0.29 %
Corporate notes, bonds and commercial paper	287,905	288,667	8	(770)	0.22 %
Total cash equivalents and marketable securities	398,119	399,182	8	(1,071)	
Cash	87,490	87,490	—	—	
Total cash, cash equivalents and marketable securities	$ 485,609	$ 486,672	$ 8	$ (1,071)	

Available-for-sale securities are reported at fair value on the balance sheets and classified along with cash as follows:

	As of	
(In thousands)	March 31, 2022	December 31, 2021
Cash equivalents	$ 15,833	$ 20,401
Short-term marketable securities	164,562	377,718
Total cash equivalents and marketable securities	180,395	398,119
Cash	163,296	87,490
Total cash, cash equivalents and marketable securities	$ 343,691	$ 485,609

The Company continues to invest in highly rated and highly liquid debt securities. The Company holds all of its marketable securities as available-for-sale, marks them to market, and regularly reviews its portfolio to ensure adherence to its investment policy and to monitor individual investments for risk analysis, proper valuation, and unrealized losses that may be other than temporary.

The estimated fair value and gross unrealized losses of cash equivalents and marketable securities classified by the length of time that the securities have been in a continuous unrealized loss position at March 31, 2022 and December 31, 2021 are as follows:

	Fair Value		Gross Unrealized Losses	
(In thousands)	**March 31, 2022**	**December 31, 2021**	**March 31, 2022**	**December 31, 2021**
Less than 12 months				
U.S. Government bonds and notes	$ 63,023	$ 82,822	$ (1,524)	$ (301)
Corporate notes, bonds and commercial paper	104,432	255,783	(2,068)	(770)
Total cash equivalents and marketable securities in a continuous unrealized loss position for less than 12 months	167,455	338,605	(3,592)	(1,071)
12 months or greater				
Corporate notes, bonds and commercial paper	1,878	—	(39)	—
Total cash equivalents and marketable securities in a continuous unrealized loss position for 12 months or greater	1,878	—	(39)	—
Total cash equivalents and marketable securities in a continuous unrealized loss position	$ 169,333	$ 338,605	$ (3,631)	$ (1,071)

The gross unrealized losses at March 31, 2022 and December 31, 2021 were not material in relation to the Company's total available-for-sale portfolio. The gross unrealized losses can be primarily attributed to a combination of market conditions as well as the demand for and duration of the U.S. government-sponsored obligations and corporate notes and bonds. The Company reasonably believes that there is no need to sell these investments and that it can recover the amortized cost of these investments. The Company has found no evidence of impairment due to credit losses in its portfolio. Therefore, these unrealized losses were recorded in other comprehensive income (loss). However, the Company cannot provide any assurance that its portfolio of cash, cash equivalents and marketable securities will not be impacted by adverse conditions in the financial markets, which may require the Company in the future to record an impairment charge for credit losses which could adversely impact its financial results.

The contractual maturities of cash equivalents (excluding money market funds which have no maturity) and marketable securities are summarized as follows:

(In thousands)	**March 31, 2022**
Due less than one year	$ 65,210
Due from one year through three years	109,127
Total	$ 174,337

Refer to Note 8, "Fair Value of Financial Instruments," for discussion regarding the fair value of the Company's cash equivalents and marketable securities.

8. Fair Value of Financial Instruments

The following table presents the financial instruments that are carried at fair value and summarizes the valuation of its cash equivalents and marketable securities by the below pricing levels as of March 31, 2022 and December 31, 2021:

	As of March 31, 2022			
(In thousands)	Total	Quoted Market Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Money market funds	$ 6,058	$ 6,058	$ —	$ —
U.S. Government bonds and notes	63,023	—	63,023	—
Corporate notes, bonds and commercial paper	111,314	—	111,314	—
Total available-for-sale securities	$ 180,395	$ 6,058	$ 174,337	$ —

	As of December 31, 2021			
(In thousands)	Total	Quoted Market Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Money market funds	$ 7,402	$ 7,402	$ —	$ —
U.S. Government bonds and notes	102,812	—	102,812	—
Corporate notes, bonds and commercial paper	287,905	—	287,905	—
Total available-for-sale securities	$ 398,119	$ 7,402	$ 390,717	$ —

The Company monitors its investments for other-than-temporary impairment and records appropriate reductions in carrying value when necessary. The Company monitors its investments for other-than-temporary losses by considering current factors, including the economic environment, market conditions, operational performance and other specific factors relating to the business underlying the investment, reductions in carrying values when necessary and the Company's ability and intent to hold the investment for a period of time which may be sufficient for anticipated recovery in the market. Any other-than-temporary loss is reported under "Interest and other income (expense), net" on the condensed consolidated statement of operations.

During the second half of 2018, the Company made an investment in a non-marketable equity security of a private company. This equity investment is accounted for under the equity method of accounting, and the Company accounts for its equity method share of the income (loss) on a quarterly basis. As of March 31, 2022 and December 31, 2021, the carrying value of the Company's 25.0% ownership percentage was $1.4 million and $1.8 million, respectively, which were included in other assets on the accompanying unaudited condensed consolidated balance sheets. The Company recorded immaterial amounts on its condensed consolidated statements of operations representing its share of the investee's loss for the three months ended March 31, 2022 and 2021.

The Company has a liability related to the contingent earn-out consideration from the PLDA acquisition, which is classified within Level 3 of the fair value hierarchy because the fair value is determined using significant unobservable inputs.

During the three months ended March 31, 2022 and 2021, there were no transfers of financial instruments between different categories of fair value.

The following table presents the financial instruments that are not carried at fair value but require fair value disclosure as of March 31, 2022 and December 31, 2021:

	As of March 31, 2022			As of December 31, 2021		
(In thousands)	Face Value [(1)]	Carrying Value	Fair Value	Face Value	Carrying Value	Fair Value
1.375% Convertible Senior Notes due 2023 (the "2023 Notes")	$ 64,604	$ 73,860	$ 111,856	$ 172,500	$ 163,687	$ 254,103

(1) As of March 31, 2022, the $64.6 million balance consisted of $49.4 million aggregate principal amount of 2023 Notes, as well as the face value of the remaining 2023 Notes Partial Repurchase of $15.2 million.

The fair value of the convertible notes at each balance sheet date is determined based on recent quoted market prices for these notes which is a level 2 measurement. As discussed in Note 10, "Convertible Notes," as of March 31, 2022, the convertible notes were carried at their face value of $64.6 million, plus the conversion premium of the remaining 2023 Notes Partial Repurchase, less any unamortized debt issuance costs. The carrying value of other financial instruments, including accounts receivable, accounts payable and other liabilities, approximated fair value due to their short maturities.

9. Leases

The Company leases office space, domestically and internationally, under operating leases. The Company's leases have remaining lease terms generally between one year and nine years. Operating leases are included in operating lease right-of-use ("ROU") assets, operating lease liabilities and long-term operating lease liabilities on the Company's unaudited condensed consolidated balance sheets. The Company does not have any finance leases.

The table below reconciles the undiscounted cash flows for the first five years and total of the remaining years to the operating lease liabilities recorded on the unaudited condensed consolidated balance sheet as of March 31, 2022 (in thousands):

Years ending December 31,		Amount
2022 (remaining nine months)	$	5,540
2023		4,966
2024		4,112
2025		4,174
2026		4,295
Thereafter		17,421
Total minimum lease payments		40,508
Less: amount of lease payments representing interest		(6,715)
Present value of future minimum lease payments		33,793
Less: current obligations under leases		(5,854)
Long-term lease obligations	$	27,939

As of March 31, 2022, the weighted-average remaining lease term for the Company's operating leases was 7.8 years and the weighted-average discount rate used to determine the present value of the Company's operating leases was 4.6%.

Operating lease costs included in research and development and selling, general and administrative costs on the condensed consolidated statements of operations were $1.9 million for both the three months ended March 31, 2022 and 2021, respectively.

Cash paid for amounts included in the measurement of operating lease liabilities were $2.3 million and $2.1 million for the three months ended March 31, 2022 and 2021, respectively.

10. Convertible Notes

1.375% Convertible Senior Notes due 2023. On March 2, 2022, the Company entered into individual, privately negotiated transactions with certain holders of its outstanding 2023 Notes, pursuant to which the Company paid an aggregate of approximately $199.1 million in cash for the repurchase of approximately $123.1 million aggregate principal amount of its 2023 Notes ("2023 Notes Partial Repurchase"). The cash consideration was based on a volume-weighted average price of $29.6789 for the 19-trading day measurement period ending March 29, 2022. Of the $123.1 million aggregate principal amount, approximately $107.9 million was settled on March 31, 2022 for $174.5 million in cash. The remaining $15.2 million aggregate principal amount was settled on April 1, 2022 for $24.6 million in cash and included in short-term convertible debt on the accompanying unaudited condensed consolidated balance sheet as of March 31, 2022. In addition, this transaction resulted in a loss on extinguishment of debt of $66.5 million and loss on fair value adjustment of derivatives, net of $8.3 million.

Upon entering into the 2023 Notes Partial Repurchase agreements, the conversion feature related to the 2023 Notes repurchased, as well as the settlements of the convertible senior note hedges and warrants, were subject to derivative accounting. This resulted in a $8.3 million loss on fair value adjustment of derivatives, net, for the three months ended March 31, 2022.

The remaining outstanding 2023 Notes were convertible at the option of the holders during the three months ended March 31, 2022 and continue to be convertible through the second quarter of 2022 since the trigger for early conversion was met. Specifically, the last reported sale price of the Company's common stock exceeded 130% of the conversion price of the 2023 Notes for more than 20 trading days during the 30 consecutive trading days ended March 31, 2022. During the three months ended March 31, 2022, no holders elected to convert their 2023 Notes which had met the trigger for early conversion as of December 31, 2021.

The Company's convertible notes are shown in the following table:

(In thousands)	As of March 31, 2022	As of December 31, 2021
2023 Notes [1]	$ 74,011	$ 172,500
Unamortized discount — 2023 Notes [2]	—	(8,266)
Unamortized debt issuance costs — 2023 Notes	(151)	(547)
Total convertible notes	73,860	163,687
Less current portion	73,860	163,687
Total long-term convertible notes	$ —	$ —

(1) As of March 31, 2022, the $74.0 million balance consisted of $49.4 million aggregate principal amount of 2023 Notes, as well as the carrying value and related conversion premium, totaling $24.6 million, of the remaining 2023 Notes Partial Repurchase.

(2) On January 1, 2022, the Company adopted ASU No. 2020-06, "Debt—Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging - Contracts in Entity's Own Equity (Subtopic 815-40)." Refer to Note 2, "Recent Accounting Pronouncements," for additional information.

Interest expense related to the convertible notes for the three months ended March 31, 2022 and 2021 was as follows:

(In thousands)	Three Months Ended March 31, 2022	Three Months Ended March 31, 2021
2023 Notes coupon interest at a rate of 1.375%	$ 316	$ 593
2023 Notes amortization of discount and debt issuance cost	105	1,874
Total interest expense on convertible notes	$ 421	$ 2,467

Note Hedges and Warrants. In connection with the 2023 Notes Partial Repurchase, the Company entered into agreements with certain financial institutions to retire the corresponding portions of convertible senior note hedges and warrants the Company had previously entered into with the counterparties in connection with the issuance of the 2023 Notes. Upon settlement, the Company received $72.4 million in cash for the retirement of the proportionate amount of convertible senior note hedges and paid $55.1 million in cash for the retirement of the proportionate amount of warrants during the three months ended March 31, 2022.

11. Commitments and Contingencies

As of March 31, 2022, the Company's material contractual obligations were as follows:

(In thousands)	Total	Remainder of 2022	2023	2024	2025	2026
Contractual obligations [1] [2] [3]						
Software licenses [4]	$ 12,428	$ 7,503	$ 3,361	$ 1,564	$ —	$ —
Acquisition retention bonuses [5]	9,500	5,166	2,167	2,167	—	—
Convertible notes [6]	74,011	24,657	49,354	—	—	—
Interest payments related to convertible notes	567	509	58	—	—	—
Total	$ 96,506	$ 37,835	$ 54,940	$ 3,731	$ —	$ —

(1) The above table does not reflect possible payments in connection with unrecognized tax benefits of approximately $20.9 million, including $19.1 million recorded as a reduction of long-term deferred tax assets and $1.8 million in long-term income taxes payable as of March 31, 2022. As noted below in Note 14, "Income Taxes," although it is possible that some of the unrecognized tax benefits could be settled within the next 12 months, the Company cannot reasonably estimate the outcome at this time.

(2) For the Company's lease commitments as of March 31, 2022, refer to Note 9, "Leases."

(3) The Company's other contractual obligations as of March 31, 2022 were not material.

(4) The Company has commitments with various software vendors for agreements generally having terms longer than one year.

(5) In connection with the acquisition of Northwest Logic in the third quarter of 2019, the Secure Silicon IP and Protocols business in the fourth quarter of 2019, and the acquisitions of AnalogX Inc. ("AnalogX") and PLDA Group ("PLDA") in the third quarter of 2021, the Company is obligated to pay retention bonuses to certain employees subject to certain eligibility and acceleration provisions including the condition of employment.

(6) During the three months ended March 31, 2022, the Company repurchased $107.9 million of the aggregate principal amount of its 2023 Notes. Refer to Note 10, "Convertible Notes."

Indemnifications

From time to time, the Company indemnifies certain customers as a necessary means of doing business. Indemnification covers customers for losses suffered or incurred by them as a result of any patent, copyright, or other intellectual property infringement or any other claim by any third party arising as result of the applicable agreement with the Company. The Company generally attempts to limit the maximum amount of indemnification that the Company could be required to make under these agreements to the amount of fees received by the Company, however, this may not always be possible. The fair value of the liability as of March 31, 2022 and December 31, 2021, respectively, was not material.

12. Equity Incentive Plans and Stock-Based Compensation

A summary of shares available for grant under the Company's plans is as follows:

	Shares Available for Grant
Total shares available for grant as of December 31, 2021	10,492,178
Nonvested equity stock and stock units granted (1) (2)	(2,869,504)
Nonvested equity stock and stock units forfeited (1)	663,083
Total shares available for grant as of March 31, 2022	8,285,757

(1) For purposes of determining the number of shares available for grant under the 2015 Equity Incentive Plan (the "2015 Plan") against the maximum number of shares authorized, each restricted stock granted reduces the number of shares available for grant by 1.5 shares and each restricted stock forfeited increases shares available for grant by 1.5 shares.

(2) Amount includes approximately 0.5 million shares that have been reserved for potential future issuance related to certain performance unit awards granted in the first quarter of 2022 and discussed under the section titled "Nonvested Equity Stock and Stock Units" below.

General Stock Option Information

The following table summarizes stock option activity under the Company's equity incentive plans for the three months ended March 31, 2022 and information regarding stock options outstanding, exercisable, and vested and expected to vest as of March 31, 2022.

	Options Outstanding			
(In thousands, except per share amounts and years)	Number of Shares	Weighted-Average Exercise Price Per Share	Weighted-Average Remaining Contractual Term (years)	Aggregate Intrinsic Value
Outstanding as of December 31, 2021	549,581	$ 10.71		
Options exercised	(58,401)	$ 5.36		
Outstanding as of March 31, 2022	491,180	$ 11.35	4.41	$ 10,089
Vested or expected to vest at March 31, 2022	491,009	$ 11.35	4.41	$ 10,086
Options exercisable at March 31, 2022	454,703	$ 11.20	4.18	$ 9,407

Employee Stock Purchase Plan

No purchases were made under the 2015 Employee Stock Purchase Plan ("2015 ESPP") during the three months ended March 31, 2022 and March 31, 2021, respectively. As of March 31, 2022, approximately 2.8 million shares under the 2015 ESPP remained available for issuance.

Stock-Based Compensation

For the three months ended March 31, 2022 and 2021, the Company maintained stock plans covering a broad range of potential equity grants including stock options, nonvested equity stock and equity stock units and performance-based instruments. In addition, the Company sponsors the 2015 ESPP, whereby eligible employees are entitled to purchase common stock semi-annually, by means of limited payroll deductions, at a 15% discount from the fair market value of the common stock as of specific dates.

Stock Options

There were no stock options granted during the three months ended March 31, 2022 and 2021, respectively. Stock-based compensation expense related to stock options was immaterial in the three months ended March 31, 2022. During the three months ended March 31, 2021, the Company recorded stock-based compensation expense related to stock options of $0.1 million.

As of March 31, 2022, there was $0.3 million of total unrecognized compensation cost, net of expected forfeitures, related to non-vested stock-based compensation arrangements granted under the stock option plans. That cost is expected to be recognized over a weighted-average period of 1.4 years.

Employee Stock Purchase Plan

For both the three months ended March 31, 2022 and 2021, the Company recorded stock-based compensation expense related to the 2015 ESPP of $0.5 million. As of March 31, 2022, there was $0.2 million of total unrecognized compensation cost related to stock-based compensation arrangements granted under the 2015 ESPP. That cost is expected to be recognized over one month.

Nonvested Equity Stock and Stock Units

The Company grants nonvested equity stock units to officers, employees and directors. During the three months ended March 31, 2022 and 2021, the Company granted nonvested equity stock units totaling approximately 1.6 million and 1.9 million shares, respectively. These awards have a service condition, generally a service period of four years, except in the case of grants to directors, for which the service period is one year. For the three months ended March 31, 2022 and 2021, the nonvested equity stock units were valued at the date of grant giving them a fair value of approximately $44.6 million and $38.5 million, respectively. During the first quarters of 2022 and 2021, the Company granted performance unit awards to certain Company executive officers with vesting subject to the achievement of certain performance and/or market conditions. The ultimate number of performance units that can be earned can range from 0% to 200% of target depending on performance relative to target over the applicable period. The shares earned will vest on the third or fourth anniversary of the date of grant. The Company's shares available for grant have been reduced to reflect the shares that could be earned at the maximum target.

For the three months ended March 31, 2022 and 2021, the Company recorded stock-based compensation expense of approximately $7.3 million and $5.9 million, respectively, related to all outstanding nonvested equity stock grants. Unrecognized stock-based compensation related to all nonvested equity stock grants, net of estimated forfeitures, was approximately $74.9 million at March 31, 2022. This amount is expected to be recognized over a weighted-average period of 2.7 years.

The following table reflects the activity related to nonvested equity stock and stock units for the three months ended March 31, 2022:

Nonvested Equity Stock and Stock Units	Shares		Weighted-Average Grant-Date Fair Value
Nonvested at December 31, 2021	4,718,385	$	16.62
Granted	1,594,236	$	28.09
Vested	(1,503,259)	$	13.80
Forfeited	(96,187)	$	18.04
Nonvested at March 31, 2022	4,713,175	$	21.37

13. Stockholders' Equity

Share Repurchase Programs

On October 29, 2020, the Company's board of directors (the "Board") approved a new share repurchase program authorizing the repurchase of up to an aggregate of 20.0 million shares (the "2020 Repurchase Program"). Share repurchases under the 2020 Repurchase Program may be made through the open market, established plans or privately negotiated transactions in accordance with all applicable securities laws, rules and regulations. There is no expiration date applicable to the 2020 Repurchase Program. During the three months ended March 31, 2022, the Company did not repurchase any shares of its common stock under the 2020 Repurchase Program.

On November 11, 2020, the Company entered into an accelerated share repurchase program with Deutsche Bank AG, London Branch as counterparty, through its agent Deutsche Bank Securities Inc. ("Deutsche Bank") (the "2020 ASR Program"). The 2020 ASR Program was part of the share repurchase program previously authorized by the Company's Board on October 29, 2020. Under the 2020 ASR Program, the Company pre-paid to Deutsche Bank the $50.0 million purchase price for its common stock and, in turn, the Company received an initial delivery of approximately 2.6 million shares of its common stock from Deutsche Bank in the fourth quarter of 2020, which were retired and recorded as a $40.0 million reduction to stockholders' equity. The remaining $10.0 million of the initial payment was recorded as a reduction to stockholders' equity as an unsettled forward contract indexed to the Company's stock. During the second quarter of 2021, the accelerated share repurchase program was completed and the Company received an additional 0.1 million shares of its common stock as the final settlement of the accelerated share repurchase program.

On June 15, 2021, the Company entered into an accelerated share repurchase program with Deutsche Bank (the "2021 ASR Program"). The 2021 ASR Program was part of the share repurchase program previously authorized by the Board on October 29, 2020. Under the 2021 ASR Program, the Company pre-paid to Deutsche Bank the $100.0 million purchase price for its common stock and, in turn, the Company received an initial delivery of approximately 3.9 million shares of its common stock from Deutsche Bank in the second quarter of 2021, which were retired and recorded as a $80.0 million reduction to stockholders' equity. The remaining $20.0 million of the initial payment was recorded as a reduction to stockholders' equity as an unsettled forward contract indexed to the Company's stock. During the fourth quarter of 2021, the accelerated share repurchase program was completed and the Company received an additional 0.4 million shares of its common stock, which were retired, as the final settlement of the accelerated share repurchase program.

As of March 31, 2022, there remained an outstanding authorization to repurchase approximately 12.9 million shares of the Company's outstanding common stock under the 2020 Repurchase Program.

The Company records share repurchases as a reduction to stockholders' equity. The Company records a portion of the purchase price of the repurchased shares as an increase to accumulated deficit when the price of the shares repurchased exceeds the average original proceeds per share received from the issuance of common stock.

14. Income Taxes

The Company recorded a provision for (benefit from) income taxes of $0.5 million and $(0.5) million for the three months ended March 31, 2022 and 2021, respectively. The provision for income taxes for the three months ended March 31, 2022 was driven by a combination of the valuation allowance recorded on U.S. deferred tax assets, foreign withholding taxes, the statutory tax expense for the foreign jurisdictions for 2022 and indefinite-lived intangible tax amortization expense. The benefit from income taxes for the three months ended March 31, 2021 was driven by a combination of the valuation allowance recorded on U.S. deferred tax assets, foreign withholding taxes, the statutory tax expense for the foreign jurisdictions for 2021 and indefinite-lived intangible tax amortization expense.

During the three months ended March 31, 2022 and 2021, the Company paid withholding taxes of $5.0 million and $5.4 million, respectively.

The Company periodically evaluates the realizability of its net deferred tax assets based on all available evidence, both positive and negative. The Company continues to maintain a full valuation allowance on its U.S. federal and California deferred tax assets as it does not expect to be able to fully utilize them.

The Company has U.S. federal deferred tax assets related to research and development credits, foreign tax credits and other tax attributes that can be used to offset U.S. federal taxable income in future periods. These credit carryforwards will expire if they are not used within certain time periods. It is possible that some or all of these attributes could ultimately expire unused.

The Company maintains liabilities for uncertain tax positions within its long-term income taxes payable accounts and as a reduction to existing deferred tax assets to the extent tax attributes are available to offset such liabilities. These liabilities involve judgment and estimation and are monitored by management based on the best information available including changes in tax regulations, the outcome of relevant court cases and other information.

As of March 31, 2022, the Company had approximately $151.4 million of unrecognized tax benefits, including $19.1 million recorded as a reduction of long-term deferred tax assets, $130.5 million recorded as a reduction of other assets associated with refundable withholding taxes previously withheld from licensees in South Korea and $1.8 million recorded in long-term income taxes payable. If recognized, $1.8 million would be recorded as an income tax benefit. As a result of recent court rulings in South Korea, the Company has determined that they may be entitled to refund claims for foreign taxes previously withheld from licensees in South Korea. The Company recognizes that there are numerous risks and uncertainties associated with the ultimate collection of this refund and has therefore maintained an offsetting reserve for the entire amount of refundable withholding taxes previously withheld in South Korea. As of December 31, 2021, the Company had $146.2 million of unrecognized tax benefits, including $18.9 million recorded as a reduction of long-term deferred tax assets, $126.1 million recorded as a reduction of other assets associated with refundable withholding taxes previously withheld from licensees in South Korea and $1.3 million recorded in long-term income taxes payable.

Although it is possible that some of the unrecognized tax benefits could be settled within the next 12 months, the Company cannot reasonably estimate the outcome at this time.

Additionally, the Company’s future effective tax rates could be adversely affected by earnings being higher than anticipated in countries where the Company has higher statutory rates or lower than anticipated in countries where it has lower statutory rates, by changes in valuation of its deferred tax assets and liabilities or by changes in tax laws or interpretations of those laws.

15. Litigation and Asserted Claims

Rambus is not currently a party to any material pending legal proceeding; however, from time to time, Rambus may become involved in legal proceedings or be subject to claims arising in the ordinary course of its business. Although the results of litigation and claims cannot be predicted with certainty, the Company currently believes that the final outcome of these ordinary course matters will not have a material adverse effect on our business, operating results, financial position or cash flows. Regardless of the outcome, litigation can have an adverse impact on the Company because of defense and settlement costs, diversion of management attention and resources and other factors.

The Company records a contingent liability when it is probable that a loss has been incurred and the amount is reasonably estimable in accordance with accounting for contingencies.

16. Subsequent Event

On May 5, 2022, the Company announced that Rambus Canada Inc. (“Rambus Canada”), a wholly-owned subsidiary of the Company, had entered into an agreement to acquire Hardent, Inc. (“Hardent”), a leading electronic design company. Rambus Canada will acquire Hardent for $20 million (CAD) in cash. This acquisition augments the world-class team of engineers at Rambus and accelerates the development of CXL processing solutions for next-generation data centers. The transaction is subject to customary closing conditions and approvals, and is expected to close in the second quarter of 2022.

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

This report contains forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934 as described in more detail under "Note Regarding Forward-Looking Statements." Our forward-looking statements are based on current expectations, forecasts and assumptions and are subject to risks, uncertainties and changes in condition, significance, value and effect. As a result of the factors described herein, and in the documents incorporated herein by reference, including, in particular, those factors described under "Risk Factors," we undertake no obligation to publicly disclose any revisions to these forward-looking statements to reflect events or circumstances occurring subsequent to filing this report with the Securities and Exchange Commission.

The following discussion and analysis should be read in conjunction with the unaudited condensed consolidated financial statements and related notes that are included elsewhere in this report.

Rambus is a trademark of Rambus Inc. Other trademarks that may be mentioned in this quarterly report on Form 10-Q are the property of their respective owners.

Business Overview

Rambus produces products and innovations that address the fundamental challenges of accelerating data. We make industry-leading chips and silicon IP that enable critical performance improvements for data center and other growing markets. The ongoing shift to the cloud, along with the widespread advancement of artificial intelligence ("AI") across the data center, edge and Internet of Things ("IoT") end points, has led to exponential growth in data usage and tremendous demands on data infrastructure. Creating fast and safe connections, both in and across systems, remains one of the most mission-critical design challenges limiting performance in advanced hardware for these markets.

As an industry pioneer with over 30 years of advanced semiconductor design experience, Rambus is ideally positioned to address the challenges of moving and protecting data. We are a leader in high-performance memory subsystems, providing chips, silicon IP and innovations that maximize the performance and security in data-intensive systems. Whether in the cloud, at the edge or in your hand, real-time and immersive applications depend on data throughput and integrity. Rambus products and innovations deliver the increased bandwidth, capacity and security required to meet the world's data needs and drive ever-greater end-user experiences.

Rambus benefits from a balanced and diverse portfolio of offerings across chips, silicon IP and patent licensing with each of them contributing at scale. From 2018 to 2021, product revenue sustained a 55% compound annual growth rate, making products the leading revenue source for the Company. Driven by the continued market momentum of our memory interface chips, we recognized record product revenue of $143.9 million in 2021. The Company achieved silicon IP growth through increasing design wins at leading system on chip ("SoC") customers with contributions from the businesses acquired in 2021. In addition, Rambus successfully closed key patent licensing agreements, solidifying our foundation of sustained cash generation and fueling investment in our product and technology roadmaps. Rambus continued its technology leadership with the launch of the CXL Memory Interconnect Initiative and development of solutions for next-generation data centers.

Executive Summary

The Company's continued execution delivered strong results during the first quarter, driven by continued demand in our memory interface chips, continued design wins in Silicon IP and continued stability from our royalties revenue.

Key 2022 first quarter financial results included:

- Revenue of $99.0 million;
- Operating expenses of $68.3 million; and
- Net cash provided by operating activities of $42.6 million.

We had record quarterly product revenue of $48.0 million, which was primarily driven by our memory interface chips. In addition, our cash provided by operating activities for the first quarter of 2022 was $42.6 million.

Operational Highlights

Revenue Sources

The Company's consolidated revenue is comprised of product revenue, royalty revenue and contract and other revenue.

Product revenue consists primarily of memory interface chips and is an increasingly growing part of our business. Our memory interface chips are sold to major DRAM manufacturers, Micron, Samsung and SK hynix, as well as directly to system manufacturers and cloud providers, for integration into server memory modules. Product revenue accounted for 48% of our consolidated revenue for the three months ended March 31, 2022, as compared to 44% for the three months ended March 31, 2021.

Royalty revenue is derived from our patent licenses, through which we provide our customers certain rights to our broad worldwide portfolio of patented inventions. Our patent licenses enable our customers to use a portion of our patent portfolio in their own digital electronics products. The licenses typically range in term up to ten years and define the specific field of use where our customers may utilize our inventions in their products. Royalties may be structured as fixed, variable or a hybrid of fixed and variable royalty payments. Leading semiconductor and electronic system companies such as AMD, Broadcom, Cisco, CXMT, IBM, Infineon, Kioxia, Marvell, Mediatek, Micron, Nanya, NVIDIA, Panasonic, Phison, Qualcomm, Samsung, SK hynix, Socionext, STMicroelectronics, Toshiba, Western Digital, Winbond and Xilinx have licensed our patents. The vast majority of our patents originate from our internal research and development efforts. Revenues from royalties accounted for 31% of our consolidated revenue for the three months ended March 31, 2022, as compared to 41% for the three months ended March 31, 2021.

Contract and other revenue consists primarily of Silicon IP, which is comprised of our high-speed interface and security IP. Revenue sources under contract and other include our IP core licenses, software licenses and related implementation, support and maintenance fees and engineering services fees. The timing and amounts invoiced to customers can vary significantly depending on specific contract terms and can therefore have a significant impact on deferred revenue or accounts receivable in any given period. Contract and other revenue accounted for 21% of our consolidated revenue for the three months ended March 31, 2022, as compared to 15% for the three months ended March 31, 2021.

Costs and Expenses

Cost of product revenue for the three months ended March 31, 2022 increased approximately $7.0 million as compared to the same period in 2021. The increase was primarily due to increases in sales volumes of our memory interface chips.

Cost of contract and other revenue for the three months ended March 31, 2022 decreased by approximately $1.0 million as compared to the same period in 2021. The decrease was due to lower engineering services associated with the contracts.

Research and development expenses continue to play a key role in our efforts to drive our product innovations. Our research and development expenses for the three months ended March 31, 2022 increased $7.4 million as compared to the same period in 2021, primarily due to headcount-related expenses of $2.6 million, consulting costs of $1.1 million, stock-based compensation expense of $0.6 million, engineering development tool costs of $0.6 million and prototyping costs of $0.4 million.

Sales, general and administrative expenses for the three months ended March 31, 2022 increased $3.3 million as compared to the same period in 2021, primarily due to increased headcount-related expenses of $1.4 million, acquisition-related costs (including retention bonus expense) of $1.2 million, stock-based compensation expense of $0.7 million, bonus accrual expense of $0.6 million, depreciation costs of $0.5 million, facilities costs of $0.4 million, consulting costs of $0.3 million, accounting and audit fees of $0.3 million and legal fees of $0.3 million, offset by decreased consulting, legal and accounting costs of $3.0 million related to the shareholder activism activity and restatement matters in 2021.

Intellectual Property

As of March 31, 2022, our semiconductor, security and other technologies are covered by 2,404 U.S. and foreign patents. Additionally, we have 599 patent applications pending. Some of the patents and pending patent applications are derived from a common parent patent application or are foreign counterpart patent applications. We have a program to file applications for and obtain patents in the United States and in selected foreign countries where we believe filing for such protection is appropriate and would further our overall business strategy and objectives. In some instances, obtaining appropriate levels of protection may involve prosecuting continuation and counterpart patent applications based on a common parent application. We believe our patented innovations provide our customers with the ability to achieve improved performance, lower risk, greater cost-effectiveness, and other benefits in their products and services.

Impact of the COVID-19 Pandemic

In December 2019, the COVID-19 virus was reported in China, in January 2020 the World Health Organization ("WHO") declared it a Public Health Emergency of International Concern, and in March 2020 the WHO declared it a pandemic. The COVID-19 pandemic and new variants have created significant global economic uncertainty and may adversely impact the business of our customers, partners and vendors. The extent of the impact of the ongoing COVID-19 pandemic and subsequent variants on our operational and financial performance will depend on certain developments, including the duration and spread of the outbreak, impact on our customers and our sales cycles, and impact on our partners or employees, all of which are uncertain and cannot be predicted. The extent to which the ongoing COVID-19 pandemic and subsequent variants may impact our financial condition or results of operations remains uncertain. Actual results could differ from any estimates and any such differences could be material to our financial statements. Furthermore, the effect of COVID-19 and the new variants may not be fully reflected in our results of operations until future periods, if at all.

Trends

There are a number of trends that may have a material impact on us in the future, including but not limited to, the evolution of memory and SerDes technology, adoption of security solutions, the use and adoption of our inventions or technologies generally, industry consolidation and global economic conditions with the resulting impact on sales of consumer electronic systems.

We have a high degree of revenue concentration. Our top five customers represented approximately 59% of our revenue for both the three months ended March 31, 2022 and 2021, respectively. The particular customers which account for revenue concentration have varied from period-to-period as a result of the addition of new contracts, expiration of existing contracts, renewals of existing contracts, industry consolidation and the volumes and prices at which the customers have recently sold to their customers. These variations are expected to continue in the foreseeable future.

Our revenue from companies headquartered outside of the United States accounted for approximately 44% of our total revenue for the three months ended March 31, 2022 as compared to 34% for the three months ended March 31, 2021. We expect that revenue derived from international customers will continue to represent a significant portion of our total revenue in the future. Currently, our revenue from international customers is denominated in U.S. dollars. For additional information concerning international revenue, refer to Note 6, "Segments and Major Customers," of Notes to Unaudited Condensed Consolidated Financial Statements of this Form 10-Q.

The royalties we receive from our semiconductor customers are partly a function of the adoption of our technologies by system companies. Many system companies purchase semiconductors containing our technologies from our customers and do not have a direct contractual relationship with us. Our customers generally do not provide us with details as to the identity or volume of licensed semiconductors purchased by particular system companies. As a result, we face difficulty in analyzing the extent to which our future revenue will be dependent upon particular system companies.

As a part of our overall business strategy, from time to time, we evaluate businesses and technologies for potential acquisitions that are aligned with our core business and designed to supplement our growth, including the 2021 acquisitions of AnalogX and PLDA, as well as the 2019 acquisitions of Northwest Logic and the Secure Silicon IP and Protocols business from Verimatrix, formerly Inside Secure. Similarly, we evaluate our current businesses and technologies that are not aligned with our core business for potential divestiture, such as the sale of our Payments and Ticketing businesses to Visa International Service Association in 2019. We expect to continue to evaluate and potentially enter into strategic acquisitions or divestitures which may adversely impact our business and operating results.

Results of Operations

The following table sets forth, for the periods indicated, the percentage of total revenue represented by certain items reflected on our unaudited condensed consolidated statements of operations:

	Three Months Ended March 31,	
	2022	2021
Revenue:		
Product revenue	48.4 %	43.7 %
Royalties	30.8 %	41.0 %
Contract and other revenue	20.8 %	15.3 %
Total revenue	100.0 %	100.0 %
Cost of revenue:		
Cost of product revenue	18.6 %	16.2 %
Cost of contract and other revenue	0.6 %	2.2 %
Amortization of acquired intangible assets	3.4 %	6.2 %
Total cost of revenue	22.6 %	24.6 %
Gross profit	77.4 %	75.4 %
Operating expenses:		
Research and development	40.2 %	46.0 %
Sales, general and administrative	27.2 %	33.5 %
Amortization of acquired intangible assets	0.4 %	0.3 %
Restructuring charges	— %	0.5 %
Change in fair value of earn-out liability	1.2 %	— %
Total operating expenses	69.0 %	80.3 %
Operating income (loss)	8.4 %	(4.9)%
Interest income and other income (expense), net	1.4 %	4.2 %
Loss on extinguishment of debt	(67.1)%	— %
Loss on fair value adjustment of derivatives, net	(8.4)%	— %
Interest expense	(0.6)%	(3.7)%
Interest and other income (expense), net	(74.7)%	0.5 %
Loss before income taxes	(66.3)%	(4.4)%
Provision for (benefit from) income taxes	0.5 %	(0.7)%
Net loss	(66.8)%	(3.7)%

(Dollars in millions)	Three Months Ended March 31, 2022	2021	Change in Percentage
Total revenue:			
Product revenue	$ 48.0	$ 30.8	55.8 %
Royalties	30.4	28.9	5.6 %
Contract and other revenue	20.6	10.7	91.9 %
Total revenue	$ 99.0	$ 70.4	40.7 %

Product Revenue

Product revenue consists of revenue from the sale of memory and security products. Product revenue increased approximately $17.2 million to $48.0 million for the three months ended March 31, 2022 from $30.8 million for the same period in 2021. The increase was due to continued market share gains of our memory interface chips.

We believe that product revenue will continue to increase in 2022 as compared to 2021, mainly from the sale of our memory interface chips. However, our ability to continue to grow product revenue is dependent on, among other things, our ability to continue to obtain orders from customers, our ability to meet our customers' demands and our ability to mitigate any supply chain risk due to the ongoing COVID-19 pandemic and subsequent variants.

Royalties

Royalty revenue, which includes patent and technology license royalties, increased approximately $1.5 million to $30.4 million for the three months ended March 31, 2022 from $28.9 million for the same period in 2021. The increase was primarily due to the timing and structure of license renewals.

We are continuously in negotiations for licenses with prospective customers. We expect patent royalties will continue to vary from period to period based on our success in adding new customers, renewing or extending existing agreements, as well as the level of variation in our customers' reported shipment volumes, sales price and mix, offset in part by the proportion of customer payments that are fixed or hybrid in nature. We also expect that our technology royalties will continue to vary from period to period based on our customers' shipment volumes, sales prices and product mix.

Contract and Other Revenue

Contract and other revenue consists of revenue from technology development projects. Contract and other revenue increased approximately $9.9 million to $20.6 million for the three months ended March 31, 2022 from $10.7 million for the same period in 2021. The increase was primarily due to higher revenue associated with our Silicon IP offerings.

We believe that contract and other revenue will fluctuate over time based on our ongoing technology development contractual requirements, the amount of work performed, the timing of completing engineering deliverables and the changes to work required, as well as new technology development contracts booked in the future.

Cost of Product Revenue

(Dollars in millions)	Three Months Ended March 31, 2022	Three Months Ended March 31, 2021	Change in Percentage
Cost of product revenue	$ 18.4	$ 11.4	61.2 %

Cost of product revenue are costs attributable to the sale of memory and security products. Cost of product revenue increased approximately $7.0 million to $18.4 million for the three months ended March 31, 2022 from $11.4 million for the same period in 2021. The increase was primarily due to increases in sales volumes of our memory interface chips during the period.

In the near term, we expect costs of product revenue to continue to be higher as we expect higher sales of our various products in 2022 as compared to 2021.

Cost of Contract and Other Revenue

(Dollars in millions)	Three Months Ended March 31, 2022	Three Months Ended March 31, 2021	Change in Percentage
Cost of contract and other revenue	$ 0.6	$ 1.6	(59.9)%

Cost of contract and other revenue reflects the portion of the total engineering costs which are specifically devoted to individual customer development and support services. Cost of contract and other revenue for the three months ended March 31, 2022 decreased by approximately $1.0 million as compared to the same period in 2021 due to lower engineering services associated with the contracts.

In the near term, we expect costs of contract and other revenue to vary from period to period based on varying revenue recognized from contract and other revenue.

Research and Development Expenses

(Dollars in millions)	Three Months Ended March 31, 2022	Three Months Ended March 31, 2021	Change in Percentage
Research and development expenses:			
Research and development expenses	$ 36.6	$ 29.8	23.1 %
Stock-based compensation	3.2	2.6	22.5 %
Total research and development expenses	$ 39.8	$ 32.4	23.1 %

Research and development expenses are those expenses incurred for the development of applicable technologies. Total research and development expenses increased $7.4 million for the three months ended March 31, 2022 as compared to the same period in 2021, primarily due to headcount-related expenses of $2.6 million, consulting costs of $1.1 million, stock-based compensation expense of $0.6 million, engineering development tool costs of $0.6 million and prototyping costs of $0.4 million.

In the near term, we expect research and development expenses to be higher as we continue to make investments in the infrastructure and technologies required to maintain our product innovation in semiconductor, security and other technologies.

Sales, General and Administrative Expenses

(Dollars in millions)	Three Months Ended March 31, 2022	Three Months Ended March 31, 2021	Change in Percentage
Sales, general and administrative expenses:			
Sales, general and administrative expenses	$ 22.4	$ 19.8	13.6 %
Stock-based compensation	4.5	3.8	17.2 %
Total sales, general and administrative expenses	$ 26.9	$ 23.6	14.2 %

Sales, general and administrative expenses include expenses and costs associated with trade shows, public relations, advertising, litigation, general legal, insurance and other sales, marketing and administrative efforts. Consistent with our business model, our licensing, sales and marketing activities aim to develop or strengthen relationships with potential new and current customers. In addition, we work with current customers through marketing, sales and technical efforts to drive adoption of their products that use our innovations and solutions, by system companies. Due to the long business development cycles we face and the semi-fixed nature of sales, general and administrative expenses in a given period, these expenses generally do not correlate to the level of revenue in that period or in recent or future periods.

Total sales, general and administrative expenses increased $3.3 million for the three months ended March 31, 2022 as compared to the same period in 2021, primarily due to increased headcount-related expenses of $1.4 million, acquisition-related costs (including retention bonus expense) of $1.2 million, stock-based compensation expense of $0.7 million, bonus accrual expense of $0.6 million, depreciation costs of $0.5 million, facilities costs of $0.4 million, consulting costs of $0.3 million, accounting and audit fees of $0.3 million and legal fees of $0.3 million, offset by decreased consulting, legal and accounting costs of $3.0 million related to the shareholder activism activity and restatement matters in 2021.

In the future, sales, general and administrative expenses will vary from period to period based on the trade shows, advertising, legal, acquisition and other sales, marketing and administrative activities undertaken, and the change in sales, marketing and administrative headcount in any given period. In the near term, we expect our sales, general and administrative expenses to remain relatively flat.

Amortization of Acquired Intangible Assets

(Dollars in millions)	Three Months Ended March 31, 2022	Three Months Ended March 31, 2021	Change in Percentage
Amortization of acquired intangible assets:			
Amortization of acquired intangible assets included in total cost of revenue	$ 3.4	$ 4.4	(23.0)%
Amortization of acquired intangible assets included in total operating expenses	0.4	0.2	78.6 %
Total amortization of acquired intangible assets	$ 3.8	$ 4.6	(17.9)%

Amortization expense is related to various acquired IP. Amortization of acquired intangible assets recognized in cost of revenue and operating expenses for the three months ended March 31, 2022 decreased as compared to the same periods in 2021 primarily due to certain intangible assets being fully amortized, offset by additional amortization from intangible assets acquired as part of the acquisitions of AnalogX and PLDA in the third quarter of 2021.

Change in Fair Value of Earn-Out Liability

(Dollars in millions)	Three Months Ended March 31, 2022	Three Months Ended March 31, 2021	Change in Percentage
Change in fair value of earn-out liability	$ 1.2	$ —	100.0 %

During the first quarter of 2022, we remeasured the fair value of the earn-out liability related to the acquisition of PLDA in the third quarter of 2021, which is subject to certain revenue targets of the acquired business for a period of three years from the date of acquisition, and which is to be paid in shares of our common stock. The remeasurement of the earn-out liability resulted in additional expense of $1.2 million on our unaudited condensed consolidated statements of operations during the three months ended March 31, 2022.

Interest and Other Income (Expense), Net

(Dollars in millions)	Three Months Ended March 31, 2022	Three Months Ended March 31, 2021	Change in Percentage
Interest income and other income (expense), net	$ 1.4	$ 3.0	(54.4)%
Loss on extinguishment of debt	(66.5)	—	100.0 %
Loss on fair value adjustment of derivatives, net	(8.3)	—	100.0 %
Interest expense	(0.6)	(2.6)	(76.9)%
Interest and other income (expense), net	$ (74.0)	$ 0.4	NM*

* NM — percentage is not meaningful

Interest income and other income (expense), net, consists primarily of the loss on extinguishment of debt of $66.5 million and $8.3 million loss on fair value adjustment of derivatives, net, for the three months ended March 31, 2022, due to the repurchase of $123.1 million aggregate principal amount of our 2023 Notes during the period and the settlement of the related convertible senior note hedges and warrants. Interest income and other income (expense), net, also includes interest income due to the significant financing component of licensing agreements, interest income generated from investments in high quality fixed income securities and any gains or losses from the re-measurement of our monetary assets or liabilities denominated in foreign currencies.

Interest expense primarily consists of interest expense associated with the non-cash interest expense related to the amortization of the debt issuance costs on the 1.375% convertible senior notes due 2023 (the “2023 Notes”), as well as the coupon interest related to these notes. Prior to the adoption of ASU No. 2020-06, “Debt—Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging - Contracts in Entity's Own Equity (Subtopic 815-40) on January 1, 2022, interest expense also included the non-cash interest expense related to the amortization of the debt discount. Refer to Note 2. “Recent Accounting Pronouncements,” of Notes to Unaudited Condensed Consolidated Financial Statements of this Form 10-Q for additional information on the adoption of ASU No. 2020-06.

We expect our non-cash interest expense to decrease steadily as there will be no additional non-cash interest related to the debt discount after the adoption of ASU No. 2020-06 and as the non-cash interest expense related to the debt issuance costs was reduced due to the repurchase of our 2023 notes. Refer to Note 10. “Convertible Notes,” of Notes to Unaudited Condensed Consolidated Financial Statements of this Form 10-Q for additional information.

Provision for (Benefit From) Income Taxes

(Dollars in millions)	Three Months Ended March 31, 2022	Three Months Ended March 31, 2021	Change in Percentage
Provision for (benefit from) income taxes	$ 0.5	$ (0.5)	NM*
Effective tax rate	(0.8)%	16.1 %	

* NM — percentage is not meaningful

The provision for income taxes reported for the three months ended March 31, 2022 was driven by a combination of the valuation allowance recorded on U.S. deferred tax assets, foreign withholding taxes, the statutory tax expense for the foreign jurisdictions for 2022 and indefinite-lived intangible tax amortization expense. Our income tax provision for (benefit from) the three months ended March 31, 2022 and 2021 reflected an effective tax rate of (0.8)% and 16.1%, respectively. Our effective tax rate for the three months ended March 31, 2022 differed from the U.S. statutory rate primarily due to foreign tax credits and the full valuation allowance against U.S. deferred tax assets. Our effective tax rate for the three months ended March 31, 2021 differed from the statutory rate primarily due to foreign tax credits and the full valuation allowances against U.S. deferred tax assets.

During the three months ended March 31, 2022 and 2021, we paid withholding taxes of $5.0 million and $5.4 million, respectively.

We periodically evaluate the realizability of our net deferred tax assets based on all available evidence, both positive and negative. We continue to maintain a full valuation allowance on our U.S. federal and California deferred tax assets as we do not expect to be able to fully utilize them.

We have U.S. federal deferred tax assets related to research and development credits, foreign tax credits and other tax attributes that can be used to offset U.S. federal taxable income in future periods. These credit carryforwards will expire if they are not used within certain time periods. It is possible that some or all of these attributes could ultimately expire unused.

Liquidity and Capital Resources

	As of	
(In millions)	**March 31, 2022**	**December 31, 2021**
Cash and cash equivalents	$ 179.1	$ 107.9
Marketable securities	164.6	377.7
Total cash, cash equivalents and marketable securities	$ 343.7	$ 485.6

	Three Months Ended March 31,	
(In millions)	**2022**	**2021**
Net cash provided by operating activities	$ 42.6	$ 39.5
Net cash provided by (used) in investing activities	$ 204.8	$ (48.5)
Net cash used in financing activities	$ (175.9)	$ (10.3)

Liquidity

We currently anticipate that existing cash, cash equivalents and marketable securities balances and cash flows from operations will be adequate to meet our cash needs for at least the next 12 months. Additionally, the majority of our cash and cash equivalents is in the United States. Our cash needs for the three months ended March 31, 2022 were funded primarily from cash collected from our customers.

We do not anticipate any liquidity constraints as a result of either the current credit environment or investment fair value fluctuations or the repayment of the remaining 2023 Notes in February 2023. Additionally, we have the intent and ability to hold our debt investments that have unrealized losses in accumulated other comprehensive gain (loss) for a sufficient period of time to allow for recovery of the principal amounts invested. Further, we have no significant exposure to European sovereign debt. We continually monitor the credit risk in our portfolio and mitigate our credit risk exposures in accordance with our policies.

As a part of our overall business strategy, from time to time, we evaluate businesses and technologies for potential acquisitions that are aligned with our core business and designed to supplement our growth.

To provide us with more flexibility in returning capital to our stockholders, on October 29, 2020, our Board approved the 2020 Repurchase Program authorizing the repurchase of up to an aggregate of 20.0 million shares. Share repurchases under the 2020 Repurchase Program may be made through the open market, established plans or privately negotiated transactions in accordance with all applicable securities laws, rules, and regulations. There is no expiration date applicable to the 2020 Repurchase Program.

On November 11, 2020, we entered into the 2020 ASR Program with Deutsche Bank. The 2020 ASR Program was part of the 2020 Repurchase Program. Under the 2020 ASR Program, we pre-paid to Deutsche Bank the $50.0 million purchase price for our common stock and, in turn, we received an initial delivery of approximately 2.6 million shares of our common stock from Deutsche Bank in the fourth quarter of 2020, which were retired and recorded as a $40.0 million reduction to stockholders' equity. The remaining $10.0 million of the initial payment was recorded as a reduction to stockholders' equity as an unsettled forward contract indexed to our stock. During the second quarter of 2021, the accelerated share repurchase program was completed and we received an additional 0.1 million shares of our common stock, which were retired, as the final settlement of the accelerated share repurchase program.

On June 15, 2021, we entered into the 2021 ASR Program with Deutsche Bank. The 2021 ASR Program was part of the 2020 Repurchase Program. Under the 2021 ASR Program, we pre-paid to Deutsche Bank the $100.0 million purchase price for our common stock and, in turn, we received an initial delivery of approximately 3.9 million shares of our common stock from Deutsche Bank in the second quarter of 2021, which were retired and recorded as $80.0 million reduction to stockholders' equity. The remaining $20.0 million of the initial payment was recorded as a reduction to stockholders' equity as an unsettled forward contract indexed to our stock. During the fourth quarter of 2021, the accelerated share repurchase program was completed and we received an additional 0.4 million shares of our common stock, which were retired, as the final settlement of the accelerated share repurchase program.

As of March 31, 2022, there remained an outstanding authorization to repurchase approximately 12.9 million shares of our outstanding common stock under the 2020 Repurchase Program. Refer to "Share Repurchase Program" below.

Operating Activities

Cash provided by operating activities of $42.6 million for the three months ended March 31, 2022 was primarily attributable to the cash generated from customer licensing, product sales and engineering services fees. Changes in operating assets and liabilities for the three months ended March 31, 2022 primarily included decreases in unbilled receivables, inventories and increases in accounts payable, offset by increases in accounts receivable, and decreases in accrued salaries and benefits and deferred revenue.

Cash provided by operating activities of $39.5 million for the three months ended March 31, 2021 was primarily attributable to the cash generated from customer licensing, product sales and engineering services fees. Changes in operating assets and liabilities for the three months ended March 31, 2021 primarily included decreases in unbilled receivables, inventories, prepaids and other current assets, and an increase in deferred revenue, offset by increases in accounts receivable as well as decreases in accrued salaries and benefits and income taxes payable.

Investing Activities

Cash provided by investing activities of $204.8 million for the three months ended March 31, 2022 consisted of proceeds from the sale and maturities of available-for-sale marketable securities of $204.1 million and $44.8 million, respectively, offset by purchases of available-for-sale marketable securities of $39.4 million, acquisition of intangible assets of $3.0 million and $1.7 million paid to acquire property, plant and equipment.

Cash used in investing activities of $48.5 million for the three months ended March 31, 2021 consisted of purchases of available-for-sale marketable securities of $159.8 million and $3.5 million paid to acquire property, plant and equipment, offset by proceeds from the maturities and sale of available-for-sale marketable securities of $106.5 million and $8.3 million, respectively.

Financing Activities

Cash used in financing activities of $175.9 million for the three months ended March 31, 2022 was primarily due to $174.5 million paid in connection with the 2023 Notes Partial Repurchase, $55.1 million paid in connection with the settlement of warrants associated with the 2023 Notes Partial Repurchase, $15.8 million in payments of taxes on restricted stock units and $3.2 million paid under installment payment arrangements to acquire fixed assets, offset by proceeds of $72.4 million from the settlement of senior convertible note hedges associated with the 2023 Notes Partial Repurchase and $0.3 million in proceeds from the issuance of common stock under equity incentive plans.

Cash used in financing activities of $10.3 million for the three months ended March 31, 2021 was primarily due to $8.1 million in payments of taxes on restricted stock units and $3.1 million in payments under installment payment arrangements to acquire fixed assets, offset by $0.9 million in proceeds from the issuance of common stock under equity incentive plans.

Contractual Obligations

As of March 31, 2022, our material contractual obligations were as follows:

(In thousands)	Total	Remainder of 2022	2023	2024	2025	2026
Contractual obligations (1) (2) (3)						
Software licenses (4)	$ 12,428	$ 7,503	$ 3,361	$ 1,564	$ —	$ —
Acquisition retention bonuses (5)	9,500	5,166	2,167	2,167	—	—
Convertible notes (6)	74,011	24,657	49,354	—	—	—
Interest payments related to convertible notes	567	509	58	—	—	—
Total	$ 96,506	$ 37,835	$ 54,940	$ 3,731	$ —	$ —

(1) The above table does not reflect possible payments in connection with unrecognized tax benefits of approximately $20.9 million, including $19.1 million recorded as a reduction of long-term deferred tax assets and $1.8 million in long-term income taxes payable as of March 31, 2022. As noted in Note 14, "Income Taxes," of Notes to Unaudited Condensed Consolidated Financial Statements of this Form 10-Q, although it is possible that some of the unrecognized tax benefits could be settled within the next 12 months, we cannot reasonably estimate the outcome at this time.

(2) For our lease commitments as of March 31, 2022, refer to Note 9, "Leases," of Notes to Unaudited Condensed Consolidated Financial Statements of this Form 10-Q.

(3) Our other contractual obligations as of March 31, 2022 were not material.

(4) We have commitments with various software vendors for agreements generally having terms longer than one year.

(5) In connection with the acquisition of Northwest Logic in the third quarter of 2019, the Secure Silicon IP and Protocols business in the fourth quarter of 2019, and the acquisitions of AnalogX and PLDA in the third quarter of 2021, we are obligated to pay retention bonuses to certain employees subject to certain eligibility and acceleration provisions including the condition of employment.

(6) During the three months ended March 31, 2022, we repurchased $107.9 million aggregate principal amount of our 2023 Notes, refer to Note 10, "Convertible Notes," of Notes to Unaudited Condensed Consolidated Financial Statements of this Form 10-Q.

Share Repurchase Program

On October 29, 2020, our Board approved the 2020 Repurchase Program authorizing the repurchase of up to an aggregate of 20.0 million shares. Share repurchases under the 2020 Repurchase Program may be made through the open market, established plans or privately negotiated transactions in accordance with all applicable securities laws, rules, and regulations. There is no expiration date applicable to the 2020 Repurchase Program. During the three months ended March 31, 2022, we did not repurchase shares of our common stock under the 2020 Repurchase Program.

On November 11, 2020, we entered into the 2020 ASR Program with Deutsche Bank. The 2020 ASR Program was part of the 2020 Repurchase Program. Under the 2020 ASR Program, we pre-paid to Deutsche Bank the $50.0 million purchase price for our common stock and, in turn, we received an initial delivery of approximately 2.6 million shares of our common stock from Deutsche Bank in the fourth quarter of 2020, which were retired and recorded as a $40.0 million reduction to stockholders' equity. The remaining $10.0 million of the initial payment was recorded as a reduction to stockholders' equity as an unsettled forward contract indexed to our stock. During the second quarter of 2021, the accelerated share repurchase program was completed and we received an additional 0.1 million shares of our common stock, which were retired, as the final settlement of the accelerated share repurchase program.

On June 15, 2021, we entered into the 2021 ASR Program with Deutsche Bank. The 2021 ASR Program was part of the share repurchase program previously authorized by our Board on October 29, 2020. Under the 2021 ASR Program, we pre-paid to Deutsche Bank the $100.0 million purchase price for our common stock and, in turn, we received an initial delivery of approximately 3.9 million shares of our common stock from Deutsche Bank in the second quarter of 2021, which were retired and recorded as a $80.0 million reduction to stockholders' equity. The remaining $20.0 million of the initial payment was recorded as a reduction to stockholders' equity as an unsettled forward contract indexed to our stock. During the fourth quarter of 2021, the accelerated share repurchase program was completed and we received an additional 0.4 million shares of our common stock, which were retired, as the final settlement of the accelerated share repurchase program.

As of March 31, 2022, there remained an outstanding authorization to repurchase approximately 12.9 million shares of our outstanding common stock under the 2020 Repurchase Program.

We record share repurchases as a reduction to stockholders' equity. We record a portion of the purchase price of the repurchased shares as an increase to accumulated deficit when the price of the shares repurchased exceeds the average original proceeds per share received from the issuance of common stock.

Warrants

In connection with the 2023 Notes, we separately entered into privately negotiated warrant transactions, whereby we sold warrants (the "Warrants") to certain counterparties (the "Counterparties") to acquire, collectively, subject to anti-dilution adjustments, approximately 9.1 million shares of our common stock at an initial strike price of approximately $23.30 per share, which represents a premium of 60% over the last reported sale price of our common stock of $14.56 on November 14, 2017. We received aggregate proceeds of approximately $23.2 million from the sale of the Warrants to the Counterparties. The Warrants are separate transactions and are not part of the 2023 Notes or Convertible Note Hedge Transactions. The holders of the 2023 Notes and Convertible Note Hedge Transactions will not have any rights with respect to the Warrants.

During the first quarter of 2022 and in connection with the 2023 Notes Partial Repurchase, we entered into agreements with certain financial institutions to retire the corresponding portions of warrants we had previously entered into with the counterparties in connection with the issuance of the 2023 Notes. Upon settlement, we paid $55.1 million in cash for the retirement of the proportionate amount of warrants during the three months ended March 31, 2022.

Upon entering into the 2023 Notes Partial Repurchase agreements, the conversion feature related to the 2023 Notes repurchased, as well as the settlement of the warrants, were subject to derivative accounting.

Refer to Note 10, "Convertible Notes," of Notes to Unaudited Condensed Consolidated Financial Statements of this Form 10-Q for additional information.

Critical Accounting Policies and Estimates

The discussion and analysis of our financial condition and results of operations are based upon our condensed consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue and expenses, and related disclosure of contingent assets and liabilities. On an ongoing basis, we evaluate our estimates, including those related to revenue recognition, investments, income taxes, litigation and other contingencies. We base our estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions. Our critical accounting estimates include those regarding (1) revenue recognition, (2) goodwill, (3) intangible assets, (4) income taxes, (5) stock-based compensation and (6) business combinations. For a discussion of our critical accounting estimates, see "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations — Critical Accounting Policies and Estimates" in our Annual Report on Form 10-K for the year ended December 31, 2021.

Recent Accounting Pronouncements

Refer to Note 2, "Recent Accounting Pronouncements," of Notes to Unaudited Condensed Consolidated Financial Statements of this Form 10-Q for discussion of recent accounting pronouncements including the respective expected dates of adoption.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to financial market risks, primarily arising from the effect of interest rate fluctuations on our investment portfolio. Interest rate fluctuation may arise from changes in the market's view of the quality of the security issuer, the overall economic outlook, and the time to maturity of our portfolio. We mitigate this risk by investing only in high quality, highly liquid instruments. Securities with original maturities of one year or less must be rated by two of the three industry standard rating agencies as follows: A1 by Standard & Poor's, P1 by Moody's and/or F-1 by Fitch. Securities with original maturities of greater than one year must be rated by two of the following industry standard rating agencies as follows: AA- by Standard & Poor's, Aa3 by Moody's and/or AA- by Fitch. By corporate investment policy, we limit the amount of exposure to $15.0 million or 10% of the portfolio, whichever is lower, for any single non-U.S. Government issuer. A single U.S. Agency can represent up to 25% of the portfolio. No more than 20% of the total portfolio may be invested in the securities of an industry sector, with money market fund investments evaluated separately. Our policy requires that at least 10% of the portfolio be in securities with a maturity of 90 days or less. We may make investments in U.S. Treasuries, U.S. Agencies, corporate bonds and municipal bonds and notes with maturities up to 36 months. However, the bias of our investment portfolio is shorter maturities. All investments must be U.S. dollar denominated. Additionally, we have no significant exposure to European sovereign debt.

We invest our cash equivalents and marketable securities in a variety of U.S. dollar financial instruments such as U.S. Treasuries, U.S. Government Agencies, commercial paper and corporate notes. Our policy specifically prohibits trading securities for the sole purposes of realizing trading profits. However, we may liquidate a portion of our portfolio if we experience unforeseen liquidity requirements. In such a case, if the environment has been one of rising interest rates, we may experience a realized loss, similarly, if the environment has been one of declining interest rates, we may experience a realized gain. As of March 31, 2022, we had an investment portfolio of fixed income marketable securities of $180.4 million including cash equivalents. If market interest rates were to increase immediately and uniformly by 1.0% from the levels as of March 31, 2022, the fair value of the portfolio would decline by approximately $2.0 million. Actual results may differ materially from this sensitivity analysis.

The fair value of our convertible notes is subject to interest rate risk, market risk and other factors due to the convertible feature. The fair value of the convertible notes will generally increase as interest rates fall and decrease as interest rates rise. In addition, the fair value of the convertible notes will generally increase as our common stock price increases and will generally decrease as our common stock price declines in value. The interest and market value changes affect the fair value of our convertible notes but do not impact our financial position, cash flows or results of operations due to the fixed nature of the debt obligation.

We invoice the majority of our customers in U.S. dollars. Although the fluctuation of currency exchange rates may impact our customers, and thus indirectly impact us, we do not attempt to hedge this indirect and speculative risk. Our overseas operations consist primarily of international business operations in France, the Netherlands and the United Kingdom, design centers in Canada, India, Bulgaria and Finland and small business development offices in Australia, China, Japan, South Korea and Taiwan. We monitor our foreign currency exposure; however, as of March 31, 2022, we believe our foreign currency exposure is not material enough to warrant foreign currency hedging.

Item 4. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

We maintain disclosure controls and procedures designed to ensure that information required to be disclosed in the reports we file or submit pursuant to the Securities and Exchange Act of 1934, as amended (the “Exchange Act”), is recorded, processed, summarized and reported within the time periods specified in the rules and forms of the Securities and Exchange Commission, and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

Management, with the participation of the Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of the design and operation of our disclosure controls and procedures as defined in Rules 13a-15(e) and 15d-15(e) of the Exchange Act as of the end of the period covered by this report. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that, as of March 31, 2022, our disclosure controls and procedures were effective.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting identified in management’s evaluation pursuant to Rules 13a-15(d) or 15d-15(d) of the Exchange Act during the quarter ended March 31, 2022, that materially affected, or that we believe are reasonably likely to materially affect, our internal control over financial reporting.

PART II—OTHER INFORMATION

Item 1. Legal Proceedings

We are not currently a party to any material pending legal proceeding; however, from time to time, we may become involved in legal proceedings or be subject to claims arising in the ordinary course of our business. Although the results of litigation and claims cannot be predicted with certainty, we currently believe that the final outcome of these ordinary course matters will not have a material adverse effect on our business, operating results, financial position or cash flows. Regardless of the outcome, litigation can have an adverse impact on us because of defense and settlement costs, diversion of management attention and resources and other factors.

Item 1A. Risk Factors

Because of the following factors, as well as other variables affecting our operating results, past financial performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results or trends in future periods. See also “Note Regarding Forward-Looking Statements” at the beginning of this report.

Summary Risk Factors

Our business is subject to numerous risks and uncertainties that you should consider before investing in our company, as fully described below. The principal factors and uncertainties that make investing in our company risky include, among others:

- We have traditionally operated in, and may enter other, industries that are highly cyclical and competitive.
- Our revenue is concentrated in a few customers, and if we lose any of these customers through contract terminations or acquisitions, our revenue may decrease substantially.
- Some of our revenue is subject to the pricing policies of our customers over which we have no control.
- Our customers often require our products to undergo a lengthy and expensive qualification process which does not assure product sales. If we are unsuccessful or delayed in qualifying any of our products with a customer, our business and operating results would suffer.
- We may not be able to enhance our existing products and develop new products in a timely manner.
- Our future revenue depends in meaningful part on sustaining or growing our licensing revenue and the failure to achieve such revenue would lead to a material decline in our results of operations.
- Our licensing cycle is lengthy and costly, and our marketing and licensing efforts may be unsuccessful.
- Some of our license agreements may convert to fully paid-up licenses at the expiration of their terms, or upon certain milestones, and we may not receive royalties after that time.
- Future revenue is difficult to predict for several reasons, and our failure to predict revenue accurately may result in our stock price declining.
- We may fail to meet our publicly announced guidance or other expectations about our business, which would likely cause our stock price to decline.
- A substantial portion of our revenue is derived from sources outside of the United States and this revenue and our business generally are subject to risks related to international operations that are often beyond our control.
- Weak global economic conditions may adversely affect demand for the products and services of our customers.
- We may have to invest more resources in research and development than anticipated, which could increase our operating expenses and negatively impact our operating results.
- Any failure in our delivery of high-quality technical support services may adversely affect our relationships with our customers and our financial results.
- Our operations are subject to the effects of a rising rate of inflation.
- We rely on third parties for a variety of services, including manufacturing, and these third parties’ failure to perform these services adequately or change the allocation of their services/capacity due to industry or other pressures could materially and adversely affect our business.
- We rely on a number of third-party providers for data center hosting facilities, equipment, maintenance and other services, and the loss of, or problems with, one or more of these providers may impede our growth or cause us to lose customers.
- We face risks related to the ongoing COVID-19 pandemic and subsequent variants, which could significantly disrupt our research and development, operations, sales and financial results.
- Our business and operations could suffer in the event of physical and cyber security breaches and incidents.
- Failures in our products and services or in the products of our customers, including those resulting from security vulnerabilities, defects, bugs or errors, could harm our business.

- We have in the past made and may in the future make acquisitions or enter into mergers, strategic investments, sales of assets, divestitures or other arrangements that may not produce expected operating and financial results.
- If we are unable to attract and retain qualified personnel globally, especially in light of a hyper-competitive compensation environment, our business and operations could suffer.
- Our operations are subject to risks of natural disasters, acts of war, terrorism, widespread illness or security breaches or incidents at our domestic and international locations, any one of which could result in a business stoppage and negatively affect our operating results.
- In the future, we may fail to maintain an effective system of internal control over financial reporting or adequate disclosure controls and procedures, which may result in material misstatements of our consolidated financial statements or cause us to fail to meet our periodic reporting obligations.
- Unanticipated changes in our tax rates or in the tax laws, treaties and regulations could expose us to additional income tax liabilities, which could affect our operating results and financial condition.
- We are subject to various government restrictions and regulations, including on the sale of products and services that use encryption technology and those related to privacy and other consumer protection matters.
- Litigation and government proceedings could affect our business in materially negative ways.
- If we are unable to protect our inventions successfully through the issuance and enforcement of patents, our operating results could be adversely affected.
- Third parties may claim that our products or services infringe on their intellectual property rights, exposing us to litigation that, regardless of merit, may be costly to defend.
- Warranty, service level agreement and product liability claims brought against us could cause us to incur significant costs and adversely affect our operating results, as well as our reputation and relationships with customers.
- The price of our common stock may continue to fluctuate.
- We are leveraged financially, which could adversely affect our ability to adjust our business to respond to competitive pressures and to obtain sufficient funds to satisfy our future research and development needs, to protect and enforce our intellectual property, and to meet other needs.
- Compliance with changing regulation of corporate governance and public disclosure may result in additional expenses.
- Our certificate of incorporation and bylaws, Delaware law, our outstanding convertible notes and certain other agreements contain provisions that could discourage transactions resulting in a change in control, which may negatively affect the market price of our common stock.

Risks Associated With Our Business, Industry and Market Conditions

We have traditionally operated in, and may enter other, industries that are highly cyclical and competitive.

Our target customers are companies that develop and market high volume business and consumer products in semiconductors, computing, data centers, networks, tablets, handheld devices, mobile applications, gaming and graphics, high-definition televisions, cryptography and data security. The electronics industry is intensely competitive and has been impacted by rapid technological change, short product life cycles, cyclical market patterns, price erosion and increasing foreign and domestic competition. We are subject to many risks beyond our control that influence whether or not we are successful in winning target customers or retaining existing customers, including, primarily, competition in a particular industry, market acceptance of such customers' products and the financial resources of such customers. In particular, DRAM manufacturers, which such customers make up a significant part of our revenue, are prone to significant business cycles and have suffered material losses and other adverse effects to their businesses, leading to industry consolidation from time-to-time that may result in loss of revenues under our existing license agreements or loss of target customers. As a result of ongoing competition in the industries in which we operate and volatility in various economies around the world, we may achieve reduced market share, a reduced number of licenses or may experience tightening of customers' operating budgets, difficulty or inability of our customers to pay our licensing fees, lengthening of the approval process for new products and licenses and consolidation among our customers. All of these factors may adversely affect the demand for our products and technologies and may cause us to experience substantial fluctuations in our operating results.

We face competition from semiconductor and digital electronics products and systems companies, and other semiconductor IP companies that provide security cores that are available to the market. We believe some of the competition for our technologies may come from our prospective customers, some of which are internally evaluating and developing products based on technologies that they contend or may contend will not require a license from us. Many of these companies are larger and may have better access to financial, technical and other resources than we possess.

To the extent that alternative technologies might provide comparable system performance at lower or similar cost to our technologies, or are perceived to require the payment of no or lower fees and/or royalties, or to the extent other factors influence the industry, our customers and prospective customers may adopt and promote such alternative technologies. Even to the extent we determine that such alternative technologies infringe our patents, there can be no assurance that we would be able to negotiate agreements that would result in royalties being paid to us without litigation, which could be costly and the results of which would be uncertain.

In addition, our efforts to expand into new markets subject us to additional risks. We may have limited or no experience in new products and markets, and our customers may not adopt our new offerings. These and other new offerings may present new and difficult challenges, which could negatively affect our operating results.

Our revenue is concentrated in a few customers, and if we lose any of these customers through contract terminations or acquisitions, our revenue may decrease substantially.

We have a high degree of revenue concentration. Our top five customers for each reporting period represented approximately 59% of our revenue for both the three months ended March 31, 2022 and 2021, respectively. Additionally, our top five customers represented approximately 56% and 46% of our revenues for the years ended December 31, 2021 and 2020, respectively. We expect to continue to experience significant revenue concentration for the foreseeable future.

In addition, our license agreements are complex and some contain terms that require us to provide certain customers with the lowest royalty rate that we provide to other customers for similar technologies, volumes and schedules. These clauses may limit our ability to effectively price differently among our customers, to respond quickly to market forces, or otherwise to compete on the basis of price. These clauses may also require us to reduce royalties payable by existing customers when we enter into or amend agreements with other customers. Any adjustment that reduces royalties from current customers or licensees may have a material adverse effect on our operating results and financial condition.

We continue to negotiate with customers and prospective customers to enter into license agreements. Any future agreement may trigger our obligation to offer comparable terms or modifications to agreements with our existing customers, which may be less favorable to us than the existing license terms. We expect licensing fees will continue to vary based on our success in renewing existing license agreements and adding new customers, as well as the level of variation in our customers' reported shipment volumes, sales price and mix, offset in part by the proportion of customer payments that are fixed. In particular, under our license agreement with Samsung, the license fees payable by Samsung are subject to certain adjustments and conditions, and we therefore cannot provide assurances that the revenues generated by this license will not decline in the future. Further, the license agreement with Samsung is currently set to expire on September 30, 2023, and we cannot provide assurances that this license will be renewed. If we are unable to renew the Samsung license, then the licensing billings generated by the license will cease, and we will not recognize any revenue associated with a potential renewal. In addition, some of our material license agreements may contain rights by the customer to terminate for convenience, or upon certain other events, such as change of control, material breach, insolvency or bankruptcy proceedings. If we are unsuccessful in entering into license agreements with new customers or renewing license agreements with existing customers, on favorable terms or at all, or if they are terminated, our results of operations may decline significantly.

Some of our revenue is subject to the pricing policies of our customers over which we have no control.

We have no control over our customers' pricing of their products and there can be no assurance that licensed products will be competitively priced or will sell in significant volumes. Any premium charged by our customers in the price of memory and controller chips or other products over alternatives must be reasonable. If the benefits of our technology do not match the price premium charged by our customers, the resulting decline in sales of products incorporating our technology could harm our operating results.

Our customers often require our products to undergo a lengthy and expensive qualification process which does not assure product sales. If we are unsuccessful or delayed in qualifying any of our products with a customer, our business and operating results would suffer.

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

We may not be able to enhance our existing products and develop new products in a timely manner.

Our future operating results will depend to a significant extent on our ability to continue to offer products that compare favorably with alternative solutions on the basis of time to introduction, cost, performance, and end user preferences. Our product offerings may present new and difficult challenges, and we may be subject to claims if customers of our offerings experience delays, failures, non-performance or other quality issues. In particular, we may experience difficulties with product design, qualification, manufacturing, including supply chain shortages that might lead to an inability to meet customer demand, marketing or certification that could delay or prevent our development, introduction or marketing and sales of products. Although we intend to design our products to be fully compliant with applicable industry standards, proprietary enhancements may not in the future result in full conformance with existing industry standards under all circumstances.

Further, our business model continues to transform towards greater reliance on product revenue. In particular, we are relying on our memory interface chips to result in significant growth in fiscal 2022. If sales of our memory interface chips do not grow as anticipated, then our business could suffer as a result.

Our future revenue depends in meaningful part on sustaining or growing our licensing revenue and the failure to achieve such revenue would lead to a material decline in our results of operations.

A large portion of our revenue consists of patent and technology license fees paid for access to our patented technologies, existing technology and other development and support services we provide to our customers. Our ability to secure and renew the licenses from which our revenues are derived depends on our customers adopting our technology and using it in the products they sell. If customers reduce the need to upgrade or enhance their product offerings to include such technologies, our revenue and operating results may be adversely affected. Once secured, license revenue may be negatively affected by factors within and outside our control, including reductions in our customers' sales prices, sales volumes, our failure to timely complete engineering deliverables, and the actual terms of such licenses themselves. In addition, our licensing cycle for new licensees, as well as for renewals for existing licensees is lengthy, costly and unpredictable. We cannot provide any assurance that we will be successful in signing new license agreements or renewing existing license agreements on equal or favorable terms or at all. If we do not achieve our revenue goals, our results of operations could decline.

Our licensing cycle is lengthy and costly, and our marketing and licensing efforts may be unsuccessful.

The process of persuading customers to adopt and license our Chip interface, data Security IP, and other technologies can be lengthy. Even if successful, there can be no assurance that our technologies will be used in a product that is ultimately brought to market, achieves commercial acceptance or results in significant royalties to us. We generally incur significant marketing and sales expenses prior to entering into our license agreements, generating a license fee and establishing a royalty stream from each customer. The length of time it takes to establish a new licensing relationship can take many months or even years. We may incur costs in any particular period before any associated revenue stream begins, if at all. If our marketing and sales efforts are very lengthy or unsuccessful, then we may face a material adverse effect on our business and results of operations as a result of failure to obtain or an undue delay in obtaining royalties.

Some of our license agreements may convert to fully paid-up licenses at the expiration of their terms, or upon certain milestones, and we may not receive royalties after that time.

From time to time, we enter into license agreements that automatically convert to fully paid-up licenses upon expiration or upon reaching certain milestones. We may not receive further royalties from customers for any licensed technology under those agreements if they convert to fully paid-up licenses because such customers will be entitled to continue using some, if not all, of the relevant intellectual property ("IP") or technology under the terms of the license agreements without further payment, even if relevant patents or technologies are still in effect. If we cannot find another source of royalties to replace the royalties from these license agreements converting to fully paid-up licenses, our results of operations following such conversion could be adversely affected.

Future revenue is difficult to predict for several reasons, and our failure to predict revenue accurately may result in our stock price declining.

As we commercially launch each of our products, the sales volume of and resulting revenue from such products in any given period will be difficult to predict. Our lengthy license negotiation cycles could make a considerable portion of our future revenue difficult to predict because we may not be successful in entering into or renewing licenses with our customers on our anticipated timelines.

In addition, while some of our license agreements provide for fixed, quarterly royalty payments, many of our license agreements provide for volume-based royalties and may also be subject to caps on royalties in a given period. The sales volume and prices of our customers' products in any given period can be difficult to predict. In addition, we began applying the new revenue recognition standard ("ASC 606") during the first quarter of 2018, as required, and we anticipate that our revenue will vary greatly from quarter to quarter. As a result of the foregoing items, our actual results may differ substantially from analyst estimates or our forecasts in any given quarter.

Also, a portion of our revenue comes from development and support services provided to our customers. Depending upon the nature of the services, a portion of the related revenue may be recognized ratably over the support period, or may be recognized according to contract revenue accounting. Contract revenue accounting may result in deferral of the service fees to the completion of the contract, or may result in the recognition of service fees over the period in which services are performed on a percentage-of-completion basis.

We may fail to meet our publicly announced guidance or other expectations about our business, which would likely cause our stock price to decline.

We provide guidance regarding our expected financial and business performance including our anticipated future revenues, operating expenses and other financial and operation metrics. Correctly identifying the key factors affecting business conditions and predicting future events is an inherently uncertain process. Any guidance that we provide may not always be accurate, or may vary from actual results, due to our inability to correctly identify and quantify risks and uncertainties to our business and to quantify their impact on our financial performance. We offer no assurance that such guidance will ultimately be accurate, and investors should treat any such guidance with appropriate caution. If we fail to meet our guidance or if we find it necessary to revise such guidance, even if such failure or revision is seemingly insignificant, investors and analysts may lose confidence in us and the market value of our common stock could be materially adversely affected.

A substantial portion of our revenue is derived from sources outside of the United States and this revenue and our business generally are subject to risks related to international operations that are often beyond our control.

For the three months ended March 31, 2022 and 2021, revenues received from our international customers constituted approximately 44% and 34%, respectively, of our total revenue. Additionally, for the years ended December 31, 2021 and 2020, revenues received from our international customers constituted approximately 36% and 44%, respectively, of our total revenue. We expect that future revenue derived from international sources will continue to represent a significant portion of our total revenue.

To the extent that customer sales are not denominated in U.S. dollars, any royalties which are based on a percentage of the customers' sales that we receive as a result of such sales could be subject to fluctuations in currency exchange rates. In addition, if the effective price of licensed products sold by our foreign customers were to increase as a result of fluctuations in the exchange rate of the relevant currencies, demand for licensed products could fall, which in turn would reduce our royalties. We do not use financial instruments to hedge foreign exchange rate risk.

Trade-related government actions, whether implemented by the U.S. government, China or other countries, that impose barriers or restrictions that would impact our ability to sell or ship products to certain customers may have a negative impact on our financial condition and results of operations. We cannot predict the actions government entities may take in this context and may be unable to quickly offset or effectively react to government actions that restrict our ability to sell to certain customers or in certain jurisdictions. Government actions that affect our customers' ability to sell products or access critical elements of their supply chains may result in a decreased demand for their products, which may consequently reduce their demand for our products.

We currently have international business operations in the United Kingdom, France, the Netherlands and Bulgaria, international design operations in Canada, India, Finland, France and Bulgaria, and business development operations in China, Japan, South Korea, and Taiwan. Our international operations and revenue are subject to a variety of risks which are beyond our control, including:

- hiring, maintaining and managing a workforce and facilities remotely and under various legal systems, including compliance with local labor and employment laws;
- non-compliance with our code of conduct or other corporate policies;
- natural disasters, acts of war, terrorism, widespread global pandemics or illness, such as COVID-19 and its variants, or security breaches or incidents;
- export controls, tariffs, import and licensing restrictions, climate-change regulations and other trade barriers;
- profits, if any, earned abroad being subject to local tax laws and not being repatriated to the United States or, if repatriation is possible, limited in amount;
- adverse tax treatment of revenue from international sources and changes to tax codes, including being subject to foreign tax laws and being liable for paying withholding, income or other taxes in foreign jurisdictions;

- unanticipated changes in foreign government laws and regulations;
- increased financial accounting and reporting burdens and complexities;
- lack of protection of our IP and other contract rights by jurisdictions in which we may do business to the same extent as the laws of the United States;
- potential vulnerability to computer system, internet or other systemic attacks, such as denial of service, viruses or other malware which may be caused by criminals, terrorists or other sophisticated organizations;
- social, political and economic instability;
- geopolitical issues, including changes in diplomatic and trade relationships, in particular with China; and
- cultural differences in the conduct of business both with customers and in conducting business in our international facilities and international sales offices.

We and our customers are subject to many of the risks described above with respect to companies which are located in different countries. There can be no assurance that one or more of the risks associated with our international operations will not result in a material adverse effect on our business, financial condition or results of operations.

Weak global economic conditions may adversely affect demand for the products and services of our customers.

Our operations and performance depend significantly on worldwide economic conditions. Future uncertainty about global or regional economic and political conditions poses a risk as consumers and businesses may postpone spending in response to tighter credit, negative financial news and declines in income or asset values, which could have a material negative effect on the demand for the products of our customers in the foreseeable future. If our customers experience reduced demand for their products as a result of global or regional economic conditions or otherwise, this could result in reduced royalty revenue and our business and results of operations could be harmed.

We may have to invest more resources in research and development than anticipated, which could increase our operating expenses and negatively impact our operating results.

If new competitors, technological advances by existing competitors, and/or development of new technologies in the digital electronics or semiconductor industries or other competitive factors require us to invest significantly greater resources than anticipated in our research and development efforts, our operating expenses could increase. If we are required to invest significantly greater resources than anticipated in research and development efforts without an increase in revenue, our operating results would decline. We expect these expenses to increase in the foreseeable future as our technology development efforts continue. Additionally, there can be no guarantee that our research and development investments will result in products that create additional revenue.

If we fail to introduce products that meet the demand of our customers, penetrate new markets in which we expend significant resources, or our marketing and sales cycles are longer than we anticipate, our revenues will be difficult to predict, may decrease over time and our financial condition could suffer. Additionally, if we concentrate resources on a new market that does not prove profitable or sustainable, it could damage our reputation and limit our growth, and our financial condition could decline.

In addition, new products that we develop may not adequately address the changing needs of the marketplace. The new products that we develop may contain undetected errors, defects, or vulnerabilities. The occurrence of any defects or errors in our products could result in lost or delayed market acceptance and sales of our products, delays in payment by customers, loss of customers or market share, product returns, damage to our reputation, diversion of our resources, increased service and warranty expenses or financial concessions, increased insurance costs and potential liability for damages.

Any failure in our delivery of high-quality technical support services may adversely affect our relationships with our customers and our financial results.

Our customers depend on our support organization to resolve technical issues and provide ongoing maintenance relating to our products and services. We may be unable to respond quickly enough to accommodate short-term increases in customer demand for support services. Increased customer demand for these services, without corresponding revenues, could increase costs and adversely affect our operating results. In addition, our sales process is highly dependent on our offerings and business reputation and on positive recommendations from our existing customers. Any failure to maintain high-quality technical support, or a market perception that we do not maintain high-quality support, could adversely affect our reputation, our ability to sell our solutions to existing and prospective customers, and our business, operating results and financial position.

Our operations are subject to the effects of a rising rate of inflation.

The United States has recently experienced historically high levels of inflation. If the inflation rate continues to increase, such as increases in the costs of labor and supplies, it will affect our expenses, such as employee compensation and research and development charges. Research and development expenses account for a significant portion of our operating expenses. Additionally, the United States is experiencing an acute workforce shortage, which in turn, has created a hyper-competitive wage environment that may increase the Company's operating costs. To the extent inflation results in rising interest rates and has other adverse effects on the market, it may adversely affect our consolidated financial condition and results of operations.

Risks Associated with Our Supply and Third Party Manufacturing

We rely on third parties for a variety of services, including manufacturing, and these third parties' failure to perform these services adequately or change the allocation of their services/capacity due to industry or other pressures could materially and adversely affect our business.

We rely on third parties for a variety of services, including our manufacturing supply chain partners and third parties within our sales and distribution channels. Certain of these third parties are, and may be, our sole manufacturer or sole source of certain production materials. If we fail to manage our relationships with these manufacturers and suppliers effectively, or if they experience delays, disruptions, capacity constraints/allocation pressures or quality control problems in their operations, our ability to ship products to our customers could be impaired and our competitive position and reputation could be harmed. In addition, any adverse change in any of our manufacturers and suppliers' financial or business condition could disrupt our ability to supply quality products to our customers. If we are required to change our manufacturers, we may lose revenue, incur increased costs and damage our end-customer relationships. In addition, qualifying a new manufacturer and commencing production can be an expensive and lengthy process. If our third-party manufacturers or suppliers are unable to provide us with adequate supplies of high-quality products for any other reason, we could experience a delay in our order fulfillment, and our business, operating results and financial condition would be adversely affected. In the event these and other third parties we rely on fail to provide their services adequately, including as a result of errors in their systems, industry pressures or events beyond their control, or refuse to provide these services on terms acceptable to us or at all, and we are not able to find suitable alternatives, our business may be materially and adversely affected. In addition, our orders may represent a relatively small percentage of the overall orders received by our manufacturers from their customers. As a result, fulfilling our orders may not be considered a priority in the event our manufacturers are constrained in their ability to fulfill all of their customer obligations in a timely manner. If our manufacturers are unable to provide us with adequate supplies of high-quality products, or if we or our manufacturers are unable to obtain adequate quantities of components, it could cause a delay in our order fulfillment, in which case our business, operating results and financial condition could be adversely affected.

Semiconductor supply chain disruptions have been well publicized recently given high demand and lower supply. We believe that we will continue to experience various supply constraints related to our memory interface chip business in the near term. In particular, to the extent we do not have sufficient wafer and packaging substrate firm commitments from our third-party suppliers, we may not obtain the materials needed on our desired timelines or at reasonable prices. Large swings in demand may exceed our contracted supply and/or our suppliers' capacity to meet those demand changes resulting in a shortage of parts, materials, or capacity needed to manufacture our products. While we continually work with our suppliers to mitigate the impact of the supply constraints to our customer deliveries, in the event of a shortage or supply interruption from suppliers of related components, we may not be able to develop alternate sources quickly, cost-effectively, or at all. An extended period of global supply chain and economic disruption as a result of the COVID-19 pandemic could have a material negative impact on our business, results of operations, access to sources of liquidity and financial condition, though the full extent and duration is uncertain. Additionally, various sources of supply-chain risk, including strikes or shutdowns at delivery ports or loss of or damage to our products while they are in transit or storage, intellectual property theft, losses due to tampering, third-party vendor issues with quality or sourcing control, failure by our suppliers to comply with applicable laws and regulations, potential tariffs or other trade restrictions, or other similar problems could limit or delay the supply of our products or harm our reputation. Any interruption or delay in manufacturing or component supply, any increases in manufacturing or component costs, or the inability to obtain these services or components from alternate sources at acceptable prices and within a reasonable amount of time would harm our ability to provide our products to customers on a timely basis. This could harm our relationships with our customers, prevent us from acquiring new customers, and materially and adversely affect our business.

We rely on a number of third-party providers for data center hosting facilities, equipment, maintenance and other services, and the loss of, or problems with, one or more of these providers may impede our growth or cause us to lose customers.

We rely on third-party providers to supply data center hosting facilities, equipment, maintenance and other services in order to enable us to provide some of our services, and have entered into various agreements for such services. The continuous availability of our services depends on the operations of those facilities, on a variety of network service providers and on third-party vendors. In addition, we depend on our third-party facility providers' ability to protect these facilities against damage or interruption from natural disasters, power or telecommunications failures, criminal acts, cyber-attacks and similar events. If there are any lapses of service or damage to a facility, we could experience lengthy interruptions in our service, as well as delays and additional expenses in arranging new facilities and services. Even with current and planned disaster recovery arrangements, our business could be harmed. Any interruptions or delays in our service, whether as a result of third-party error, our own error, natural disasters, criminal acts, security breaches or other causes, whether accidental or willful, could harm our relationships with customers, harm our reputation and cause our revenue to decrease and/or our expenses to increase. Also, in the event of damage or interruption, our insurance policies may not adequately compensate us for any losses that we may incur. These factors in turn could further reduce our revenue, subject us to liability and cause us to issue credits or cause us to lose customers, any of which could materially adversely affect our business.

Certain software that we use in certain of our products is licensed from third parties and, for that reason, may not be available to us in the future, which has the potential to delay product development and production or cause us to incur additional expense, which could materially adversely affect our business, financial condition, operating results and cash flow.

Some of our products and services contain software licensed from third parties. Some of these licenses may not be available to us in the future on terms that are acceptable to us or allow our products to remain competitive. The loss of these licenses or the inability to maintain any of them on commercially acceptable terms could delay development of future offerings or the enhancement of existing products and services. We may also choose to pay a premium price for such a license in certain circumstances where continuity of the licensed product would outweigh the premium cost of the license. The unavailability of these licenses or the necessity of agreeing to commercially unreasonable terms for such licenses could materially adversely affect our business, financial condition, operating results and cash flow.

Risks Associated with Our Business Operations

We face risks related to the ongoing COVID-19 pandemic and subsequent variants, which could significantly disrupt our research and development, operations, sales and financial results.

Our business may continue to be adversely impacted by the effects of the ongoing COVID-19 pandemic and subsequent variants that continue to spread through the world and has adversely impacted global commercial activity. In addition to global macroeconomic effects, the ongoing COVID-19 pandemic has caused minor disruption to our domestic and international operations and sales activities. Our third-party manufacturers, suppliers, third-party distributors, sub-contractors and customers have been and will continue to be disrupted by worker absenteeism, quarantines and restrictions on our employees' ability to work, office and factory closures, disruptions to ports and other shipping infrastructure, border closures, or other travel or health-related restrictions. The spread of COVID-19 has caused us to modify our business practices (including employee travel, mandatory work-from-home policies, vaccine mandates, and cancellation of physical participation in meetings, events, and conferences), and we may take further actions as required by government authorities and regulations or that we determine are in the best interests of our employees, customers, partners, and suppliers. Some regions are easing COVID-19 related restrictions; however, most of our employees continue to work remotely and we continue to temporarily prohibit most business travel. There is no certainty that such measures will be sufficient to mitigate the risks posed by the disease, and our ability to perform critical functions could be harmed. As our offices begin to reopen, we expect to incur incremental expenses as we resume onsite services and related in-office costs, which could adversely impact our results of operations.

Such restrictions may also impact the ability of our employees to perform their jobs and our ability to develop and design our products in a timely manner or meet required milestones or customer commitments. Depending on the magnitude of such effects on the operations of our suppliers, third-party distributors, or sub-contractors, our supply chain and product shipments may be delayed, which could adversely affect our business, operations and customer relationships.

Further, we rely on third-party suppliers and manufacturers throughout the globe. The ongoing COVID-19 pandemic has resulted in the extended shutdown of certain businesses and the closure of international borders throughout the world, which may result in disruptions to our supply chain and critical logistics providers. These may include disruptions from temporary closure of third-party supplier and manufacturer facilities, interruptions in product supply or restrictions on the export or shipment of our products, as well as the import of products into countries in which we operate. Although we have attempted to minimize the effects of these disruptions, it is possible that these attempts will be insufficient and that these disruptions will likely have an adverse effect on our revenues and operating results.

In some regions, markets, or industries where COVID-19 and its variants have driven an increase in sales for our products, the demand may not be sustainable if conditions change. The reopening of offices may also generate demand for our products that may be temporary. Additionally, stronger demand globally has limited the availability of capacity and components in our supply chain, which could cause us to order an excess amount if demand changes, pay higher prices, or limit our ability to obtain supply at necessary levels or at all. As the COVID-19 pandemic continues, the timing and overall demand from customers and the availability of supply chain, logistical services, component supply and increases in inflation rates may have a material net negative impact on our business and financial results.

In addition, the ongoing COVID-19 pandemic or other disease outbreak may continue to adversely affect the economies and financial markets of many countries, resulting in an economic downturn that may impact overall technology spending, adversely affecting demand for our products and impacting our operating results. There can be no assurance that any decrease in sales resulting from the ongoing COVID-19 pandemic will be offset by increased sales in subsequent periods. Furthermore, such disruption in the global financial markets may reduce our ability to access capital or our customers' ability to pay us for past or future purchases, which could negatively affect our liquidity.

In addition, the ongoing COVID-19 pandemic continues to evolve rapidly, with localized surges in COVID-19 cases and the status of operations and government restrictions evolving weekly. Although the magnitude of the impact of the ongoing COVID-19 pandemic on our business and operations remains uncertain, the extent to which the outbreak impacts our business, financial condition, operating results and cash flows will depend on future developments, which are highly uncertain and cannot be predicted with confidence, such as the duration, severity and continued spread of the pandemic, the emergence and spread of new and more contagious or deadly variants or mutant strains of the COVID-19 virus that may render vaccines ineffective or decrease their efficacy, travel restrictions and social distancing in the United States and other countries, business closures or business disruptions, the duration, timing and severity of the impact on customer spending, and the effectiveness of actions taken in the United States and other countries to contain and treat the disease. We may also suffer from any of the foregoing disruptions if COVID-19 experiences a resurgence in any particular country or region in the future.

Our business and operations could suffer in the event of physical and cyber security breaches and incidents.

Attempts by others to gain unauthorized access to and disrupt our information technology systems are becoming more sophisticated. These attempts, which might be related to industrial or other espionage, may include covertly introducing malware to our computers and networks and impersonating authorized users, phishing attempts and other forms of social engineering, employee or contractor malfeasance, denial of service attacks and ransomware attacks, among others. We seek to detect and investigate all security incidents impacting our systems and to prevent their recurrence, but in some cases, we might be unaware of an incident or its magnitude and effects. We also utilize third-party service providers to host, transmit or otherwise process electronic data in connection with our business activities, including our supply chain processes, operations and communications. We and/or our third-party service providers have faced and may continue to face security threats and attacks from a variety of sources. Our data, corporate systems, third-party systems and security measures may be subject to breaches or intrusions due to the actions of outside parties, employee error, malfeasance, a combination of these, or otherwise, including social engineering and employee and contractor error or malfeasance, especially as certain of our employees engage in work from home arrangements because of the COVID-19 pandemic, and, as a result, an unauthorized party may obtain access to our systems, networks, or data, including IP and confidential business information of ourselves and our customers. There have been and may continue to be significant supply chain attacks, and we cannot guarantee that our or our third-party service providers' systems and networks have not been breached or that they do not contain exploitable defects or bugs that could result in a breach of or disruption to our systems and networks or the systems and networks of third parties that support us and our services. We and our service providers may face difficulties or delays in identifying or responding to any actual or perceived security breach or incident. While we have not identified any material incidents of unauthorized access to date, the theft or other unauthorized acquisition of, unauthorized use or publication of, or access to our IP and/or confidential business information could harm our competitive position and reputation, reduce the value of our investment in research and development and other strategic initiatives or otherwise adversely affect our business. In the event of any security breach or incident, including any breach or incident that results in inappropriate access to, or loss, corruption, unavailability, or unauthorized acquisition, disclosure or other processing of our or our customers' confidential information or any personally-identifiable information we or our third-party service providers maintain, including that of our employees, we could suffer a loss of intellectual property or loss of data, may be subject to claims, liability and proceedings, and may incur liability and otherwise suffer financial harm.

Any actual, alleged or perceived breach of security in our systems or networks, or any other actual, alleged or perceived data security incident we or our third-party service providers suffer, could result in damage to our reputation, negative publicity, loss of customers and sales, harm to our market position, increased costs to remedy any problems and otherwise respond to any incident, regulatory investigations and enforcement actions, claims, litigation, proceedings and other liability. In addition, we may incur significant costs and operational consequences of investigating, remediating, eliminating and putting in place additional tools and devices designed to prevent actual or perceived security breaches and other security incidents, as well as the costs to comply with any notification or other legal obligations resulting from any security incidents. Any of these negative outcomes could result in substantial costs and diversion of resources, distract management and technical personnel, adversely impact our sales and reputation and seriously harm our business or operating results.

Although we maintain insurance coverage that may cover certain liabilities in connection with some security breaches and other security incidents, we cannot be certain our insurance coverage will be adequate for liabilities actually incurred, that insurance will continue to be available to us on commercially reasonable terms (if at all) or that any insurer will not deny coverage as to any future claim. The successful assertion of one or more large claims against us that exceed available insurance coverage, the occurrence of changes in our insurance policies, including premium increases or the imposition of large deductible or co-insurance requirements, or denials of coverage, could have a material adverse effect on our business, including our financial condition, results of operations and reputation.

Failures in our products and services or in the products of our customers, including those resulting from security vulnerabilities, defects, bugs or errors, could harm our business.

Our products and services are highly technical and complex, and among our various businesses our products and services are crucial to providing security and other critical functions for our customers' operations. Our products and services have from time to time contained and may in the future contain undetected errors, bugs, defects or other security vulnerabilities. Some errors in our products and services may only be discovered after a product or service has been deployed and used by customers, and may in some cases only be detected under certain circumstances or after extended use. In addition, because the techniques used by hackers to access or sabotage our products and services and other technologies change and evolve frequently and generally are not recognized until launched against a target, we may be unable to anticipate, detect or prevent these techniques and may not address them in our data security technologies. Any errors, bugs, defects or security vulnerabilities discovered in our solutions after commercial release could adversely affect our revenue, our customer relationships and the market's perception of our products and services. We may not be able to correct any errors, bugs, defects, security flaws or vulnerabilities promptly, or at all. Any breaches, defects, errors or vulnerabilities in our products and services could result in:

- expenditure of significant financial and research and development resources in efforts to analyze, correct, eliminate or work around breaches, errors, bugs or defects or to address and eliminate vulnerabilities;
- financial liability to customers for breach of certain contract provisions, including indemnification obligations;
- loss of existing or potential customers;
- product shipment restrictions or prohibitions to certain customers;
- delayed or lost revenue;
- delay or failure to attain market acceptance;
- negative publicity, which would harm our reputation; and
- litigation, regulatory inquiries or investigations that would be costly and harm our reputation.

Changes in accounting principles and guidance could result in unfavorable accounting charges or effects.

We prepare our financial statements in accordance with accounting principles generally accepted in the United States and these principles are subject to interpretation by the SEC, the Financial Accounting Standards Board ("FASB") and various bodies formed to interpret and create appropriate accounting principles and guidance. A change in these principles or application guidance, or in their interpretations, may have a material effect on our reported results, as well as our processes and related controls, and may retroactively affect previously reported results. For instance, we adopted ASC 842, the New Leasing Standard, effective for us on January 1, 2019, using the alternative transition method and recognized a cumulative-effect adjustment to the opening balance of accumulated deficit on January 1, 2019. We also adopted ASC 606, the New Revenue Standard, effective for us on January 1, 2018, on a modified retrospective basis, with a cumulative-effect adjustment to the opening balance of accumulated deficit on January 1, 2018. The New Revenue Standard materially impacted the timing of revenue recognition for our fixed-fee IP licensing arrangements (including certain fixed-fee agreements that license our existing IP portfolio, as well as IP added to our portfolio during the license term) as a majority of such revenue would be recognized at inception of the license term (as opposed to over time as is the case under prior U.S. GAAP), and we are required to compute and recognize interest income over time for certain licensing arrangements as control over the IP generally transfers significantly in advance of cash being received from customers. The impact of the adoption of the New Revenue Standard did not have a material impact on our other revenue streams. We also have enhanced the form and content of some of our guidance metrics that we provide following implementation of the New Revenue Standard. We expect that any change to current revenue recognition practices may significantly increase volatility in our quarterly revenue, financial results and trends, and may impact our stock price.

We have in the past made and may in the future make acquisitions or enter into mergers, strategic investments, sales of assets, divestitures or other arrangements that may not produce expected operating and financial results.

From time to time, we engage in acquisitions, strategic transactions, strategic investments, divestitures and potential discussions with respect thereto. For example, in 2019, we acquired Northwest Logic and the Secure Silicon IP and Protocols business from Verimatrix, formerly Inside Secure. Further, we acquired AnalogX Inc. ("AnalogX") in July 2021 and PLDA Group ("PLDA") in August 2021. Many of our acquisitions or strategic investments entail a high degree of risk, including those involving new areas of technology and such investments may not become liquid for several years after the date of the investment, if at all. Our acquisitions or strategic investments may not provide the advantages that we anticipated or generate the financial returns we expect, including if we are unable to close any pending acquisitions. For example, for any pending or completed acquisitions, we may discover unidentified issues not discovered in due diligence, and we may be subject to regulatory approvals or liabilities that are not covered by indemnification protection or become subject to litigation.

Achieving the anticipated benefits of business acquisitions depends in part upon our ability to integrate the acquired businesses in an efficient and effective manner and achieve anticipated synergies, and we may not be successful in these efforts. The integration of companies that have previously operated independently is complex and time consuming and may result in significant challenges, including, among others: retaining key employees; successfully integrating new employees, facilities, products, processes, operations, business models and systems, technology, and sales and distribution channels; retaining customers and suppliers of the acquired business; minimizing the diversion of management's and other employees' attention from ongoing business matters; coordinating geographically separate organizations; consolidating research and development operations; consolidating corporate and administrative infrastructures; implementing controls, processes and policies appropriate for a public company at acquired companies that may have previously lacked such controls, processes and policies; and managing the increased scale, complexity and globalization of our business, operations and employee base. We do not currently foresee any significant risks in the operational integration of either AnalogX or PLDA.

Additional risks related to the AnalogX and PLDA acquisitions and other acquisitions or strategic investments include, but are not limited to:

- difficulty in combining the technology, products, or operations of the acquired business with our business;
- difficulty in integrating and retaining the acquired workforce, including key employees;
- diversion of capital and other resources, including management's attention;
- assumption of liabilities and incurring amortization expenses, impairment charges to goodwill or write-downs of acquired assets;
- integrating financial forecasting and controls, procedures and reporting cycles;
- coordinating and integrating operations in countries in which we have not previously operated;
- acquiring business challenges and risks, including, but not limited to, disputes with management and integrating international operations and joint ventures;
- difficulty in realizing a satisfactory return, if any return at all;
- difficulty in obtaining or inability to obtain governmental and regulatory consents and approvals, other approvals or financing;
- the potential impact of complying with governmental or other regulatory restrictions placed on an acquisition;
- the potential impact on our stock price and financial results if we are unable to obtain regulatory approval for an acquisition, are required to pay reverse breakup fees or are otherwise unable to close an acquisition;
- failure and costs associated with the failure to consummate a proposed acquisition or other strategic investment;
- legal proceedings initiated as a result of an acquisition or investment;
- the potential for our acquisitions to result in dilutive issuances of our equity securities;
- the potential variability of the amount and form of any performance-based consideration;
- uncertainties and time needed to realize the benefits of an acquisition or strategic investment, if at all;
- negative changes in general economic conditions in the regions or the industries in which we or our target operate;
- the need to determine an alternative strategy if an acquisition does not meet our expectations;
- potential failure of our due diligence processes to identify significant issues with the acquired assets or company; and
- impairment of relationships with, or loss of our or our target's employees, vendors and customers, as a result of our acquisition or investment.

Our strategic investments in new areas of technology may involve significant risks and uncertainties, including distraction of management from current operations, greater than expected liabilities and expenses, inadequate return of capital, and unidentified issues not discovered in due diligence. These investments are inherently risky and may not be successful.

In addition, we may record impairment charges related to our acquisitions or strategic investments. Any losses or impairment charges that we incur related to acquisitions, strategic investments or sales of assets will have a negative impact on our financial results and the market value of our common stock, and we may continue to incur new or additional losses related to acquisitions or strategic investments.

We may have to incur debt or issue equity securities to pay for any future acquisitions, which debt could involve restrictive covenants or which equity security issuance could be dilutive to our existing stockholders. We may also use cash to pay for any future acquisitions which will reduce our cash balance.

From time to time, we may also divest certain assets. These divestitures or proposed divestitures may involve the loss of revenue and/or potential customers, and the market for the associated assets may dictate that we sell such assets for less than what we paid. In addition, in connection with any asset sales or divestitures, we may be required to provide certain representations, warranties and covenants to buyers. While we would seek to ensure the accuracy of such representations and warranties and fulfillment of any ongoing obligations, we may not be completely successful and consequently may be subject to claims by a purchaser of such assets.

If our counterparties are unable to fulfill their financial and other obligations to us, our business and results of operations may be affected adversely.

Any downturn in economic conditions or other business factors could threaten the financial health of our counterparties, including companies with which we have entered into licensing and/or settlement agreements, and their ability to fulfill their financial and other obligations to us. Such financial pressures on our counterparties may eventually lead to bankruptcy proceedings or other attempts to avoid financial obligations that are due to us. Because bankruptcy courts have the power to modify or cancel contracts of the petitioner which remain subject to future performance and alter or discharge payment obligations related to pre-petition debts, we may receive less than all of the payments that we would otherwise be entitled to receive from any such counterparty as a result of bankruptcy proceedings.

If we are unable to attract and retain qualified personnel globally, especially in light of a hyper-competitive compensation environment, our business and operations could suffer.

Our success is dependent upon our ability to identify, attract, compensate, motivate and retain qualified personnel, especially engineers, senior management and other key personnel. The loss of the services of any key employees could be disruptive to our development efforts, business relationships and strategy, and could cause our business and operations to suffer.

All of our officers and other U.S. employees are at-will employees, which means they may terminate their employment relationship with us at any time, and their knowledge of our business and industry would be extremely difficult to replace. Any changes in our senior management team in particular, even in the ordinary course of business, may be disruptive to our business. For example, in October 2021, we announced the resignation of our chief financial officer and the appointment of our current chief accounting officer as interim chief financial officer, to be effective as of November 15, 2021. We are currently undergoing a search for a new chief financial officer and will likely hire a replacement in the near future. While we seek to manage these transitions carefully, including by establishing strong processes and procedures and succession planning, such changes may result in a loss of institutional knowledge and cause disruptions to our business. If our senior management team fails to work together effectively or execute our plans and strategies on a timely basis as a result of management turnover or otherwise, our business could be harmed.

Our future success depends in large part upon the continued service and enhancement of our management team and our employees. If there are further changes in management, such changes could be disruptive and could negatively affect our sales, operations, culture, future recruiting efforts and strategic direction. Competition for qualified executives is intense, especially in light of a hyper-competitive compensation environment, and if we are unable to compensate our key talent appropriately and continue expanding our management team, or successfully integrate new additions to our management team in a manner that enables us to scale our business and operations effectively, our ability to operate effectively and efficiently could be limited or negatively impacted. In addition, changes in key management positions may temporarily affect our financial performance and results of operations as new management becomes familiar with our business, processes and strategy. The loss of any of our key personnel, or our inability to attract, integrate and retain qualified employees who join us organically and through acquisitions, could require us to dedicate significant financial and other resources to such personnel matters, disrupt our operations and seriously harm our operations and business.

Our operations are subject to risks of natural disasters, acts of war, terrorism, widespread illness or security breaches or incidents at our domestic and international locations, any one of which could result in a business stoppage and negatively affect our operating results.

Our business operations depend on our ability to maintain and protect our facilities, computer systems and personnel, which are primarily located in the San Francisco Bay Area in the United States, Canada, the Netherlands, France, Bulgaria, Taiwan and India. The San Francisco Bay Area is in close proximity to known earthquake fault zones and sites of recent historic wildfires. Our facilities and transportation for our employees are susceptible to damage from earthquakes and other natural disasters such as fires, floods, droughts, extreme temperatures, and similar events. Should a catastrophe disable our facilities, we do not have readily available alternative facilities from which we could conduct our business, so any resultant work stoppage could have a negative effect on our operating results. We also rely on our network infrastructure and technology systems for operational support and business activities which are subject to physical and cyber damage, and also susceptible to other related vulnerabilities common to networks and computer systems. Acts of terrorism, climate-change related risk, widespread illness, or global pandemics, including the COVID-19 pandemic, war and any event that causes failures or interruption in our network infrastructure and technology systems could have a negative effect at our international and domestic facilities and could harm our business, financial condition, and operating results.

We rely upon the accuracy of our customers' recordkeeping, and any inaccuracies or payment disputes for amounts owed to us under our licensing agreements may harm our results of operations.

Many of our license agreements require our customers to document the manufacture and sale of products that incorporate our technology and report this data to us on a quarterly basis. While licenses with such terms give us the right to audit books and records of our customers to verify this information, audits rarely are undertaken because they can be expensive, time consuming, and potentially detrimental to our ongoing business relationship with our customers. Therefore, we typically rely on the accuracy of the reports from customers without independently verifying the information in them. Our failure to audit our customers' books and records may result in our receiving more or less royalty revenue than we are entitled to under the terms of our license agreements. If we conduct royalty audits in the future, such audits may trigger disagreements over contract terms with our customers and such disagreements could hamper customer relations, divert the efforts and attention of our management from normal operations and impact our business operations and financial condition.

We are subject to increased inventory risks and costs because we build our products based on forecasts provided by customers before receiving purchase orders for the product.

Our business and operating results could be harmed if we undertake any restructuring activities.

From time to time, we may undertake restructurings of our business, including discontinuing certain products, services and technologies and planned reductions in force. There are several factors that could cause restructurings to have adverse effects on our business, financial condition and results of operations. These include potential disruption of our operations, the development of our technology, the deliveries to our customers and other aspects of our business. Loss of sales, service and engineering talent, in particular, could damage our business. Any restructuring would require substantial management time and attention and may divert management from other important work. Employee reductions or other restructuring activities also would cause us to incur restructuring and related expenses such as severance expenses. Moreover, we could encounter delays in executing any restructuring plans, which could cause further disruption and additional unanticipated expense.

Problems with our information systems could interfere with our business and could adversely impact our operations.

We rely on our information systems and those of third parties for fulfilling licensing and contractual obligations, processing customer orders, delivering products, providing services and support to our customers, billing and tracking our customer orders, performing accounting operations and otherwise running our business. If our systems fail, our disaster and data recovery planning and capacity may prove insufficient to enable timely recovery of important functions and business records. Any disruption in our information systems and those of the third parties upon whom we rely could have a significant impact on our business. Additionally, our information systems may not support new business models and initiatives and significant investments could be required in order to upgrade them. Delays in adapting our information systems to address new business models and accounting standards could limit the success or result in the failure of such initiatives and impair the effectiveness of our internal controls. Even if we do not encounter these adverse effects, the implementation of these enhancements may be much more costly than we anticipated. If we are unable to successfully implement the information systems enhancements as planned, our operating results could be negatively impacted.

Certain software we use is from open source code sources, which, under certain circumstances, may lead to unintended consequences and, therefore, could materially adversely affect our business, financial condition, operating results and cash flow.

We use open source software in our services and we intend to continue to use open source software in the future. From time to time, there have been claims challenging the ownership of open source software against companies that incorporate open source software into their products or alleging that these companies have violated the terms of an open source license. As a result, we could be subject to lawsuits by parties claiming ownership of what we believe to be open source software or alleging that we have violated the terms of an open source license. Litigation could be costly for us to defend, have a negative effect on our operating results and financial condition or require us to devote additional research and development resources to change our solutions. In addition, if we were to combine our proprietary software solutions with open source software in certain manners, we could, under certain open source licenses, be required to publicly release the source code of our proprietary software solutions. If we inappropriately use open source software, we may be required to re-engineer our solutions, discontinue the sale of our solutions, release the source code of our proprietary software to the public at no cost or take other remedial actions. There is a risk that open source licenses could be construed in a way that could impose unanticipated conditions or restrictions on our ability to commercialize our solutions, which could adversely affect our business, operating results and financial condition.

If we are at any time unable to generate sufficient cash flows from operations to service our indebtedness when payment is due, we may be required to attempt to renegotiate the terms of the instruments relating to the indebtedness, seek to refinance all or a portion of the indebtedness or obtain additional financing. There can be no assurance that we will be able to successfully renegotiate such terms, that any such refinancing would be possible or that any additional financing could be obtained on terms that are favorable or acceptable to us.

In the future, we may fail to maintain an effective system of internal control over financial reporting or adequate disclosure controls and procedures, which may result in material misstatements of our consolidated financial statements or cause us to fail to meet our periodic reporting obligations.

If we are not able to comply with the requirements of the Sarbanes-Oxley Act or if we are unable to maintain effective internal control over financial reporting and disclosure controls and procedures, we may not be able to produce timely and accurate financial statements or guarantee that information required to be disclosed by us in the reports that we file with the SEC is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms. Any failure of our internal control over financial reporting or disclosure controls and procedures could result in material misstatements of our consolidated financial statements, which could cause our investors to lose confidence in our publicly reported information, cause the market price of our stock to decline, expose us to sanctions or investigations by the SEC or other regulatory authorities, or impact our results of operations.

Unanticipated changes in our tax rates or in the tax laws, treaties and regulations could expose us to additional income tax liabilities, which could affect our operating results and financial condition.

We are subject to income taxes in both the United States and various foreign jurisdictions. Significant judgment is required in determining our worldwide provision for income taxes and, in the ordinary course of business, there are many transactions and calculations where the ultimate tax determination is uncertain. Our effective tax rate could be adversely affected by several factors, many of which are outside of our control, including changes in the mix of earnings and losses in countries with differing statutory tax rates, changes in the valuation of deferred tax assets and liabilities, changes in tax laws, rates, treaties and regulations or the interpretation of the same, changes to the financial accounting rules for income taxes, the outcome of current and future tax audits, examinations or administrative appeals and certain non-deductible expenses. Our tax determinations are regularly subject to audit by tax authorities and developments in those audits could adversely affect our income tax provision, and we are currently undergoing such audits of certain of our tax returns. Although we believe that our tax estimates are reasonable, the final determination of tax audits or tax disputes may be different from what is reflected in our historical income tax provisions, which could affect our operating results.

Recently, in the United States, the Biden administration proposed to increase the U.S. corporate income tax rate, increase U.S. taxation of international business operations and impose a global minimum tax. Many countries and organizations such as the Organization for Economic Cooperation and Development are also actively considering changes to existing tax laws or have proposed or enacted new laws that could increase our tax obligations in countries where we do business or cause us to change the way we operate our business. Any of these developments or changes in federal, state, or international tax laws or tax rulings could adversely affect our effective tax rate and our operating results.

Risks Associated with Litigation, Regulation and Our Intellectual Property

We are subject to various government restrictions and regulations, including on the sale of products and services that use encryption technology and those related to privacy and other consumer protection matters.

Various countries have adopted controls, license requirements and restrictions on the export, import and use of products or services that contain encryption technology. In addition, governmental agencies have proposed additional requirements for encryption technology, such as requiring the escrow and governmental recovery of private encryption keys. Restrictions on the sale or distribution of products or services containing encryption technology may impact our ability to license data security technologies to the manufacturers and providers of such products and services in certain markets or may require us or our customers to make changes to the licensed data security technology that is embedded in such products to comply with such restrictions. Government restrictions, or changes to the products or services of our customers to comply with such restrictions, could delay or prevent the acceptance and use of such customers' products and services. In addition, the United States and other countries have imposed export controls that prohibit the export of encryption technology to certain countries, entities and individuals. Our failure to comply with export and use regulations concerning encryption technology could subject us to sanctions and penalties, including fines, and suspension or revocation of export or import privileges. Additionally, climate change concerns and the potential resulting environmental impact may result in new environmental, health, and safety laws and regulations that may affect us, our suppliers, and our customers. Such laws or regulations could cause us to incur additional direct costs for compliance, as well as increased indirect costs resulting from our customers, suppliers, or both incurring additional compliance costs that are passed on to us. These costs may adversely impact our results of operations and financial condition.

We are subject to a variety of laws and regulations in the United States, the European Union and other countries that involve, for example, user privacy, data protection and security, content and consumer protection. A number of proposals are pending before federal, state, and foreign legislative and regulatory bodies that could significantly affect our business. For example, in 2016, a new EU data protection regime, the General Data Protection Regulation ("GDPR") was adopted, with it fully effective on May 25, 2018, and California enacted the California Consumer Privacy Act as of January 1, 2020 ("CCPA"). Moreover, a new privacy law, the California Privacy Rights Act ("CPRA"), was approved by California voters in November 2020. The CPRA significantly modifies the CCPA when it becomes effective in most material respects on January 1, 2023. Further, on March 2, 2021, Virginia enacted the Virginia Consumer Data Protection Act ("CDPA"), which takes effect January 1, 2023, and on July 7, 2021, Colorado enacted the Colorado Privacy Act ("CPA"), which takes effect July 1, 2023. The CDPA and CPA are comprehensive privacy statutes that share similarities with the CCPA, CPRA and legislation proposed in other states. The GDPR and CCPA, and new and evolving laws such as the CPRA, CDPA, CPA and other future changes in laws or regulations relating to privacy, data protection and information security may require us to modify our existing practices with respect to the collection, use and disclosure of data. In particular, the GDPR provides for significant penalties in the case of non-compliance of up to €20 million or four percent of worldwide annual revenues, whichever is greater. The GDPR, CCPA, CPRA, CDPA, CPA and other existing and proposed laws and regulations can be costly to comply with and can delay or impede the development of new products, result in negative publicity, increase our operating costs and subject us to claims or other remedies.

In accordance with the Dodd-Frank Wall Street Reform and Consumer Protection Act, the SEC established new disclosure and reporting requirements for those companies that use "conflict" minerals mined from the Democratic Republic of Congo and adjoining countries in their products, whether or not these products are manufactured by third parties. These requirements could affect the sourcing and availability of minerals that are used in the manufacture of our products. We have to date incurred costs and expect to incur significant additional costs associated with complying with the disclosure requirements, including for example, due diligence in regard to the sources of any conflict minerals used in our products, in addition to the cost of remediation and other changes to products, processes, or sources of supply as a consequence of such verification activities. Additionally, we may face reputational challenges with our customers and other stakeholders if we are unable to sufficiently verify the origins of all minerals used in our products through the due diligence procedures that we implement. We may also face challenges with government regulators and our customers and suppliers if we are unable to sufficiently verify that the metals used in our products are conflict free.

Litigation and government proceedings could affect our business in materially negative ways.

We may be subject to legal claims or regulatory matters involving consumer, stockholder, employment, competition, IP and other issues on a global basis. Litigation can be lengthy, expensive and disruptive to our operations, and results cannot be predicted with certainty. An adverse decision could include monetary damages or, in cases for which injunctive relief is sought, an injunction prohibiting us from manufacturing or selling one or more of our products or technologies. If we were to receive an unfavorable ruling on a matter, our business, operating results or financial condition could be materially harmed.

We have in the past, and may in the future, become engaged in litigation stemming from our efforts to protect and enforce our patents and intellectual property and make other claims, which could adversely affect our intellectual property rights, distract our management and cause substantial expenses and declines in our revenue and stock price.

We seek to diligently protect our IP rights and will continue to do so. While we are not currently involved in IP litigation, any future litigation, whether or not determined in our favor or settled by us, would be expected to be costly, may cause delays applicable to our business (including delays in negotiating licenses with other actual or potential customers), would be expected to discourage future design partners, would tend to impair adoption of our existing technologies and would divert the efforts and attention of our management and technical personnel from other business operations. In addition, we may be unsuccessful in any litigation if we have difficulty obtaining the cooperation of former employees and agents who were involved in our business during the relevant periods related to our litigation and are now needed to assist in cases or testify on our behalf. Furthermore, any adverse determination or other resolution in litigation could result in our losing certain rights beyond the rights at issue in a particular case, including, among other things: our being effectively barred from suing others for violating certain or all of our IP rights; our patents being held invalid or unenforceable or not infringed; our being subjected to significant liabilities; our being required to seek licenses from third parties; our being prevented from licensing our patented technology; or our being required to renegotiate with current customers on a temporary or permanent basis.

From time to time, we are subject to proceedings by government agencies that may result in adverse determinations against us and could cause our revenue to decline substantially.

An adverse resolution by or with a governmental agency could result in severe limitations on our ability to protect and license our IP, and could cause our revenue to decline substantially. Third parties have and may attempt to use adverse findings by a government agency to limit our ability to enforce or license our patents in private litigations, to challenge or otherwise act against us with respect to such government agency proceedings.

Further, third parties have sought and may seek review and reconsideration of the patentability of inventions claimed in certain of our patents by the U.S. Patent and Trademark Office ("USPTO") and/or the European Patent Office (the "EPO"). Any re-examination or inter parties review proceedings may be initiated by the USPTO's Patent Trial and Appeal Board ("PTAB"). The PTAB and the related former Board of Patent Appeals and Interferences have previously issued decisions in a few cases, finding some challenged claims of Rambus' patents to be valid, and others to be invalid. Decisions of the PTAB are subject to further USPTO proceedings and/or appeal to the Court of Appeals for the Federal Circuit. A final adverse decision, not subject to further review and/or appeal, could invalidate some or all of the challenged patent claims and could also result in additional adverse consequences affecting other related U.S. or European patents, including in any IP litigation. If a sufficient number of such patents are impaired, our ability to enforce or license our IP would be significantly weakened and could cause our revenue to decline substantially.

The pendency of any governmental agency acting as described above may impair our ability to enforce or license our patents or collect royalties from existing or potential customers, as any litigation opponents may attempt to use such proceedings to delay or otherwise impair any pending cases and our existing or potential customers may await the final outcome of any proceedings before agreeing to new licenses or to paying royalties.

Litigation or other third-party claims of intellectual property infringement could require us to expend substantial resources and could prevent us from developing or licensing our technology on a cost-effective basis.

Our research and development programs are in highly competitive fields in which numerous third parties have issued patents and patent applications with claims closely related to the subject matter of our programs. We have also been named in the past, and may in the future be named, as a defendant in lawsuits claiming that our technology infringes upon the IP rights of third parties. As we develop additional products and technology, we may face claims of infringement of various patents and other IP rights by third parties. In the event of a third-party claim or a successful infringement action against us, we may be required to pay substantial damages, to stop developing and licensing our infringing technology, to develop non-infringing technology, and to obtain licenses, which could result in our paying substantial royalties or our granting of cross licenses to our technologies. We may not be able to obtain licenses from other parties at a reasonable cost, or at all, which could cause us to expend substantial resources, or result in delays in, or the cancellation of, new products. Moreover, customers and/or suppliers of our products may seek indemnification for alleged infringement of IP rights. We could be liable for direct and consequential damages and expenses including attorneys' fees. A future obligation to indemnify our customers and/or suppliers may harm our business, financial condition and operating results.

If we are unable to protect our inventions successfully through the issuance and enforcement of patents, our operating results could be adversely affected.

We have an active program to protect our proprietary inventions through the filing of patents. There can be no assurance, however, that:

- any current or future U.S. or foreign patent applications will be approved and not be challenged by third parties;
- our issued patents will protect our IP and not be challenged by third parties;
- the validity of our patents will be upheld;
- our patents will not be declared unenforceable;
- the patents of others will not have an adverse effect on our ability to do business;
- Congress or the U.S. courts or foreign countries will not change the nature or scope of rights afforded patents or patent owners or alter in an adverse way the process for seeking or enforcing patents;
- changes in law will not be implemented, or changes in interpretation of such laws will occur, that will affect our ability to protect and enforce our patents and other IP;
- new legal theories and strategies utilized by our competitors will not be successful;

- others will not independently develop similar or competing chip interfaces or design around any patents that may be issued to us; or
- factors such as difficulty in obtaining cooperation from inventors, pre-existing challenges or litigation, or license or other contract issues will not present additional challenges in securing protection with respect to patents and other IP that we acquire.

If any of the above were to occur, our operating results could be adversely affected.

Furthermore, patent reform legislation, such as the Leahy-Smith America Invents Act, could increase the uncertainties and costs surrounding the prosecution of any patent applications and the enforcement or defense of our licensed patents. The federal courts, the USPTO, the Federal Trade Commission, and the U.S. International Trade Commission have also recently taken certain actions and issued rulings that have been viewed as unfavorable to patentees. While we cannot predict what form any new patent reform laws or regulations may ultimately take, or what impact recent or future reforms may have on our business, any laws or regulations that restrict or negatively impact our ability to enforce our patent rights against third parties could have a material adverse effect on our business.

In addition, our patents will continue to expire according to their terms, with expected expiration dates ranging from 2022 to 2041. Our failure to continuously develop or acquire successful innovations and obtain patents on those innovations could significantly harm our business, financial condition, results of operations, or cash flows.

Our inability to protect and own the intellectual property we create would cause our business to suffer.

We rely primarily on a combination of license, development and nondisclosure agreements, trademark, trade secret and copyright law and contractual provisions to protect our non-patentable IP rights. If we fail to protect these IP rights, our customers and others may seek to use our technology without the payment of license fees and royalties, which could weaken our competitive position, reduce our operating results and increase the likelihood of costly litigation. The growth of our business depends in part on the use of our IP in the products of third-party manufacturers, and our ability to enforce IP rights against them to obtain appropriate compensation. In addition, effective trade secret protection may be unavailable or limited in certain foreign countries. Although we intend to protect our rights vigorously, if we fail to do so, our business will suffer.

Effective protection of trademarks, copyrights, domain names, patent rights, and other IP rights is expensive and difficult to maintain, both in terms of application and maintenance costs, as well as the costs of defending and enforcing those rights. The efforts we have taken to protect our IP rights may not be sufficient or effective. Our IP rights may be infringed, misappropriated, or challenged, which could result in them being narrowed in scope or declared invalid or unenforceable. In addition, the laws or practices of certain countries do not protect our proprietary rights to the same extent as do the laws of the United States. Significant impairments of our IP rights, and limitations on our ability to assert our IP rights against others, could have a material and adverse effect on our business.

Third parties may claim that our products or services infringe on their intellectual property rights, exposing us to litigation that, regardless of merit, may be costly to defend.

Our success and ability to compete are also dependent upon our ability to operate without infringing upon the patent, trademark and other IP rights of others. Third parties may claim that our current or future products or services infringe upon their IP rights. Any such claim, with or without merit, could be time consuming, divert management’s attention from our business operations and result in significant expenses. We cannot assure you that we would be successful in defending against any such claims. In addition, parties making these claims may be able to obtain injunctive or other equitable relief affecting our ability to license the products that incorporate the challenged IP. As a result of such claims, we may be required to obtain licenses from third parties, develop alternative technology or redesign our products. We cannot be sure that such licenses would be available on terms acceptable to us, if at all. If a successful claim is made against us and we are unable to develop or license alternative technology, our business, financial condition, operating results and cash flows could be materially adversely affected.

Any dispute regarding our intellectual property may require us to indemnify certain customers, the cost of which could severely hamper our business operations and financial condition.

In any potential dispute involving our patents or other IP, our customers could also become the target of litigation. While we generally do not indemnify our customers, some of our agreements provide for indemnification, and some require us to provide technical support and information to a customer that is involved in litigation involving use of our technology. In addition, we may be exposed to indemnification obligations, risks and liabilities that were unknown at the time that we acquired assets or businesses for our operations. Any of these indemnification and support obligations could result in substantial and material expenses. In addition to the time and expense required for us to indemnify or supply such support to our customers, a customer’s development, marketing and sales of licensed semiconductors, mobile communications and data security technologies could be severely disrupted or shut down as a result of litigation, which in turn could severely hamper our business operations and financial condition as a result of lower or no royalty payments.

Warranty, service level agreement and product liability claims brought against us could cause us to incur significant costs and adversely affect our operating results, as well as our reputation and relationships with customers.

We may from time to time be subject to warranty, service level agreement and product liability claims with regard to product performance and our services. We could incur material losses as a result of warranty, support, repair or replacement costs in response to customer complaints or in connection with the resolution of contemplated or actual legal proceedings relating to such claims. In addition to potential losses arising from claims and related legal proceedings, warranty and product liability claims could affect our reputation and our relationship with customers. We generally attempt to limit the maximum amount of indemnification or liability that we could be exposed to under our contracts, however, this is not always possible.

We have been party to, and may in the future be subject to, lawsuits relating to securities law matters which may result in unfavorable outcomes and significant judgments, settlements and legal expenses which could cause our business, financial condition and results of operations to suffer.

We and certain of our current and former officers and directors, as well as our current auditors, were subject from 2006 to 2011 to several stockholder derivative actions, securities fraud class actions and/or individual lawsuits filed in federal court against us and certain of our current and former officers and directors. The complaints generally alleged that the defendants violated the federal and state securities laws and stated state law claims for fraud and breach of fiduciary duty. Although to date these complaints have either been settled or dismissed, the amount of time to resolve any future lawsuits is uncertain, and these matters could require significant management and financial resources. Unfavorable outcomes and significant judgments, settlements and legal expenses in litigation related to any future securities law claims could have material adverse impacts on our business, financial condition, results of operations, cash flows and the trading price of our common stock.

Participation in standards setting organizations may subject us to IP licensing requirements or limitations that could adversely affect our business and prospects.

In the course of our participation in the development of emerging standards for some of our present and future products, we may be obligated to grant to all other participants a license to our patents that are essential to the practice of those standards on reasonable and non-discriminatory, or RAND, terms. If we fail to limit to whom we license our patents, or fail to limit the terms of any such licenses, we may be required to license our patents or other IP to others in the future, which could limit the effectiveness of our patents against competitors.

Risks Associated with Capitalization Matters and Indebtedness

The price of our common stock may continue to fluctuate.

Our common stock is listed on The NASDAQ Global Select Market under the symbol “RMBS.” The trading price of our common stock has at times experienced price volatility and may continue to fluctuate significantly in response to various factors, some of which are beyond our control. Some of these factors include:

- any progress, or lack of progress, real or perceived, in the development of products that incorporate our innovations and technology companies’ acceptance of our products, including the results of our efforts to expand into new target markets;
- our signing or not signing new licenses or renewing existing licenses, and the loss of strategic relationships with any customer;
- announcements of technological innovations or new products by us, our customers or our competitors;
- changes in our strategies, including changes in our licensing focus and/or acquisitions or dispositions of companies or businesses with business models or target markets different from our core;
- positive or negative reports by securities analysts as to our expected financial results and business developments;
- developments with respect to patents or proprietary rights and other events or factors;
- new litigation and the unpredictability of litigation results or settlements;
- repurchases of our common stock on the open market;
- issuance of additional securities by us, including in acquisitions, or large cash payments, including in acquisitions; and
- changes in accounting pronouncements, including the effects of ASC 606 and ASC 842.

In addition, the stock market in general, and prices for companies in our industry in particular, have experienced extreme volatility that often has been unrelated to the operating performance of such companies. These broad market and industry fluctuations may adversely affect the price of our common stock, regardless of our operating performance.

We have outstanding senior convertible notes in an aggregate principal amount totaling $64.6 million as of March 31, 2022. Because these notes are convertible into shares of our common stock, volatility or depressed prices of our common stock could have a similar effect on the trading price of such notes. In addition, the existence of these notes may encourage short selling in our common stock by market participants because the conversion of the notes could depress the price of our common stock.

We are leveraged financially, which could adversely affect our ability to adjust our business to respond to competitive pressures and to obtain sufficient funds to satisfy our future research and development needs, to protect and enforce our intellectual property, and to meet other needs.

We have material indebtedness. In November 2017, we issued $172.5 million aggregate principal amount of our 2023 Notes, of which $64.6 million remains outstanding as of March 31, 2022. The degree to which we are leveraged could have negative consequences, including, but not limited to, the following:

- we may be more vulnerable to economic downturns, less able to withstand competitive pressures and less flexible in responding to changing business and economic conditions;
- our ability to obtain additional financing in the future for working capital, capital expenditures, acquisitions, litigation, general corporate or other purposes may be limited;
- a substantial portion of our cash flows from operations in the future may be required for the payment of interest and principal when due at maturity in February 2023; and
- we may be required to make cash payments upon any conversion of the 2023 Notes, which would reduce our cash on hand.

A failure to comply with the covenants and other provisions of our debt instruments could result in events of default under such instruments, which could permit acceleration of all of our outstanding 2023 Notes. Any required repurchase of the 2023 Notes as a result of a fundamental change or acceleration of the 2023 Notes would reduce our cash on hand such that we would not have those funds available for use in our business.

If we are at any time unable to generate sufficient cash flows from operations to service our indebtedness when payment is due, we may be required to attempt to renegotiate the terms of the instruments relating to the indebtedness, seek to refinance all or a portion of the indebtedness or obtain additional financing. There can be no assurance that we will be able to successfully renegotiate such terms, that any such refinancing would be possible or that any additional financing could be obtained on terms that are favorable or acceptable to us.

Compliance with changing regulation of corporate governance and public disclosure may result in additional expenses.

Changing laws, regulations and standards relating to corporate governance and public disclosure have historically created uncertainty for companies such as ours. Any new or changed laws, regulations and standards are subject to varying interpretations due to their lack of specificity, and as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices.

Our certificate of incorporation and bylaws, Delaware law, our outstanding convertible notes and certain other agreements contain provisions that could discourage transactions resulting in a change in control, which may negatively affect the market price of our common stock.

Our certificate of incorporation, our bylaws and Delaware law contain provisions that might enable our management to discourage, delay or prevent a change in control. In addition, these provisions could limit the price that investors would be willing to pay in the future for shares of our common stock. Pursuant to such provisions:

- our board of directors is authorized, without prior stockholder approval, to create and issue preferred stock, commonly referred to as “blank check” preferred stock, with rights senior to those of common stock, which means that a stockholder rights plan could be implemented by our board;
- our board of directors is staggered into two classes, only one of which is elected at each annual meeting;
- stockholder action by written consent is prohibited;
- nominations for election to our board of directors and the submission of matters to be acted upon by stockholders at a meeting are subject to advance notice requirements;
- certain provisions in our bylaws and certificate of incorporation such as notice to stockholders, the ability to call a stockholder meeting, advance notice requirements and action of stockholders by written consent may only be amended with the approval of stockholders holding 66 2/3% of our outstanding voting stock;
- our stockholders have no authority to call special meetings of stockholders; and

- our board of directors is expressly authorized to make, alter or repeal our bylaws.

We are also subject to Section 203 of the Delaware General Corporation Law, which provides, subject to enumerated exceptions, that if a person acquires 15% or more of our outstanding voting stock, the person is an "interested stockholder" and may not engage in any "business combination" with us for a period of three years from the time the person acquired 15% or more of our outstanding voting stock.

Certain provisions of our outstanding Notes could make it more difficult or more expensive for a third party to acquire us. Upon the occurrence of certain transactions constituting a fundamental change, holders of such Notes will have the right, at their option, to require us to repurchase, at a cash repurchase price equal to 100% of the principal amount plus accrued and unpaid interest on such Notes, all or a portion of their Notes. We may also be required to increase the conversion rate of such Notes in the event of certain fundamental changes.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds

None.

Item 3. Defaults Upon Senior Securities

None.

Item 4. Mine Safety Disclosures

Not applicable.

Item 5. Other Information

None.

Item 6. Exhibits

INDEX TO EXHIBITS

Exhibit Number	Description of Document
10.1(1)	Letter agreement dated as of March 11, 2022, among Rambus Inc., Barington Companies Equity Partners, L.P. and certain other parties.
10.2(2)	Director Transition and Consulting Agreement dated March 11, 2022, by and between Rambus Inc. and James Mitarotonda.
31.1	Certification of Principal Executive Officer, pursuant to Rule 13a-14(a) and Rule 15d-14(a) of the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of Principal Financial Officer, pursuant to Rule 13a-14(a) and Rule 15d-14(a) of the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*	Certification of Principal Executive Officer, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2*	Certification of Principal Financial Officer, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document
104	Cover Page Interactive Data File (formatted as inline XBRL and contained in Exhibit 101)

* The certifications furnished in Exhibit 32.1 and 32.2 hereto are deemed to accompany this Quarterly Report on Form 10-Q and will not be deemed “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liability of that section. Such certifications will not be deemed to be incorporated by reference into any filings under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, except to the extent that the registrant specifically incorporates it by reference.

(1) Incorporated by reference to the Form 8-K filed on March 11, 2022, with the Securities and Exchange Commission.

(2) Incorporated by reference to the Form 8-K filed on March 11, 2022, with the Securities and Exchange Commission.

SIGNATURE

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

RAMBUS INC.

Date:	May 6, 2022	By:	/s/ Keith Jones
			Keith Jones Vice President, Finance and Interim Chief Financial Officer (Principal Financial and Accounting Officer)

Exhibit 31.1

**CERTIFICATION PURSUANT TO RULE 13A-14(A) AND RULE 15D-14(A)
OF THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Luc Seraphin, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Rambus Inc.;

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

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

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

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

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

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

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

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

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

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

Date: May 6, 2022

By:	/s/ Luc Seraphin
Name:	Luc Seraphin
Title:	Chief Executive Officer (Principal Executive Officer)

Exhibit 31.2

**CERTIFICATION PURSUANT TO RULE 13A-14(A) AND RULE 15D-14(A)
OF THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002**

I, Keith Jones, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Rambus Inc.;

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

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

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

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

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

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

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

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

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

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

Date: May 6, 2022

By:	/s/ Keith Jones
Name:	Keith Jones
Title:	Vice President, Finance and Interim Chief Financial Officer (Principal Financial and Accounting Officer)

Exhibit 32.1

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

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

Date: May 6, 2022

By:	/s/ Luc Seraphin
Name:	Luc Seraphin
Title:	Chief Executive Officer (Principal Executive Officer)

Exhibit 32.2

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

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

Date: May 6, 2022

By:	/s/ Keith Jones
Name:	Keith Jones
Title:	Vice President, Finance and Interim Chief Financial Officer (Principal Financial and Accounting Officer)