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 27, 2020

☐ **Transition report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934**

Commission File No. 000-25826

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

Delaware	**77-0201147**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification Number)**

4300 North First Street
San Jose, CA 95134
(408) 542-2500
(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common stock, $0.001 par value	HLIT	NASDAQ Global Select Market

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter 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 of the registrant's Common Stock, $0.001 par value, outstanding on April 27, 2020 was 96,579,495.

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PART I

FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS

HARMONIC INC.
CONDENSED CONSOLIDATED BALANCE SHEETS
(Unaudited, in thousands, except per share data)

	March 27, 2020	December 31, 2019
ASSETS		
Current assets:		
Cash and cash equivalents	$ 71,712	$ 93,058
Accounts receivable, net	93,058	88,500
Inventories, net	34,854	29,042
Prepaid expenses and other current assets	32,001	40,762
Total current assets	231,625	251,362
Property and equipment, net	37,091	22,928
Operating lease right-of-use assets	26,281	27,491
Goodwill	238,614	239,780
Intangibles, net	2,789	4,461
Other long-term assets	39,875	41,305
Total assets	$ 576,275	$ 587,327
LIABILITIES AND STOCKHOLDERS’ EQUITY		
Current liabilities:		
Other debts and finance lease obligations, current	$ 6,343	$ 6,713
Accounts payable	45,159	40,933
Income taxes payable	419	1,226
Deferred revenue	48,719	37,117
Accrued and other current liabilities	52,080	62,535
Convertible notes, short-term	44,008	43,375
Total current liabilities	196,728	191,899
Convertible notes, long-term	89,832	88,629
Other debts and finance lease obligations, long-term	10,048	10,511
Income taxes payable, long-term	180	178
Other non-current liabilities	41,388	41,254
Total liabilities	338,176	332,471
Commitments and contingencies (Note 17)		
Convertible notes	1,777	2,410
Stockholders’ equity:		
Preferred stock, $0.001 par value, 5,000 shares authorized; no shares issued or outstanding	—	—
Common stock, $0.001 par value, 150,000 shares authorized; 96,566 and 91,875 shares issued and outstanding at March 27, 2020 and December 31, 2019, respectively	97	92
Additional paid-in capital	2,336,459	2,327,359
Accumulated deficit	(2,093,894)	(2,071,940)
Accumulated other comprehensive loss	(6,340)	(3,065)
Total stockholders’ equity	236,322	252,446
Total liabilities and stockholders’ equity	$ 576,275	$ 587,327

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

HARMONIC INC.
CONDENSED CONSOLIDATED STATEMENTS OF OPERATIONS
(Unaudited, in thousands, except per share data)

	Three months ended	
	March 27, 2020	March 29, 2019
Revenue:		
Appliance and integration	$ 47,752	$ 52,365
SaaS and service	30,665	27,741
Total net revenue	78,417	80,106
Cost of revenue:		
Appliance and integration	26,287	27,054
SaaS and service	15,392	11,203
Total cost of revenue	41,679	38,257
Total gross profit	36,738	41,849
Operating expenses:		
Research and development	22,123	21,401
Selling, general and administrative	31,218	28,011
Amortization of intangibles	770	788
Restructuring and related charges	676	57
Total operating expenses	54,787	50,257
Loss from operations	(18,049)	(8,408)
Interest expense, net	(2,903)	(2,906)
Other expense, net	(273)	(311)
Loss before income taxes	(21,225)	(11,625)
Provision for (benefit from) income taxes	729	(319)
Net loss	$ (21,954)	$ (11,306)
Net loss per share:		
Basic and diluted	$ (0.23)	$ (0.13)
Shares used in per share calculation:		
Basic and diluted	95,575	88,165

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

HARMONIC INC.
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE LOSS
(Unaudited, in thousands)

	Three months ended	
	March 27, 2020	**March 29, 2019**
Net loss	$ (21,954)	$ (11,306)
Losses reclassified into earnings	—	157
Change in foreign currency translation adjustments	(3,119)	(1,300)
Other comprehensive loss before tax	(3,119)	(1,143)
Provision for income taxes	156	106
Other comprehensive loss, net of tax	(3,275)	(1,249)
Total comprehensive loss	$ (25,229)	$ (12,555)

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

HARMONIC INC.
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(Unaudited, in thousands)

	Three Months Ended March 27, 2020					
	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance at December 31, 2019	91,875	$ 92	$ 2,327,359	$ (2,071,940)	$ (3,065)	$ 252,446
Net loss	—	—	—	(21,954)	—	(21,954)
Other comprehensive loss, net of tax	—	—	—	—	(3,275)	(3,275)
Issuance of common stock under option, stock award and purchase plans	2,278	3	2,168	—	—	2,171
Stock-based compensation	—	—	6,301	—	—	6,301
Exercise of warrant	2,413	2	(2)	—	—	—
Reclassification from mezzanine equity to equity for 4.00% Convertible Senior Notes due in 2020	—	—	633	—	—	633
Balance at March 27, 2020	96,566	$ 97	$ 2,336,459	$ (2,093,894)	$ (6,340)	$ 236,322

	Three Months Ended March 29, 2019					
	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance at December 31, 2018	87,057	$ 87	$ 2,296,795	$ (2,067,416)	$ (1,216)	$ 228,250
Cumulative effect to retained earnings related to adoption of Topic 718 (1)	—	—	—	1,400	—	1,400
Balance at January 1, 2019	87,057	87	2,296,795	(2,066,016)	(1,216)	229,650
Net loss	—	—	—	(11,306)	—	(11,306)
Other comprehensive loss, net of tax	—	—	—	—	(1,249)	(1,249)
Issuance of common stock under option, stock award and purchase plans	1,727	2	1,353	—	—	1,355
Stock-based compensation	—	—	2,111	—	—	2,111
Balance at March 29, 2019	88,784	$ 89	$ 2,300,259	$ (2,077,322)	$ (2,465)	$ 220,561

(1) See Note 2, "Summary of Significant Accounting Policies - Recently Adopted Accounting Pronouncements" on Form 10-K for the year ended December 31, 2019 for more information on the adoption of Accounting Standard Update ("ASU") No. 2018-07, Compensation-Stock Compensation ("Topic 718"): Improvements to Nonemployee Share-Based Payment Accounting issued by the Financial Accounting Standards Board.

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

HARMONIC INC.
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited, in thousands)

	Three months ended	
	March 27, 2020	**March 29, 2019**
Cash flows from operating activities:		
Net loss	$ (21,954)	$ (11,306)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:		
Amortization of intangibles	1,655	2,083
Depreciation	2,843	2,846
Stock-based compensation	6,259	2,113
Amortization of discount on convertible debt	1,835	1,605
Amortization of non-cash warrant	434	25
Restructuring, asset impairment and loss on retirement of fixed assets	8	103
Deferred income taxes, net	653	(538)
Foreign currency adjustments	(2,066)	(638)
Provision for excess and obsolete inventories	234	254
Provision for doubtful accounts, returns and discounts	331	417
Other non-cash adjustments, net	113	287
Changes in operating assets and liabilities:		
Accounts receivable	(5,068)	22,351
Inventories	(6,281)	(4,157)
Prepaid expenses and other assets	10,579	1,417
Accounts payable	(242)	(8,177)
Deferred revenue	12,477	4,750
Income taxes payable	(768)	(192)
Accrued and other liabilities	(12,083)	(9,027)
Net cash provided by (used in) operating activities	(11,041)	4,216
Cash flows from investing activities:		
Purchases of property and equipment	(11,224)	(1,674)
Net cash used in investing activities	(11,224)	(1,674)
Cash flows from financing activities:		
Payment of convertible debt issuance costs	(35)	—
Proceeds from other debts and finance leases	—	160
Repayment of other debts and finance leases	(406)	(97)
Proceeds from common stock issued to employees	3,000	2,012
Payment of tax withholding obligations related to net share settlements of restricted stock units	(829)	(657)
Net cash provided by financing activities	1,730	1,418
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(811)	(33)
Net increase (decrease) in cash, cash equivalents and restricted cash	(21,346)	3,927
Cash, cash equivalents and restricted cash at beginning of period	93,058	65,989
Cash, cash equivalents and restricted cash at end of period	$ 71,712	$ 69,916
Supplemental disclosures of cash flow information:		
Income tax payments, net	408	490
Interest payments, net	1,095	92
Supplemental schedule of non-cash investing and financing activities:		
Capital expenditures incurred but not yet paid	7,620	91

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

HARMONIC INC.
NOTES TO CONDENSED CONSOLIDATED FINANCIAL STATEMENTS (UNAUDITED)

NOTE 1: BASIS OF PRESENTATION AND SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation

The accompanying unaudited condensed consolidated financial statements, in the opinion of management, include all adjustments (consisting only of normal recurring adjustments) which Harmonic Inc. ("Harmonic," or the "Company") considers necessary to present fairly the results of operations for the interim periods covered and the consolidated financial condition of the Company at the date of the balance sheets. This Quarterly Report on Form 10-Q should be read in conjunction with the Company's audited consolidated financial statements contained in the Company's Annual Report on Form 10-K, which was filed with the Securities and Exchange Commission ("SEC") on March 2, 2020 (the "2019 Form 10-K"). The interim results presented herein are not necessarily indicative of the results of operations that may be expected for the full fiscal year ending December 31, 2020, or any other future period. The Company's fiscal quarters are based on 13-week periods, except for the fourth quarter, which ends on December 31.

The condensed consolidated financial statements include the accounts of the Company and its subsidiaries. All intercompany accounts and transactions have been eliminated in consolidation. The condensed consolidated balance sheet as of December 31, 2019 was derived from audited financial statements, and the unaudited condensed consolidated financial statements included herein have been prepared pursuant to the rules and regulations of the SEC for interim reporting. As permitted under those requirements, certain footnotes or other financial information that are normally required by generally accepted accounting principles in the United States of America ("U.S. GAAP") have been condensed or omitted.

Use of Estimates

The preparation of the condensed consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenue and expenses during the reporting period. The Company's reported financial positions or results of operations may be materially different under changed conditions or when using different estimates and assumptions, particularly with respect to significant accounting policies. If estimates or assumptions differ from actual results, subsequent periods are adjusted to reflect more current information.

Due to the COVID-19 pandemic, there has been uncertainty and disruption in the global economy and financial markets. The Company is not aware of any specific event or circumstance that would require an update to its estimates or judgments or a revision of the carrying value of its assets or liabilities as of May 4, 2020, the date of issuance of this Quarterly Report on Form 10-Q. These estimates may change, as new events occur and additional information is obtained. Actual results could differ materially from these estimates under different assumptions or conditions.

Reclassifications

Certain prior period balances have been reclassified to conform to the current period's presentation. These reclassifications did not have a material impact on previously reported financial statements.

Significant Accounting Policies

The Company's significant accounting policies are described in Note 2 to its audited Consolidated Financial Statements included in the 2019 Form 10-K. There have been no significant changes to these policies during the three months ended March 27, 2020 other than those disclosed in Note 2, "Recent Accounting Pronouncements".

NOTE 2: RECENT ACCOUNTING PRONOUNCEMENTS

Recently Adopted Accounting Pronouncements

ASU No. 2016-13, Financial Instruments - Credit Losses (Topic 326)

In June 2016, the FASB issued ASU No. 2016-13, Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments, which changes the impairment model for most financial assets and certain other instruments. For trade receivables and other instruments, the Company will be required to use a new forward-looking “expected loss” model.

The Company adopted this new standard in the first quarter of fiscal 2020, and the adoption did not have a material impact on its condensed consolidated financial statements.

ASU No. 2017-04, Intangibles - Goodwill and Other (Topic 350)

In January 2017, the FASB issued ASU No. 2017-04, Intangibles - Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment. The new ASU removes Step 2 of the goodwill impairment test and requires the assessment of fair value of individual assets and liabilities of a reporting unit to measure goodwill impairments. Goodwill impairment will then be the amount by which a reporting unit's carrying value exceeds its fair value.

The Company adopted this new standard in the first quarter of fiscal 2020, and the adoption did not have an impact on its condensed consolidated financial statements.

ASU 2018-13, Fair Value Measurement (Topic 820)

In August 2018, the FASB issued ASU 2018-13, which removes, modifies and adds to the disclosure requirements on fair value measurements in Topic 820. The amendments on changes in unrealized gains and losses, the range and weighted average of significant unobservable inputs used to develop Level 3 fair value measurements, and the narrative description of measurement uncertainty should be applied prospectively for only the most recent interim or annual period presented in the initial fiscal year of adoption. All other amendments should be applied retrospectively to all periods presented upon their effective date.

The Company adopted this new standard in the first quarter of fiscal 2020, and the adoption did not have a material impact on its condensed consolidated financial statements.

ASU 2019-08, Compensation—Stock Compensation (Topic 718) and Revenue from Contracts with Customers (Topic 606): Codification Improvements—Share-Based Consideration Payable to a Customer

In November 2019, the FASB issued ASU 2019-08, Compensation - Stock Compensation (Topic 718) and Revenue from Contracts with Customers (Topic 606): Codification Improvements - Share-Based Consideration Payable to a Customer, which clarifies guidance on measurement and classification of share-based payments to customers.

The Company adopted this new standard in the first quarter of fiscal 2020, and the adoption did not have a material impact on its condensed consolidated financial statements.

Recently Issued Accounting Pronouncements

In August 2018, the FASB issued ASU No. 2018-14, Compensation - Retirement Benefits - Defined Benefit Plans - General Subtopic 715-20 - Disclosure Framework - Changes to the Disclosure Requirements for Defined Benefit Plans, which is designed to improve the effectiveness of disclosures by removing and adding disclosures related to defined benefit plans. The new ASU is effective for the Company for fiscal years ending after December 15, 2020, and early adoption is permitted. The Company expects the impact to its disclosure to be relatively limited.

In January 2020, the FASB issued ASU No. 2020-01, to clarify certain interactions between the guidance to account for equity securities, the guidance to account for investments under the equity method of accounting, and the guidance to account for derivatives and hedging. The new ASU clarifies the application of measurement alternatives and the accounting for certain forward contracts and purchased options to acquire investments. The new ASU is effective for the Company for fiscal years ending after December 15, 2021, and early adoption is permitted. The Company is currently evaluating the impact of adopting the new ASU on its consolidated financial statements.

NOTE 3: REVENUE

The Company's principal sources of revenue are from the sale of hardware, software, hardware and software maintenance contracts, and end-to-end solutions, encompassing design, manufacture, test, integration and installation of products. The Company also derives recurring revenue from subscriptions, which are comprised of subscription fees from customers utilizing the Company's cloud-based video processing solutions.

The Company's revenue is classified into two categories in the Condensed Consolidated Statement of Operations, which are "Appliance and integration" and "SaaS and service." The "Appliance and integration" revenue category includes hardware, licenses and professional services and is reflective of non-recurring revenue, while the "SaaS and service" category includes usage fees for the Company's SaaS platform and support revenue stream from the Company's appliance-based customers and reflects the Company's recurring revenue stream.

Significant Judgments. The Company has revenue arrangements that include promises to transfer multiple products and services to a customer. The Company may exercise significant judgment when determining whether products and services are considered distinct performance obligations that should be accounted for separately versus together.

The Company has revenue arrangements that include multiple performance obligations. The Company allocates the transaction price to all separate performance obligations based on the relative standalone selling prices ("SSP") of each obligation. The Company's best evidence for SSP is the price the Company charges for that good or service when the Company sells it separately in similar circumstances to similar customers. If goods or services are not always sold separately, the Company uses the best estimate of SSP in the allocation of the transaction price. The objective of determining the best estimate of SSP is to estimate the price at which the Company would transact a sale if the product or service were sold on a standalone basis. The Company's process for determining the best estimate of SSP involves management's judgment, and considers multiple factors including, but not limited to, major product groupings, geographies, gross margin objectives and pricing practices. Pricing practices taken into consideration include contractually stated prices, discounts and applicable price lists. These factors may vary over time, depending upon the unique facts and circumstances related to each deliverable. If the facts and circumstances underlying the factors considered change or should future facts and circumstances lead the Company to consider additional factors, the Company's best estimate of SSP may also change.

If the Company has not yet established a price because the good or service has not previously been sold on a standalone basis, SSP for such good and service in a contract with multiple performance obligations is determined by applying a residual approach whereby all other performance obligations within a contract are first allocated a portion of the transaction price based upon their respective SSP, using observable prices, with any residual amount of the transaction price allocated to the good or service for which the price has not yet been established.

Contract Balances. Deferred revenue represents the Company's obligation to transfer goods or services to a customer for which the Company has received consideration (or an amount of consideration is due) from the customer. The Company's payment terms vary by the type and location of its customer and the products or services offered. The term between invoicing and when payment is due is not significant. For certain products or services and customer types, the Company requires payment before the products or services are delivered to the customer.

Contract assets exist when the Company has satisfied a performance obligation but does not have an unconditional right to consideration (e.g., because the entity first must satisfy another performance obligation in the contract before it is entitled to invoice the customer).

Contract assets and deferred revenue consisted of the following (in thousands):

	As of	
	March 27, 2020	**December 31, 2019**
Contract assets	$ 5,806	$ 13,969
Deferred revenue	55,854	43,450

Contract assets and Deferred revenue (long-term) are reported as components of "Prepaid expenses and other current assets" and "Other non-current liabilities", respectively, on the Condensed Consolidated Balance Sheets. See Note 8, "Balance Sheet Components" for additional information.

During the three months ended March 27, 2020 and March 29, 2019, the Company recognized revenue of $18.0 million and $21.2 million, respectively, that was included in the deferred revenue balance at the beginning of each fiscal year.

Practical Expedients and Exemptions. The Company elected the practical expedient under Topic 606 to not disclose the transaction price allocated to remaining performance obligations, since the majority of the Company’s arrangements have original expected durations of one year or less, or the invoicing corresponds to the value of the Company’s performance completed to date. These performance obligations primarily relate to the Company’s support and maintenance contracts which have a duration of one year or less and subscriptions services for which invoicing corresponds to the value of the Company’s performance completed to date.

In July 2019, Comcast elected enterprise license pricing for the Company’s CableOS software under certain existing commercial agreements between the Company and Comcast (the “CableOS software license agreement”), which also includes maintenance and support services, and material rights. As of March 27, 2020, the aggregate amount of the transaction price under this agreement allocated to the remaining performance obligations is $98.1 million, and the Company will recognize this revenue as the related performance obligations are delivered over the next three years to four years.

See Note 16, “Segment Information” for disaggregated revenue information.

NOTE 4: LEASES

The components of lease expense are as follows (in thousands):

	Three months ended March 27, 2020	Three months ended March 29, 2019
Operating lease cost	$ 2,668	$ 1,996
Variable lease cost	792	779
Total lease cost	$ 3,460	$ 2,775

Supplemental cash flow information related to leases are as follows (in thousands):

	Three months ended	
	March 27, 2020	March 29, 2019
Cash paid for amounts included in the measurement of operating lease liabilities	$ 2,421	$ 2,130
ROU assets obtained in exchange for operating lease obligations	$ 1,671	$ —

NOTE 5: INVESTMENTS IN EQUITY SECURITIES

EDC

In 2014, the Company acquired an 18.4% interest in Encoding.com, Inc. ("EDC"), a privately held video transcoding service company headquartered in San Francisco, California, for $3.5 million by purchasing EDC's Series B preferred stock. EDC is considered a VIE but the Company determined that it is not the primary beneficiary of EDC. As a result, EDC is measured at its cost minus impairment, if any.

The Company determined that there were no indicators at March 27, 2020 that the EDC investment was impaired. The Company's maximum exposure to loss from the EDC's investment at March 27, 2020 was limited to its investment cost of $3.6 million, including $0.1 million of transaction costs.

NOTE 6: DERIVATIVES AND HEDGING ACTIVITIES

The Company uses forward contracts to manage exposures to foreign currency exchange rates. The Company's primary objective in holding derivative instruments is to reduce the volatility of earnings and cash flows associated with fluctuations in foreign currency exchange rates and the Company does not use derivative instruments for trading purposes. The use of derivative instruments exposes the Company to credit risk to the extent that the counterparties may be unable to meet their contractual obligations. As such, the potential risk of loss with any one counterparty is closely monitored by the Company.

Derivatives Not Designated as Hedging Instruments (Balance Sheet Hedges)

The Company's balance sheet hedges consist of foreign currency forward contracts that generally mature within three months, are carried at fair value, and are used to minimize the short-term impact of foreign currency exchange rate fluctuation on cash and certain trade and inter-company receivables and payables. Changes in the fair value of these foreign currency forward contracts are recognized in "Other expense, net" in the Condensed Consolidated Statement of Operations and are largely offset by the changes in the fair value of the assets or liabilities being hedged.

Losses on the non-designated derivative instruments recognized during the periods presented were as follows (in thousands):

		Three months ended	
	Financial Statement Location	**March 27, 2020**	**March 29, 2019**
Derivatives not designated as hedging instruments:			
Losses recognized in operations	Other expense, net	$ (912)	$ (565)

The U.S. dollar equivalents of all outstanding notional amounts of foreign currency forward contracts are summarized as follows (in thousands):

	March 27, 2020	**December 31, 2019**
Derivatives not designated as hedging instruments:		
Purchase	$ 21,783	$ 14,806
Sell	$ 4,669	$ 2,629

The locations and fair value amounts of the Company's derivative instruments reported in its Condensed Consolidated Balance Sheets are as follows (in thousands):

		Asset Derivatives			Derivative Liabilities	
	Balance Sheet Location	**March 27, 2020**	**December 31, 2019**	**Balance Sheet Location**	**March 27, 2020**	**December 31, 2019**
Derivatives not designated as hedging instruments:						
Foreign currency contracts	Prepaid expenses and other current assets	$ —	$ 43	Accrued and other current liabilities	$ 479	$ 112
Total derivatives		$ —	$ 43		$ 479	$ 112

Offsetting of Derivative Assets and Liabilities

The Company recognizes all derivative instruments on a gross basis in the Condensed Consolidated Balance Sheets. However, the arrangements with its counterparties allows for net settlement, which are designed to reduce credit risk by permitting net settlement with the same counterparty. As of March 27, 2020, information related to the offsetting arrangements was as follows (in thousands):

	Gross Amounts of Derivatives	**Gross Amounts of Derivatives Offset in the Condensed Consolidated Balance Sheets**	**Net Amounts of Derivatives Presented in the Condensed Consolidated Balance Sheets**
Derivative liabilities	$ 479	—	$ 479

In connection with foreign currency derivatives entered in Israel, the Company's subsidiaries in Israel are required to maintain a compensating balance with their bank at the end of each month. The compensating balance arrangements do not legally restrict the use of cash. As of March 27, 2020, the total compensating balance maintained was $1.0 million.

NOTE 7: FAIR VALUE MEASUREMENTS

The authoritative accounting guidance establishes a framework for measuring fair value and requires disclosure about the fair value measurements of assets and liabilities. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability, in the principal or most advantageous market for the asset or liability, in an orderly transaction between market participants on the measurement date. This guidance requires the Company to classify and disclose assets and liabilities measured at fair value on a recurring basis, as well as fair value measurements of assets and liabilities measured on a nonrecurring basis in periods subsequent to initial measurement, in a three-tier fair value hierarchy as described below.

Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. The guidance describes three levels of inputs that may be used to measure fair value:

- Level 1 — Observable inputs that reflect quoted prices for identical assets or liabilities in active markets.
- Level 2 — Observable inputs other than Level 1 prices, such as quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities. The forward exchange contracts are classified as Level 2 because they are valued using quoted market prices and other observable data for similar instruments in an active market.
- Level 3 — Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

The following table sets forth the fair value of the Company's financial assets and liabilities measured at fair value on a recurring basis based on the three-tier fair value hierarchy (in thousands):

	Level 1	Level 2	Level 3	Total
As of March 27, 2020				
Accrued and other current liabilities				
Derivative liabilities	$ —	$ 479	$ —	$ 479
Total liabilities measured and recorded at fair value	$ —	$ 479	$ —	$ 479
	Level 1	**Level 2**	**Level 3**	**Total**
As of December 31, 2019				
Prepaid and other current assets				
Derivative assets	$ —	$ 43	$ —	$ 43
Total assets measured and recorded at fair value	$ —	$ 43	$ —	$ 43
Accrued and other current liabilities				
Derivative liabilities	$ —	$ 112	$ —	$ 112
Total liabilities measured and recorded at fair value	$ —	$ 112	$ —	$ 112

The Company's liability for the acquired employee voluntary departure plan in France (the "French VDP") was $0.3 million and $0.8 million as of March 27, 2020 and December 31, 2019, respectively. This amount is not included in the table above because its fair value at inception, based on Level 3 inputs, was determined during the fourth quarter of fiscal 2016. Subsequently there is no recurring fair value remeasurement for this liability based on the applicable accounting guidance.

The carrying value of the Company's financial instruments, including cash equivalents, accounts receivable, accounts payable and accrued and other current liabilities, approximate fair value due to their short maturities.

The Company uses the market approach to measure fair value for its financial assets and liabilities. The market approach uses prices and other relevant information generated by market transactions involving identical or comparable assets or liabilities. The fair value of the Company's convertible notes is influenced by interest rates, the Company's stock price and stock market volatility. The fair value of the Company's 4.00% Convertible Senior Notes due 2020 (the "2020 Notes") was approximately $53.8 million and $66.8 million as of March 27, 2020 and December 31, 2019, respectively. The fair value of Company's 2.00% Convertible Senior Notes due 2024 (the "2024 Notes" and, together with the 2020 Notes, the "Notes") was approximately $114.6 million and $131.9 million as of March 27, 2020 and December 31, 2019, respectively. The Notes are classified as Level 2 valuations. The Company's other debts assumed from the Thomson Video Networks ("TVN") acquisition are classified within Level 2 because these borrowings are not actively traded and the majority of them have a variable interest rate structure based upon market rates currently available to the Company for debt with similar terms and maturities, therefore, the carrying value of these debts approximate its fair value. The other debts, excluding finance leases, outstanding as of March 27, 2020 and December 31, 2019 were in the aggregate of $16.4 million and $17.2 million, respectively. (See Note 11, "Convertible Notes, Other debts and Finance Leases" for additional information).

During the three months ended March 27, 2020, there were no nonrecurring fair value measurements of assets and liabilities subsequent to initial recognition.

NOTE 8: BALANCE SHEET COMPONENTS

The following tables provide details of selected balance sheet components (in thousands):

	March 27, 2020	December 31, 2019
Accounts receivable, net:		
Accounts receivable	$ 95,719	$ 91,513
Less: allowances for doubtful accounts and sales returns	(2,661)	(3,013)
Total	$ 93,058	$ 88,500

	March 27, 2020	December 31, 2019
Inventories, net:		
Raw materials	$ 4,881	$ 4,179
Work-in-process	2,220	1,633
Finished goods	18,841	14,080
Service-related spares	8,912	9,150
Total	$ 34,854	$ 29,042

	March 27, 2020	December 31, 2019
Prepaid expenses and other current assets:		
French R&D tax credits receivable(1)	7,163	7,343
Contract assets(2)	5,806	13,969
Deferred cost of revenue	$ 3,892	$ 2,631
Prepaid maintenance, royalty, rent, and property taxes	3,653	1,594
Capitalized sales commissions	1,168	1,309
Other	10,319	13,916
Total	$ 32,001	$ 40,762

(1) The Company's French subsidiary participates in the French Crédit d'Impôt Recherche program (the "R&D tax credits") which allows companies to monetize eligible research expenses. The R&D tax credits can be used to offset against income tax payable to the French government in each of the four years after being incurred, or if not utilized, are recoverable in cash. The amount of R&D tax credits recoverable are subject to audit by the French government. The R&D tax credits receivable at March 27, 2020 were approximately $23.5 million and are expected to be recoverable from 2020 through 2023.

(2) Contract assets reflect the satisfied performance obligations for which the Company does not yet have an unconditional right to consideration.

	March 27, 2020	December 31, 2019
Property and equipment, net:		
Machinery and equipment	$ 77,213	$ 75,229
Capitalized software	34,395	34,190
Construction in progress*	19,482	5,506
Leasehold improvements	15,072	15,170
Furniture and fixtures	6,004	6,036
Property and equipment, gross	152,166	136,131
Less: accumulated depreciation and amortization	(115,075)	(113,203)
Total	$ 37,091	$ 22,928

*During fiscal 2019, the Company entered into a lease for a new facility which will become the Company's new headquarters in 2020. The new lease commenced in May 2019, as the facility was made available to the Company for constructing leasehold improvements. Construction in progress includes $18.2 million for constructing leasehold improvements in the new headquarters facility.

	March 27, 2020	December 31, 2019
Other long-term assets:		
French R&D tax credits receivable	$ 16,303	$ 15,899
Deferred tax assets	10,222	10,575
Equity investment	3,593	3,593
Other	9,757	11,238
Total	$ 39,875	$ 41,305

	March 27, 2020	December 31, 2019
Accrued and other current liabilities:		
Accrued employee compensation and related expenses	$ 16,175	$ 19,454
Operating lease liability (short-term)	8,583	8,881
Customer deposits	3,805	3,557
Accrued warranty	3,744	4,308
Accrued royalty payments	2,384	2,642
Accrued Avid litigation settlement, current	2,000	2,000
Contingent inventory reserves	1,700	2,208
Others	13,689	19,485
Total	$ 52,080	$ 62,535

	March 27, 2020	December 31, 2019
Other non-current liabilities:		
Operating lease liability (long-term)	$ 25,326	$ 25,766
Deferred revenue (long-term)	7,135	6,333
Others	8,927	9,155
Total	$ 41,388	$ 41,254

NOTE 9: GOODWILL AND IDENTIFIED INTANGIBLE ASSETS

Goodwill

Goodwill represents the cost in excess of the fair value of the net assets acquired in a business combination. Goodwill is tested for impairment at the reporting unit level on an annual basis and on an interim basis if an event occurs or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying value. The Company determined that there was no impairment identified as of March 27, 2020.

The changes in the carrying amount of goodwill for the three months ended March 27, 2020 were as follows (in thousands):

	Video	Cable Access	Total
Balance as of December 31, 2019	$ 178,982	$ 60,798	$ 239,780
Foreign currency translation adjustment, net	(1,110)	(56)	(1,166)
Balance as of March 27, 2020	$ 177,872	$ 60,742	$ 238,614

Intangible Assets, Net

The following is a summary of intangible assets, net (in thousands):

	March 27, 2020				December 31, 2019		
	Weighted Average Remaining Life (Years)	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Developed core technology	0.3	$ 31,707	$ (31,642)	$ 65	$ 31,707	$ (30,757)	$ 950
Customer relationships/contracts	0.9	44,497	(41,773)	2,724	44,577	(41,092)	3,485
Trademarks and trade names	n/a	594	(594)	—	609	(583)	26
Maintenance agreements and related relationships	n/a	5,500	(5,500)	—	5,500	(5,500)	—
Order backlog	n/a	3,054	(3,054)	—	3,085	(3,085)	—
Total identifiable intangibles, net		$ 85,352	$ (82,563)	$ 2,789	$ 85,478	$ (81,017)	$ 4,461

Amortization expense for the identifiable purchased intangible assets for the three months ended March 27, 2020 and March 29, 2019 was allocated as follows (in thousands):

	Three months ended	
	March 27, 2020	March 29, 2019
Included in cost of revenue	$ 885	$ 1,295
Included in operating expenses	770	788
Total amortization expense	$ 1,655	$ 2,083

The estimated future amortization expense of purchased intangible assets with definite lives is as follows (in thousands):

	Cost of Revenue	Operating Expenses	Total
Year ended December 31,			
2020 (remaining nine months)	$ 65	$ 2,228	$ 2,293
2021	—	496	496
Total future amortization expense	$ 65	$ 2,724	$ 2,789

NOTE 10: RESTRUCTURING AND RELATED CHARGES

The Company has implemented several restructuring plans in an effort to better align its resources with its business strategy. The goal of these plans was to bring operational expenses to appropriate levels relative to the Company's net revenues, while simultaneously implementing extensive company-wide expense control programs. The restructuring plans have primarily been comprised of excess facilities, severance payments and termination benefits related to headcount reductions.

The Company accounts for its restructuring plans under the authoritative guidance for exit or disposal activities. The restructuring and related charges are included in "Cost of revenue" and "Operating expenses - Restructuring and related charges" in the Condensed Consolidated Statements of Operations. The following table summarizes the restructuring and related charges (in thousands):

	Three months ended	
	March 27, 2020	March 29, 2019
Restructuring and related charges in:		
Cost of revenue	$ (73)	$ 301
Operating expenses - Restructuring and related charges	676	57
Total restructuring and related charges	$ 603	$ 358

As of March 27, 2020 and December 31, 2019, the Company's total restructuring liability was $3.1 million and $4.9 million, respectively, of which $1.9 million and $1.5 million, respectively, were reported as a component of "Accrued and other current liabilities", and the remaining $1.2 million and $3.4 million, respectively, were reported as a component of "Other non-current liabilities" on the Company's Condensed Consolidated Balance Sheets.

The following table summarizes the activities related to the Company's restructuring plans during the three months ended March 27, 2020 (in thousands):

	Excess facilities	Severance and benefits	French VDP	Others	Total
Balance at December 31, 2019	$ 720	$ 3,294	$ 806	$ 30	$ 4,850
Charges for current period	—	563	40	—	603
Cash payments	(463)	(1,252)	(526)	—	(2,241)
Others	—	(80)	(46)	—	(126)
Balance at March 27, 2020	$ 257	$ 2,525	$ 274	$ 30	$ 3,086

NOTE 11: CONVERTIBLE NOTES, OTHER DEBTS AND FINANCE LEASES

2.00% Convertible Senior Notes due 2024

In September 2019, the Company issued $115.5 million of the 2024 Notes pursuant to an indenture (the "2024 Notes Indenture"), dated September 13, 2019, by and between the Company and U.S. Bank National Association, as trustee. The 2024 Notes bear interest at a rate of 2.00% per year, payable semiannually on March 1 and September 1 of each year. The 2024 Notes will mature on September 1, 2024, unless earlier repurchased by the Company, redeemed by the Company or converted pursuant to their terms.

The 2024 Notes are convertible into cash, shares of the Company's common stock, par value $0.001 ("Common Stock"), or a combination thereof, at the Company's election, at an initial conversion rate of 115.5001 shares of Common Stock per $1,000 principal amount of 2024 Notes (which is equivalent to an initial conversion price of approximately $8.66 per share). The conversion rate, and thus the effective conversion price, may be adjusted under certain circumstances, including in connection with conversions made following certain fundamental changes or a notice of redemption and under other circumstances, in each case, as set forth in the 2024 Notes Indenture.

The 2024 Notes will be convertible at certain times and upon the occurrence of certain events in the future, in each case, specified in the 2024 Notes Indenture. Further, on or after June 1, 2024, until the close of business on the scheduled trading day immediately preceding the maturity date, holders of the 2024 Notes may convert all or a portion of their 2024 Notes regardless of these conditions.

In accordance with the accounting guidance on embedded conversion features, the conversion feature associated with the 2024 Notes was valued at $24.9 million and bifurcated from the host debt instrument and recorded in “Additional paid-in capital”. The resulting debt discount on the 2024 Notes is being amortized to interest expense at the effective interest rate over the contractual term of the 2024 Notes. The following table presents the components of the 2024 Notes as of March 27, 2020 and December 31, 2019 (in thousands, except for years and percentages):

	March 27, 2020	December 31, 2019
Liability:		
Principal amount	$ 115,500	$ 115,500
Less: Debt discount, net of amortization	(22,594)	(23,652)
Less: Debt issuance costs, net of amortization	(3,074)	(3,219)
Carrying amount	$ 89,832	$ 88,629
Remaining amortization period (years)	4.4	4.7
Effective interest rate on liability component	7.95%	7.95%

4.00% Convertible Senior Notes due 2020

In December 2015, the Company issued $128.25 million in aggregate principal amount of the 2020 Notes pursuant to an indenture (the “2020 Notes Indenture”), dated December 14, 2015, by and between the Company and U.S. Bank National Association, as trustee. The 2020 Notes bear interest at a rate of 4.00% per year, payable in cash on June 1 and December 1 of each year and the 2020 Notes will mature on December 1, 2020 unless earlier repurchased by the Company, redeemed by the Company or converted pursuant to their terms.

In September 2019, the Company used approximately $109.6 million of the net proceeds from the issuance of the 2024 Notes to repurchase $82.5 million aggregate principal of the 2020 Notes in privately negotiated transactions. The repurchase of the 2020 Notes was accounted for as a debt extinguishment, and the consideration transferred was allocated between the equity and liability components by determining the fair value of the conversion option immediately prior to the debt extinguishment and allocating that portion of the repurchase price to additional paid-in capital for $27.1 million, with the residual repurchase price allocated to the liability component, respectively. The partial repurchase of the 2020 Notes resulted in the recognition of a $5.7 million loss on debt extinguishment for the year ended December 31, 2019.

The 2020 Notes are convertible into cash, shares of the Common Stock, or a combination thereof, at the Company’s election, at an initial conversion rate of 173.9978 shares of Common Stock per $1,000 principal amount of 2020 Notes (which is equivalent to an initial conversion price of approximately $5.75 per share). The conversion rate, and thus the effective conversion price, may be adjusted under certain circumstances, including in connection with conversions made following certain fundamental changes and under other circumstances, in each case, as set forth in the 2020 Notes Indenture.

The 2020 Notes will be convertible at certain times and upon the occurrence of certain events in the future, in each case, specified in the 2020 Notes Indenture. Further, on or after September 1, 2020, until the close of business on the scheduled trading day immediately preceding the maturity date, holders of the 2020 Notes may convert all or a portion of their 2020 Notes regardless of these conditions.

In accordance with the accounting guidance on embedded conversion features, the conversion feature associated with the 2020 Notes was initially valued at $26.1 million and bifurcated from the host debt instrument and recorded in “Additional paid-in capital”. The resulting debt discount on the 2020 Notes is being amortized to interest expense at the effective interest rate over the contractual terms of the 2020 Notes. The following table presents the components of the 2020 Notes as of March 27, 2020 and December 31, 2019 (in thousands, except for years and percentages):

	March 27, 2020	December 31, 2019
Liability:		
Principal amount	$ 45,785	$ 45,785
Less: Debt discount, net of amortization	(1,586)	(2,151)
Less: Debt issuance costs, net of amortization	(191)	(259)
Carrying amount	$ 44,008	$ 43,375
Remaining amortization period (years)	0.7	0.9
Effective interest rate on liability component	9.94%	9.94%

The 2020 Notes became convertible as of December 31, 2019, as the last reported sale price of the Common stock for at least 20 trading days during a period of 30 consecutive trading days ending on the last trading day of the immediately preceding fiscal quarter was greater than or equal to 130% of the conversion price of the 2020 Notes on each applicable trading day. As a result of the 2020 Notes becoming currently convertible for cash up to the principal amount of $45.8 million, the Company reclassified the unamortized debt discount for the 2020 Notes in the amount of $1.8 million from “Additional paid-in-capital” to convertible debt in the mezzanine equity section in the Condensed Consolidated Balance Sheet as of March 27, 2020.

The following table presents interest expense recognized for the 2020 Notes and the 2024 Notes (in thousands):

	Three months ended	
	March 27, 2020	March 29, 2019
Contractual interest expense	$ 1,035	$ 1,283
Amortization of debt discount	1,623	1,433
Amortization of debt issuance costs	212	172
Total interest expense recognized	$ 2,870	$ 2,888

Other Debts and Finance Leases

The Company has a variety of debt and credit facilities in France to satisfy the financing requirements of the operations of its French subsidiary. These arrangements are summarized in the table below (in thousands):

	March 27, 2020	December 31, 2019
Financing from French government agencies related to various government incentive programs (1)	$ 16,160	$ 16,566
Term loans	174	587
Obligations under finance leases	57	71
Total debt obligations	16,391	17,224
Less: current portion	(6,343)	(6,713)
Long-term portion	$ 10,048	$ 10,511

(1) As of March 27, 2020 and December 31, 2019, loans backed by French R&D tax credit receivables were $14.7 million and $15.1 million, respectively. As of March 27, 2020, the French Subsidiary had an aggregate of $23.5 million of R&D tax credit receivables from the French government from 2020 through 2023. See Note 8, “Balance Sheet Components” for additional information. These tax loans have a fixed rate of 0.6%, plus EURIBOR 1 month + 1.3% and mature between 2020 through 2022. The remaining loans of $1.5 million at March 27, 2020, primarily relate to financial support from French government agencies for R&D innovation projects at minimal interest rates, and these loans mature between 2020 through 2025.

Future minimum repayments

The table below presents the future minimum repayments of debts and finance lease obligations in France as of March 27, 2020 (in thousands):

Years ending December 31,	Finance lease obligations		Other Debt obligations	
2020 (remaining nine months)	$	35	$	6,212
2021		22		5,007
2022		—		4,750
2023		—		147
Thereafter		—		218
Total	$	57	$	16,334

Line of Credit

On December 19, 2019, the Company entered into a Credit Agreement (the "Credit Agreement") with JPMorgan Chase Bank, N.A., as lender. The Credit Agreement provides for a secured revolving loan facility in an aggregate principal amount of up to $25.0 million, based on a borrowing base of eligible accounts receivable and inventory, with a maturity date of October 31, 2020. The Company may use availability under the revolving loan facility for the issuance of letters of credit. The proceeds of the revolving loans may be used for general corporate purposes.

The revolving loans bear interest, at the Company's election, at a floating rate per annum equal to either (1) 1.25% plus the greater of (i) 1 month LIBOR on any day plus 2.50% and (ii) the prime rate as reported in the Wall Street Journal from time to time or (2) 2.25% plus LIBOR for an interest period of one, two or three months. Interest on the revolving loans is payable monthly in arrears, in the case of prime rate loans, and at the end of the applicable interest period, in the case of LIBOR loans.

The Credit Agreement contains customary affirmative and negative covenants, including covenants limiting the ability of the Company, among other things, incur debt, grant liens, undergo certain fundamental changes, make investments, make certain restricted payments, dispose of assets, enter into transactions with affiliates, and enter into burdensome agreements, in each case, subject to limitations and exceptions set forth in the Credit Agreement. The Company is also required to maintain compliance with an adjusted quick ratio, a minimum EBITDA covenant (tested quarterly) and a minimum liquidity covenant, in each case, determined in accordance with the terms of the Credit Agreement. As of March 27, 2020, the Company was in compliance with the covenants under the Credit Agreement.

As of March 27, 2020, there was $0.3 million of outstanding letters of credit issued under the Credit Agreement. There were no revolving borrowings under the Credit Agreement as of March 27, 2020.

As of March 27, 2020, the Company has security for letters of credit which are unsecured in the amount of $2.2 million.

NOTE 12: EMPLOYEE BENEFIT PLANS AND STOCK-BASED COMPENSATION

Equity Award Plans

The Company's stock benefit plans include the 2002 Employee Stock Purchase Plan ("ESPP") and current active stock plans adopted in 1995 and 2002. See Note 13, "Employee Benefit Plans and Stock-based Compensation" of Notes to Consolidated Financial Statements in the 2019 Form 10-K for details pertaining to each plan.

As of March 27, 2020, there were 0.8 million and 3.7 million shares of common stock reserved for future grants under the Company's ESPP and active stock plans, respectively.

Stock Option Activities

The following table summarizes the Company’s stock option activities and related information during the three months ended March 27, 2020 (in thousands, except per share amounts and terms):

	Stock Options Outstanding			
	Number of Shares	Weighted Average Exercise Price Per Share	Weighted Average Remaining Contractual Term (Years)	Aggregate Intrinsic Value
Balance at December 31, 2019	1,888	$ 5.83		
Exercised	(127)	5.78		
Canceled or expired	(203)	5.78		
Balance at March 27, 2020	1,558	5.84	1.9	$ 1,319
Vested and expected to vest	1,558	5.84	1.9	$ 1,319
Exercisable	1,558	5.84	1.9	$ 1,319

The aggregate intrinsic value disclosed above represents the difference between the exercise price of the options and the fair value of the Company’s common stock. There were no employee stock options granted in the three months ended March 27, 2020.

There were no realized tax benefits attributable to stock options exercised in jurisdictions where this expense is deductible for tax purposes for the three months ended March 27, 2020 and March 29, 2019, respectively.

Restricted Stock Units (“RSUs”) Activities

The following table summarizes the Company’s RSUs activities and related information during the three months ended March 27, 2020 (in thousands, except per share amounts):

	Restricted Stock Units Outstanding	
	Number of Shares	Weighted Average Grant Date Fair Value Per Share
Balance at December 31, 2019	3,601	$ 5.18
Granted	1,894	6.24
Vested	(1,790)	5.48
Forfeited	(237)	3.84
Balance at March 27, 2020	3,468	5.69

Performance- and Market-based awards

The Company settled a portion of its incentive bonus payments to eligible employees by issuing performance-based RSU awards (“PRSUs”) from the 1995 Stock Plan. The Company granted 472,247 shares of PRSUs to certain employees for the three months ended March 27, 2020, all of which were fully vested at the time of grant for the purpose of settling amounts earned under the Company’s 2019 incentive bonus plans. The stock-based compensation recognized for these PRSUs was $3.0 million for the three months ended March 27, 2020. There were no PRSUs issued for purposes of settling amounts earned under the Company's incentive plans in the three months ended March 29, 2019.

In the first quarter of 2020, the Company granted 67,910 performance-based RSUs to certain key executives that are expected to vest by the end of fiscal 2020. The vesting condition for these PRSUs include achievement of certain financial operating goals. The stock-based compensation recognized for all PRSUs which vest according to achievement of certain financial operating goals for the three months ended March 27, 2020 was $0.4 million. The unrecognized stock-based compensation of the PRSUs as of March 27, 2020 was $0.8 million which includes $0.4 million of unrecognized expense from PRSUs granted in 2019. 40,000 shares of PRSUs granted in 2019 had vested as of March 27, 2020.

In the first quarter of 2020, the Company granted 182,830 market-based RSUs ("MRSUs") under the 1995 Stock Plan to a key executive that is expected to vest during a three-year period. The vesting condition for the MRSUs include performance of the Company's total shareholder return ("TSR") relative to the TSR of the NASDAQ Telecommunication Index. The aggregate grant-date fair value of these shares was estimated to be $1.1 million using a Monte-Carlo simulation valuation method. The stock-based compensation recognized for all MRSUs for the three months ended March 27, 2020 was $0.1 million. The unrecognized stock-based compensation of the MRSUs as of March 27, 2020 was $1.8 million which includes $0.7 million of unrecognized expense from MRSUs granted in 2019. None of these MRSUs had vested as of March 27, 2020.

French Retirement Benefit Plan

The Company assumed obligations under a defined benefit pension plan in connection with the acquisition of its French subsidiary in 2016. The plan is unfunded and there are no contributions required by laws or funding regulations, discretionary contributions or non-cash contributions expected to be made. The table below presents the components of net periodic benefit costs (in thousands):

	Three months ended	
	March 27, 2020	March 29, 2019
Service cost	$ 61	$ 57
Interest cost	9	20
Net periodic benefit cost	$ 70	$ 77

The present value of the Company's pension obligation as of March 27, 2020 was $5.2 million, of which $0.1 million was reported as a component of "Accrued and other current liabilities" and $5.1 million was reported as a component of "Other non-current liabilities" on the Company's Condensed Consolidated Balance Sheets. The present value of the Company's pension obligation as of December 31, 2019 was $5.3 million.

401(k) Plan

The Company has a retirement/savings plan for its U.S. employees, which qualifies as a thrift plan under Section 401(k) of the Internal Revenue Code. This plan allows participants to contribute up to the applicable Internal Revenue Code limitations under the plan. The Company has made discretionary contributions to the plan of 25% of the first 4% contributed by eligible participants, up to a maximum contribution per participant of $1,000 per year. The contributions for the three months ended March 27, 2020 and March 29, 2019 were $109,000 and $122,000, respectively.

Stock-based Compensation

The following table summarizes stock-based compensation for all plans (in thousands):

	Three months ended	
	March 27, 2020	March 29, 2019
Stock-based compensation in:		
Cost of revenue	$ 770	$ 225
Research and development expense	1,738	616
Selling, general and administrative expense	3,751	1,272
Total stock-based compensation in operating expense	5,489	1,888
Total stock-based compensation	$ 6,259	$ 2,113

As of March 27, 2020, total unrecognized stock-based compensation cost related to unvested RSUs was $18.7 million and is expected to be recognized over a weighted-average period of approximately 2.17 years.

Valuation Assumptions

The Company estimates the fair value of employee stock options and stock purchase rights under the ESPP using a Black-Scholes option valuation model. The value of the stock purchase rights under the ESPP consists of: (1) the 15% discount on the purchase of the stock; (2) 85% of the fair value of the call option; and (3) 15% of the fair value of the put option. The call option and put option were valued using the Black-Scholes option pricing model.

	ESPP Purchase Period Ending	
	July 1, 2020	July 1, 2019
Expected term (years)	0.5	0.5
Volatility	50%	43%
Risk-free interest rate	1.6%	2.5%
Expected dividends	0.0%	0.0%
Estimated weighted average fair value per share at purchase date	$2.24	$1.31

The expected term of the stock purchase rights under the ESPP represents the period of time from the beginning of the offering period to the purchase date. The Company uses its historical volatility for a period equivalent to the expected term of the options to estimate the expected volatility. The risk-free interest rate assumption is based on U.S. Treasury zero-coupon issues with remaining terms similar to the expected term. The Company has not paid and does not plan to pay any cash dividends in the foreseeable future.

NOTE 13: INCOME TAXES

The Company reported the following operating results for the periods presented (in thousands):

	Three months ended	
	March 27, 2020	March 29, 2019
Loss before income taxes	$ (21,225)	$ (11,625)
Provision for income taxes	729	(319)
Effective income tax rate	(3.4)%	2.7%

The Company operates in multiple jurisdictions and its profits are taxed pursuant to the tax laws of these jurisdictions. The Company’s effective income tax rate may be affected by changes in, or interpretations of tax laws and tax agreements in any given jurisdiction, utilization of net operating loss and tax credit carry forwards, changes in geographical mix of income and expense, and changes in management’s assessment of matters such as the ability to realize deferred tax assets. The Company’s effective tax rate varies from year to year primarily due to the absence of several one-time, discrete items that benefited or decremented the tax rates in the previous years.

The Company's effective income tax rate of (3.4)% for the three months ended March 27, 2020 was different from the U.S. federal statutory rate of 21%, primarily due to the full valuation allowance against U.S. federal, California and other states deferred tax assets, foreign withholding taxes and income taxes on earnings from operations in foreign tax jurisdictions.

The Company's effective income tax rate of 2.7% for the three months ended March 29, 2019 was different from the U.S. federal statutory rate of 21%, primarily due to geographical mix of income and losses, full valuation allowance against U.S. federal, California and other states deferred tax assets, foreign withholding taxes and income taxes on earnings from operations in foreign tax jurisdictions. In addition, during the three months ended March 29, 2019, the Company recorded a one-time benefit of approximately $0.8 million due to a valuation allowance release for one of its foreign subsidiaries. This release of valuation allowance was due to changes in forecasted taxable income resulting from the Company receiving a favorable tax ruling during the first quarter of 2019.

The Company files U.S. federal and state, and foreign income tax returns in jurisdictions with varying statutes of limitations during which such tax returns may be audited and adjusted by the relevant tax authorities. The 2016 through 2019 tax years generally remain subject to examination by U.S. federal and most state tax authorities. In significant foreign jurisdictions, the 2014 through 2019 tax years generally remain subject to examination by their respective tax authorities. If, upon the conclusion of an audit, the ultimate determination of taxes owed in the jurisdictions under audit is for an amount in excess of the tax provision the Company has recorded in the applicable period, the Company’s overall tax expense, effective tax rate, operating results and cash flow could be materially and adversely impacted in the period of adjustment.

On July 27, 2015, the U.S. Tax Court issued an opinion in Altera Corp. v. Commissioner, 145 T.C. No.3 (2015) related to the treatment of stock-based compensation expense in an intercompany cost-sharing arrangement. A final decision was entered by the U.S. Tax Court on December 1, 2015 (the “2015 Decision”). On February 19, 2016, the U.S. Internal Revenue Service filed a notice of appeal in Altera Corp. v. Commissioner, 145 T.C. No. 3 (2015), to the Ninth Circuit Court of Appeals. The Ninth Circuit was to decide whether a regulation that mandates that stock-based compensation costs related to the intangible development activity of a qualified cost sharing arrangement (a "QCSA") must be included in the joint cost pool of the QCSA (the "all costs rule") is consistent with the arm's length standard as set forth in Section 482 of the Internal Revenue Code. On June 7, 2019, the Ninth Circuit overturned the earlier Tax Court decision and ruled to include share-based compensation in the cost sharing pool. On July 22, 2019, Altera Corp. filed a petition for an en banc rehearing before the U.S. Court of Appeals for the Ninth Circuit, which was denied on November 12, 2019. Altera filed a petition for a writ of certiorari on February 10, 2020 asking the Supreme Court to review the Ninth Circuit Court of Appeals' decision, but it has not yet been granted. The Company has not changed its historical position of including share-based compensation in the cost base consistent with the Ninth Circuit's ruling.

As of March 27, 2020, the total amount of gross unrecognized tax benefits, including interest and penalties, was approximately $17.0 million, of which $15.7 million would affect the Company's effective tax rate if the benefits are eventually recognized, subject to valuation allowance considerations. The Company recognizes interest and penalties related to unrecognized tax positions in income tax expense. The net interest and penalty charges recorded as of March 27, 2020 were not material

On March 27, 2020, the "Coronavirus Aid, Relief, and Economic Security Act" was signed into law. The new legislation includes a number of income tax provisions applicable to individuals and businesses. The Company is required to recognize the effect of the tax law changes in the period of enactment for the three months ended March 27, 2020, such as the reclassification of the long term receivable of $0.5 million for the alternative minimum tax credit refund to short term receivable.

NOTE 14: NET LOSS PER SHARE

The following table sets forth the computation of the basic and diluted net loss per share (in thousands, except per share amounts):

	Three months ended	
	March 27, 2020	**March 29, 2019**
Numerator:		
Net loss	$ (21,954)	$ (11,306)
Denominator:		
Weighted average number of common shares outstanding		
Basic and diluted	95,575	88,165
Net loss per share:		
Basic and diluted	$ (0.23)	$ (0.13)

Basic net loss per share was the same as diluted net loss per share for the three months ended March 27, 2020 and March 29, 2019, as the inclusion of potential common shares outstanding would have been anti-dilutive due to the Company's net losses for the periods presented. The following table sets forth the potential weighted common shares outstanding and the anti-dilutive weighted shares that were excluded from the computation of basic and diluted net loss per share calculations (in thousands):

	Three months ended	
	March 27, 2020	**March 29, 2019**
Stock options	1,796	2,941
RSUs	2,899	2,400
Stock purchase rights under the ESPP	443	489
Convertible Debt	1,169	—
Warrants [1]	—	1,954
Total	6,307	7,784

(1) See Note 15, "Warrants" for additional information.

The Company's intent is to settle the principal amount of the 2020 Notes and the 2024 Notes in cash. The treasury stock method is used to calculate any potential dilutive effect of the conversion spread on diluted net income per share, if applicable.

- The conversion spread of 7,962,609 shares will have a dilutive impact on diluted net income per share when the Company's average market price of its common stock for a given period exceeds the conversion price of $5.75 per share for the 2020 Notes.

- The conversion spread of 13,337,182 shares will have a dilutive impact on diluted net income per share when the Company's average market price of its common stock for a given period exceeds the conversion price of $8.66 per share for the 2024 Notes.

See Note 11, "Convertible Notes, Other Debts and Finance Leases" for additional information on the 2020 Notes and the 2024 Notes.

NOTE 15: WARRANTS

On September 26, 2016, the Company granted a warrant to purchase shares of common stock (the "Warrant") to Comcast pursuant to which Comcast may, subject to certain vesting provisions, purchase up to 7,816,162 shares of the Company's common stock subject to adjustment in accordance with the terms of the Warrant, for a per share exercise price of $4.76.

The Warrant shares were fully vested and exercisable as of July 1, 2019. On December 17, 2019, Comcast exercised the Warrant in its entirety, resulting in a net issuance of 3,217,547 shares. The Company delivered 804,387 shares to Comcast on December 20, 2019, with the remaining 2,413,160 shares delivered on January 10, 2020.

During the three months ended March 27, 2020 and March 29, 2019, the Company recorded $0.4 million and $25 thousand, respectively, as a reduction to net revenues in connection with amortization of the Warrant.

NOTE 16: SEGMENT INFORMATION

Operating segments are defined as components of an enterprise that engage in business activities for which separate financial information is available and evaluated by the Company's Chief Operating Decision Maker (the "CODM"), which for the Company is its Chief Executive Officer, in deciding how to allocate resources and assess performance. Based on our internal reporting structure, the Company consists of two operating segments: Video and Cable Access. The operating segments were determined based on the nature of the products offered. The Video segment provides video processing and production and playout solutions and services worldwide to broadcast and media companies, streaming new media companies, cable operators, and satellite and telecommunications Pay-TV service providers. The Cable Access segment provides cable access solutions and related services to cable operators globally.

The following table provides summary financial information by reportable segment (in thousands):

	Three months ended	
	March 27, 2020	**March 29, 2019**
Video		
Revenue	$ 54,372	$ 67,176
Gross profit	27,907	38,602
Operating income (loss)	(6,267)	1,968
Cable Access		
Revenue	$ 24,045	$ 12,930
Gross profit	10,414	5,068
Operating loss	(3,265)	(5,822)
Total		
Revenue	$ 78,417	$ 80,106
Gross profit	38,321	43,670
Operating loss	$ (9,532)	$ (3,854)

A reconciliation of the Company's consolidated segment operating loss to consolidated loss before income taxes is as follows (in thousands):

	Three months ended	
	March 27, 2020	**March 29, 2019**
Total segment operating loss	$ (9,532)	$ (3,854)
Unallocated corporate expenses	(603)	(358)
Stock-based compensation	(6,259)	(2,113)
Amortization of intangibles	(1,655)	(2,083)
Loss from operations	(18,049)	(8,408)
Non-operating expense, net	(3,176)	(3,217)
Loss before income taxes	$ (21,225)	$ (11,625)

Unallocated Corporate Expenses

Together with amortization of intangibles and stock-based compensation, the Company does not allocate restructuring and related charges to the operating loss for each segment because management does not include this information in the measurement of the performance of the operating segments. A measure of assets by segment is not applicable as segment assets are not included in the discrete financial information provided to the CODM.

Geographic Information

	Three months ended	
	March 27, 2020	March 29, 2019
Net Revenue (in thousands) [1]		
United States	$ 34,403	$ 30,115
Other Countries	44,014	49,991
Total	$ 78,417	$ 80,106

(1) Revenue is attributed to countries based on the location of the customer.

Market Information

	Three months ended	
	March 27, 2020	March 29, 2019
Market (in thousands)		
Service Provider	$ 43,759	$ 44,212
Broadcast and Media	34,658	35,894
Total	$ 78,417	$ 80,106

NOTE 17: COMMITMENTS AND CONTINGENCIES

Warranties

The Company accrues for estimated warranty costs at the time of product shipment. Management periodically reviews the estimated fair value of its warranty liability and records adjustments based on the terms of warranties provided to customers, historical and anticipated warranty claims experience, and estimates of the timing and cost of warranty claims. Activity for the Company’s warranty accrual, which is included in “Accrued and other current liabilities”, is summarized below (in thousands):

	Three months ended	
	March 27, 2020	March 29, 2019
Balance at beginning of period	$ 4,314	$ 4,869
Accrual for current period warranties	656	1,403
Warranty costs incurred	(1,226)	(1,685)
Balance at end of period	$ 3,744	$ 4,587

Purchase Obligations

The Company relies on a limited number of contract manufacturers and suppliers to provide manufacturing services for a substantial majority of its products. The Company had approximately $55.3 million of non-cancelable commitments to purchase inventories and other commitments as of March 27, 2020.

Standby Letters of Credit and Guarantees

As of March 27, 2020 and December 31, 2019, the Company has outstanding bank guarantees and standby letters of credit in aggregate of $2.7 million, consisting of building leases and performance bonds issued to customers.

As of March 27, 2020 there were $0.3 million of outstanding letters of credit issued under the Credit Agreement. There were no revolving borrowings under the Credit Agreement as of March 27, 2020.

During 2017, one of the Company’s subsidiaries entered into a $2.0 million credit facility with a foreign bank for the purpose of issuing performance guarantees. The credit facility is secured by a $2.2 million guarantee issued by the Company. There were no amounts outstanding under this credit facility as of March 27, 2020 and December 31, 2019, respectively.

Indemnification

Harmonic is obligated to indemnify its officers and the members of its Board of Directors pursuant to its bylaws and contractual indemnity agreements. Harmonic also indemnifies some of its suppliers and most of its customers for specified intellectual property matters pursuant to certain contractual arrangements, subject to certain limitations. The scope of these indemnities varies, but, in some instances, includes indemnification for damages and expenses (including reasonable attorneys’ fees). There have been no amounts accrued in respect of these indemnification provisions through March 27, 2020.

Legal proceedings

From time to time, the Company is involved in lawsuits as well as subject to various legal proceedings, claims, threats of litigation, and investigations in the ordinary course of business, including claims of alleged infringement of third-party patents and other intellectual property rights, commercial, employment, and other matters. The Company assesses potential liabilities in connection with each lawsuit and threatened lawsuits and accrues an estimated loss for these loss contingencies if both of the following conditions are met: information available prior to issuance of the financial statements indicates that it is probable that a liability has been incurred at the date of the financial statements and the amount of loss can be reasonably estimated. While certain matters to which the Company is a party specify the damages claimed, such claims may not represent reasonably probable losses. Given the inherent uncertainties of litigation, the ultimate outcome of these matters cannot be predicted at this time, nor can the amount of possible loss or range of loss, if any, be reasonably estimated.

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

The terms "Harmonic," "Company," "we," "us," "its," and "our," as used in this Quarterly Report on Form 10-Q (this "Form 10-Q"), refer to Harmonic Inc. and its subsidiaries and its predecessors as a combined entity, except where the context requires otherwise.

Some of the statements contained in this Form 10-Q are forward-looking statements that involve risk and uncertainties. The statements contained in this Form 10-Q that are not purely historical are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended, including, without limitation, statements regarding our expectations, beliefs, intentions or strategies regarding the future. In some cases, you can identify forward-looking statements by terminology such as, "may," "will," "should," "expects," "plans," "anticipates," "believes," "intends," "estimates," "predicts," "potential," or "continue" or the negative of these terms or other comparable terminology. These forward-looking statements include, but are not limited to, statements regarding:

- the impact of the COVID-19 pandemic, and related responses of businesses and governments to the pandemic, on our operations and personnel, on commercial activity in the markets in which we operate and worldwide and regional economies, and on our results of operations;
- developing trends and demands in the markets we address, particularly emerging markets;
- economic conditions, particularly in certain geographies, and in financial markets;
- new and future products and services;
- spending of our customers;
- our strategic direction, future business plans and growth strategy;
- industry and customer consolidation;
- expected demand for and benefits of our products and services;
- concentration of revenue sources;
- expectations regarding our CableOS solutions;
- expectations regarding the impact of the software license agreement with Comcast on our business;
- potential future acquisitions and dispositions;
- anticipated results of potential or actual litigation;
- our competitive environment;
- the impact of our restructuring plans;
- the impact of governmental regulations, including with respect to tariffs and economic sanctions;
- anticipated revenue and expenses, including the sources of such revenue and expenses;
- expected impacts of changes in accounting rules;
- expectations regarding the usability of our inventory and the risk that inventory will exceed forecasted demand;
- expectations and estimates related to goodwill and intangible assets and their associated carrying value; and
- use of cash, cash needs and ability to raise capital, including repaying our convertible notes.

These statements are subject to known and unknown risks, uncertainties and other factors, any of which may cause our actual results to differ materially from those implied by the forward-looking statements. Important factors that may cause actual results to differ from expectations include those discussed in "Risk Factors" beginning on page 40 of this Form 10-Q. All forward-looking statements included in this Quarterly Report on Form 10-Q are based on information available to us on the date thereof, and we assume no obligation to update any such forward-looking statements.

OVERVIEW

We are a leading global provider of (i) versatile and high performance video delivery software, products, system solutions and services that enable our customers to efficiently create, prepare, store, playout and deliver a full range of high-quality broadcast and OTT video services to consumer devices, including televisions, personal computers, laptops, tablets and smart phones and (ii) cable access solutions that enable cable operators to more efficiently and effectively deploy high-speed internet, for data, voice and video services to consumers' homes.

We classify our total revenue in two categories, "Appliance and integration" and "SaaS and service". The "Appliance and integration" revenue category includes hardware, licenses and professional services and is reflective of non-recurring revenue, while the "SaaS and service" category includes usage fees for our SaaS platform and support revenue stream from our appliance-based customers and reflects our recurring revenue stream.

We do business in three geographic regions: the Americas, EMEA and APAC and operate in two segments, Video and Cable Access. Our Video business sells video processing, production and playout solutions, and services worldwide to cable operators and satellite and telecommunications ("telco") Pay-TV service providers, which we refer to collectively as "service providers," as well as to broadcast and media companies, including streaming media companies. Our Video business infrastructure solutions are delivered either through shipment of our products, software licenses or as software-as-a-service ("SaaS") subscriptions. Our Cable Access business sells cable access solutions and related services, including our CableOS software-based cable access solution, primarily to cable operators globally.

Historically, our revenue has been dependent upon capital spending in the cable, satellite, telco, broadcast and media industries, including streaming media. Our customers' capital spending patterns are dependent on a variety of factors, including but not limited to: economic conditions in the U.S. and international markets, including the impacts of the COVID-19 pandemic; access to financing; annual budget cycles of each of the industries we serve; impact of industry consolidations; and customers suspending or reducing capital spending in anticipation of new products or new standards, new industry trends and/or technology shifts. If our product portfolio and product development plans do not position us well to capture an increased portion of the capital spending in the markets in which we compete, our revenue may decline. As we attempt to further diversify our customer base in these markets, we may need to continue to build alliances with other equipment manufacturers, content providers, resellers and system integrators, managed services providers and software developers; adapt our products for new applications; take orders at prices resulting in lower margins; and build internal expertise to handle the particular operational, payment, financing and/or contractual demands of our customers, which could result in higher operating costs for us.

The worldwide spread of COVID-19 has resulted in public health responses in affected regions, including travel bans and restrictions, social distancing requirements, and shelter-in-place orders, which have caused a global slowdown of economic activity and negatively impacted our business, operations and financial performance. In our Cable Access segment, COVID-19 led to delays in deployments as our customers operations were slowed to comply with appropriate safety precautions, and we expect some additional delays in deployments and a modest impact on design win velocity in the second quarter. In our Video segment, sales of video appliances and integration fell in March following the spread of COVID-19 as transactions or shipments were delayed and we were unable to complete certain field deployment projects as customer facilities closed. Sales in APAC were impacted the most due to the earlier spread of COVID-19, though we believe economies in APAC may begin to recover sooner than other regions and lead to increased demand for our products and services. We expect that the COVID-19 pandemic will continue to have a material impact on our results of operations.

We continue to monitor the impact of the COVID-19 pandemic and we have adopted several measures in response to COVID-19, including instructing employees to work from home, making adjustments to our expenses and cash flow to correlate with declines in revenues, and restricting non-essential business travel by our employees. The extent to which our operations will be impacted by the pandemic will depend largely on future developments, which are highly uncertain and cannot be accurately predicted, including new information which may emerge concerning the severity of the pandemic and actions by governments and businesses in response to the pandemic. As such, given the uncertainty around the duration and severity of the impact on market conditions and the business environment, we cannot reasonably estimate the full impacts of COVID-19 on our future results of operations. See "Risk Factors" in Item 1A of Part II of this Quarterly Report on Form 10-Q for additional information.

A majority of our revenue has been derived from relatively few customers, due in part to the consolidation of our service provider customers. Sales to our 10 largest customers during the three months ended March 27, 2020 accounted for 48% of our net revenue, compared to 41% for the corresponding period in 2019. Although we are attempting to broaden our customer base by penetrating new markets and further expanding internationally, we expect to see continuing industry consolidation and customer concentration. During the three months ended March 27, 2020, Comcast accounted for 17% and Vodafone accounted for 12% of our net revenue. During the three months ended March 29, 2019, no single customer accounted for more than 10% of our net revenue. The loss of any significant customer, any material reduction in orders by any significant customer, or our failure to qualify our new products with a significant customer could materially and adversely affect our operating results, financial condition and cash flows.

Our net revenue decreased $1.7 million, or 2%, in the three months ended March 27, 2020, compared to the corresponding period in 2019, primarily due to a decrease in Video segment revenue of $12.8 million, partially offset by an increase of $11.1 million in Cable Access segment revenue. Our Video business was impacted by the COVID-19 pandemic, as we experienced reduced appliance demand in March. Additionally, as anticipated, the ongoing transition from video appliances to SaaS also contributed to the year-over-year reduction in segment revenue. The increase in Cable Access segment revenue year-over-year is primarily due significant progress ramping CableOS over the past year.

Our Video segment customers continue to be cautious with investments in new technologies, such as next-generation IP architectures and Ultra HD. We believe a material and growing portion of the opportunities for our video business are linked to a migration by our customers to IP workflows and the distribution of linear and on-demand, OTT, and new mobile video services. We continue to steadily transition our video business away from legacy and customized computing hardware to more software-centric solutions and services, including OTT SaaS subscription offerings that enable video compression and processing through our VOS software platform running on standard off-the-shelf servers, data centers and in the cloud.

Our Cable Access strategy is to continue to deliver software-based cable access technologies, which we refer to as our CableOS solutions, to our cable operator customers. We believe our CableOS software-based cable access solutions are superior to hardware-based systems and deliver unprecedented scalability, agility and cost savings for our customers. Our CableOS solutions, which can be deployed based on a centralized, distributed Remote PHY or hybrid architecture, enable our customers to migrate to multi-gigabit broadband capacity and the fast deployment of DOCSIS 3.1 data, video and voice services. We believe our CableOS solutions resolve space and power constraints in cable operator facilities, eliminate dependence on hardware upgrade cycles and significantly reduce total cost of ownership, and will help us become a major player in the cable access market. In the meantime, we believe our Cable Access segment is gaining momentum in the marketplace as our customers have begun to adopt new virtualized DOCSIS 3.1 CMTS solutions and distributed access architectures. While we are in the early stages of field trials and deployments and may experience near-term challenges, we continue to make progress in the development of our CableOS solutions and in the growth of our CableOS business, with expanded commercial deployments, field trials, and customer engagements, though we expect this progress to slow in the near term as customers delay their spending activity in light of the global economic uncertainty due to COVID-19.

As the timing of our customers' investment decisions can be uncertain, we have implemented restructuring plans to better align the Company's resources and strategic goals. We continue to focus on expense controls on a company-wide basis. (See Note 10, "Restructuring and Related Charges" of the Notes to our Condensed Consolidated Financial Statements for additional information).

Our aggregate balance of cash and cash equivalents as of March 27, 2020 was $71.7 million. During the three months ended March 27, 2020, we used $11.0 million of cash from operating activities. In 2019, we refinanced a portion of our 4.00% Convertible Senior Notes due 2020 (the "2020 Notes") by issuing 2.00% Convertible Senior Notes due 2024 (the "2024 Notes"). We also entered into a $25 million revolving loan facility with JPMorgan Chase Bank, N.A., in October 2019, which has not been used to withdraw any cash as of March 27, 2020. We expect that our current sources of liquidity will provide us adequate liquidity based on our current plan for the next twelve months.

CRITICAL ACCOUNTING POLICIES, JUDGMENTS AND ESTIMATES

Our unaudited condensed consolidated financial statements and the related notes included elsewhere in this report are prepared in accordance with U.S. GAAP. The preparation of these unaudited condensed consolidated financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Due to the COVID-19 pandemic, there has been uncertainty and disruption in the global economy and financial markets. We are not aware of any specific event or circumstance that would require updates to our estimates or judgments or require us to revise the carrying value of our assets or liabilities as of May 4, 2020, the date of issuance of this Quarterly Report on Form 10-Q. These estimates may change as new events occur and additional information is obtained.

Our critical accounting policies, judgments and estimates are disclosed in our 2019 Annual Report on Form 10-K, as filed with the SEC. There have been no significant changes to these policies during the three months ended March 27, 2020 other than those disclosed in Note 2 to the Condensed Consolidated Financial Statements in Item 1.

ACCOUNTING PRONOUNCEMENTS

For a summary of recent accounting pronouncements applicable to our condensed consolidated financial statements, see Note 2 to the Condensed Consolidated Financial Statements in Item 1, which is incorporated herein by reference.

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RESULTS OF OPERATIONS

Net Revenue

The following table presents the breakdown of revenue by segment for the three months ended March 27, 2020 and March 29, 2019 (in thousands, except percentages):

	Three months ended		Q1 FY20 vs Q1 FY19	
	March 27, 2020	March 29, 2019		
Segment:				
Video	$ 54,372	$ 67,176	$ (12,804)	(19)%
Cable Access	24,045	12,955	11,090	86 %
Total segment revenue	78,417	80,131	(1,714)	(2)%
Amortization of warrants	—	(25)	25	(100)%
Total net revenue	$ 78,417	$ 80,106	$ (1,689)	(2)%
Segment revenue as a % of total segment revenue:				
Video	69%	84%		
Cable Access	31%	16%		

The following table presents the breakdown of revenue by geographical region for the three months ended March 27, 2020 and March 29, 2019 (in thousands, except percentages):

	Three months ended		Q1 FY20 vs Q1 FY19	
	March 27, 2020	March 29, 2019		
Geography:				
Americas	$ 37,650	$ 34,188	$ 3,462	10 %
EMEA	27,816	28,078	(262)	(1)%
APAC	12,951	17,840	(4,889)	(27)%
Total net revenue	$ 78,417	$ 80,106	$ (1,689)	(2)%
Regional revenue as a % of total net revenue:				
Americas	48%	43%		
EMEA	35%	35%		
APAC	17%	22%		

Our Video segment net revenue decreased 19% in the three months ended March 27, 2020, compared to the corresponding period in 2019, which was largely due to the impact from the COVID-19 pandemic, as we experienced reduced appliance demand in March. Additionally, as anticipated, the ongoing transition from video appliances to SaaS also contributed to the year-over-year reduction in segment revenue.

Our Cable Access segment net revenue increased 86% in the three months ended March 27, 2020, compared to the corresponding period in 2019. The increase in Cable Access segment revenue year-over-year is primarily due significant progress ramping CableOS over the past year.

Net revenue in the Americas increased 10% in the three months ended March 27, 2020, compared to the corresponding period in 2019, primarily due to the growing success of our CableOS solutions, which was offset by a decrease in revenue from other products and services.

EMEA net revenue decreased 1% in the three months ended March 27, 2020, compared to the corresponding period in 2019, primarily due to a decrease in Video appliance revenue as a result of the COVID-19 pandemic.

APAC net revenue decreased 27% in the three months ended March 27, 2020, compared to the corresponding period in 2019, primarily due to the impacts of the COVID-19 pandemic being felt throughout APAC earlier in the quarter resulting in a decrease in Video appliance revenue.

Gross Profit

The following table presents the gross profit and gross profit as a percentage of net revenue ("gross margin") for the three months ended March 27, 2020 and March 29, 2019 (in thousands, except percentages):

	Three months ended		Q1 FY20 vs Q1 FY19	
	March 27, 2020	March 29, 2019		
Gross profit	$ 36,738	$ 41,849	$ (5,111)	(12)%
As a percentage of net revenue ("gross margin")	46.8%	52.2%	(5.4)%	

Our gross margins are dependent upon, among other factors, the proportion of software sales, product mix, customer mix, product introduction costs, price reductions granted to customers and achievement of cost reductions.

Gross margin in the three months ended March 27, 2020 decreased 12% compared to the corresponding period in 2019 primarily due to the impact of COVID-19 resulting in lower contribution from high-margin appliance and integration services, and higher operating costs, particularly freight charges.

The decrease in Video segment margins were partially offset by an improvement of Cable Access margins as a result of improved software mix.

Research and Development

The following table presents the research and development expenses and the expenses as a percentage of net revenue for the three months ended March 27, 2020 and March 29, 2019 (in thousands, except percentages):

	Three months ended			
	March 27, 2020	March 29, 2019	Q1 FY20 vs Q1 FY19	
Research and development	$ 22,123	$ 21,401	$ 722	3%
As a percentage of net revenue	28.2%	26.7%		

Our research and development expenses consist primarily of employee salaries and related expenses, contractors and outside consultants, supplies and materials, equipment depreciation and facilities costs, all associated with the design and development of new products and enhancements of existing products.

Research and development expenses increased 3% in the three months ended March 27, 2020, compared to the corresponding period in 2019, primarily due to higher stock-based compensation expense related to performance-based RSUs, higher employee compensation costs due to headcount increases and higher outside consulting spending attributable to our Cable Access segment. This increase was partially offset by lower travel and entertainment expenses as a result of the COVID-19 pandemic.

Selling, General and Administrative

The following table presents the selling, general and administrative expenses and the expenses as a percentage of net revenue for the three months ended March 27, 2020 and March 29, 2019 (in thousands, except percentages):

	Three months ended		Q1 FY20 vs Q1 FY19	
	March 27, 2020	March 29, 2019		
Selling, general and administrative	$ 31,218	$ 28,011	$ 3,207	11%
As a percentage of net revenue	39.8%	35.0%		

Selling, general and administrative expenses increased 11% in the three months ended March 27, 2020, compared to the corresponding period in 2019, primarily due to higher stock-based compensation expense related to performance-based RSUs and higher outside services costs, offset by lower travel and entertainment expenses due to the COVID-19 pandemic.

Segment Operating Loss

The following table presents a breakdown of operating income (loss) by segment for the three months ended March 27, 2020 and March 29, 2019 (in thousands, except percentages):

	Three months ended		Q1 FY20 vs Q1 FY19	
	March 27, 2020	March 29, 2019		
Video	$ (6,267)	$ 1,968	$ (8,235)	(418)%
Cable Access	(3,265)	(5,797)	2,532	(44)%
Total segment operating loss	$ (9,532)	$ (3,829)	$ (5,703)	149 %
Segment operating income (loss) as a % of segment revenue (“operating margin”):				
Video	(11.5)%	2.9 %	(14.4)%	
Cable Access	(13.6)%	(44.7)%	31.1 %	

The operating margin for the Video segment in the three months ended March 27, 2020 decreased 14.4%, compared to the corresponding period in 2019 primarily due to the decrease in gross margins, partially offset by lower travel and entertainment expenses due to the COVID-19 pandemic.

The operating margin for the Cable Access segment increased 31.1% in the three months ended March 27, 2020, compared to the corresponding period in 2019, primarily due to significant progress ramping CableOS over the past year and improvement of Cable Access margins as a result of improved software mix.

The following table presents a reconciliation of total segment operating loss to consolidated loss before income taxes (in thousands):

	Three months ended	
	March 27, 2020	March 29, 2019
Total segment operating loss	$ (9,532)	$ (3,829)
Amortization of warrants	—	(25)
Unallocated corporate expenses	(603)	(358)
Stock-based compensation	(6,259)	(2,113)
Amortization of intangibles	(1,655)	(2,083)
Loss from operations	(18,049)	(8,408)
Non-operating expense, net	(3,176)	(3,217)
Loss before income taxes	$ (21,225)	$ (11,625)

Unallocated Corporate Expenses

Together with amortization of intangibles and stock-based compensation, we do not allocate restructuring and related charges and certain other non-recurring charges to the operating income for each segment because our management does not include this information in the measurement of the performance of the operating segments.

Amortization of Intangibles

The following table presents the amortization of intangible assets charged to operating expenses and the expense as a percentage of net revenue for the three months ended March 27, 2020 and March 29, 2019 (in thousands, except percentages):

	Three months ended				Q1 FY20 vs Q1 FY19		
	March 27, 2020		March 29, 2019				
Amortization of intangibles	$	770	$	788	$	(18)	(2)%
As a percentage of net revenue		1.0%		1.0%			

The amortization of intangibles expense in the three months ended March 27, 2020 remained relatively flat compared to the corresponding period in 2019.

Restructuring and related charges

We have implemented certain restructuring plans in the past few years. The goal of these plans is to bring operational expenses to appropriate levels relative to our net revenues, while simultaneously implementing extensive company-wide expense control programs.

We account for our restructuring plans under the authoritative guidance for exit or disposal activities. The restructuring and related charges are included in "Cost of revenue" and "Operating expenses-restructuring and related charges" in the Condensed Consolidated Statement of Operations. The following table summarizes the restructuring and related charges (in thousands, except percentages):

	Three months ended			
	March 27, 2020	March 29, 2019	Q1 FY20 vs Q1 FY19	
Restructuring and related charges in:				
Cost of revenue	$ (73)	$ 301	$ (374)	(124)%
Operating expenses-Restructuring and related charges	676	57	619	1,086 %
Total restructuring and related charges	$ 603	$ 358	$ 245	68 %

Restructuring and related charges in the three months ended March 27, 2020 increased by 68% compared to the corresponding period in 2019 primarily due to higher severance and employee benefit costs recorded in conjunction with the restructuring activities during the first quarter of fiscal 2020.

Interest Expense, Net

Interest expense, net was $2.9 million in each of the three months ended March 27, 2020 and March 29, 2019. Interest expense, net remained consistent compared to the corresponding period in 2019, primarily because the higher amortization of debt discount and issuance costs for the 2024 Notes issued in September 2019, was offset by lower interest due to the partial repurchase of the 2020 Notes during 2019. See Note 11, "Convertible notes, Other Debts and Finance Leases" of the notes to our Condensed Consolidated Financial Statements for additional information.

Other Income (Expense), Net

Our other income (expense), net is primarily comprised of foreign exchange gains and losses on cash, accounts receivable and intercompany balances denominated in currencies other than the functional currency of the reporting entity. Our foreign currency exposure is primarily driven by fluctuations in the foreign currency exchanges rates of the Euro, British pound, Japanese yen and Israeli shekel.

Other expense, net was $0.3 million for the three months ended March 27, 2020 and March 29, 2019, respectively. Other expense, net remained consistent primarily because the fluctuation of the Euro against the U.S. dollar was similar in both periods.

To mitigate the volatility related to fluctuations in foreign exchange rates, we enter into various foreign currency forward contracts. See "Foreign Currency Exchange Risk" under Item 3 of this Quarterly Report on Form 10-Q for additional information.

Income Taxes

The following table presents the provision for (benefit from) income taxes and the effective income tax rate for the three months ended March 27, 2020 and March 29, 2019 (in thousands, except percentages):

	Three months ended			
	March 27, 2020	March 29, 2019	Q1 FY20 vs Q1 FY19	
Provision for (benefit from) income taxes	$ 729	$ (319)	$ 1,048	(329)%
Effective income tax rate	(3.4)%	2.7%		

We operate in multiple jurisdictions and our profits are taxed pursuant to the tax laws of these jurisdictions. Our effective income tax rate may be affected by changes in, or interpretations of tax laws and tax agreements in any given jurisdiction, utilization of net operating loss and tax credit carry forwards, changes in geographical mix of income and expense, and changes in management's assessment of matters such as the ability to realize deferred tax assets. Our effective tax rate varies from year to year primarily due to the absence of several one-time, discrete items that benefited or decremented the tax rates in the previous years.

Our effective income tax rate of (3.4)% for the three months ended March 27, 2020 was different from the U.S. federal statutory rate of 21%, primarily due to the full valuation allowance against U.S. federal, California and other states deferred tax assets, foreign withholding taxes and income taxes on earnings from operations in foreign tax jurisdictions.

Our effective income tax rate of 2.7% for the three months ended March 29, 2019 was different from the U.S. federal statutory rate of 21%, primarily due to the geographical mix of income and losses, a full valuation allowance against U.S. federal, California and other states deferred tax assets, foreign withholding taxes and income taxes on earnings from operations in foreign tax jurisdictions. In addition, during the three months ended March 29, 2019, we recorded a one-time benefit of approximately $0.8 million due to a valuation allowance release for one of our foreign subsidiaries. This release of valuation allowance was due to changes in forecasted taxable income resulting from receiving a favorable tax ruling during the first quarter of 2019.

Liquidity and Capital Resources

As of March 27, 2020, our principal sources of liquidity consisted of cash and cash equivalents of $71.7 million, net accounts receivable of $93.1 million, our $25.0 million revolving credit facility with JPMorgan Chase Bank, N.A., and financing from French government agencies. As of March 27, 2020, we had $115.5 million in principal amount 2024 Notes outstanding, bearing interest at a rate of 2.00% per year, payable semiannually on March 1 and September 1 of each year which are due on September 1, 2024, and $45.8 million in principal amount of 2020 Notes outstanding, bearing interest at a rate of 4.00% per year, payable in cash on June 1 and December 1 of each year which are due on December 1, 2020. We also had debts with French government agencies and to a lesser extent, with other financial institutions, primarily in France, in the aggregate of $16.3 million at March 27, 2020. See Note 11, "Convertible notes, Other Debts and Finance Leases" of the notes to our Condensed Consolidated Financial Statements for additional information.

Our cash and cash equivalents of $71.7 million as of March 27, 2020 consisted of bank deposits held throughout the world, of which $47.9 million of the cash and cash equivalents balance was held outside of the U.S. At present, such foreign funds are considered to be indefinitely reinvested in foreign countries to the extent of indefinitely reinvested foreign earnings. In the event funds from foreign operations are needed to fund cash needs in the United States and if U.S. taxes have not already been previously accrued, we may be required to accrue and pay additional U.S. and foreign withholding taxes in order to repatriate these funds.

Our principal uses of cash will include repayments of debts and related interest, purchases of inventory, payroll and other operating expenses related to the development and marketing of our products, purchases of property and equipment and other contractual obligations for the foreseeable future. We are monitoring and managing our cash position in light of ongoing market conditions due to COVID-19. We believe that our cash and cash equivalents of $71.7 million at March 27, 2020 and available sources of liquidity will be sufficient to fund our principal uses of cash for at least the next 12 months. However, we may need to raise additional funds to fund our operations, take advantage of unanticipated strategic opportunities or strengthen our financial position. In the future, we may enter into other arrangements for potential investments in, or acquisitions of, complementary businesses, services or technologies, which could require us to seek additional equity or debt financing. The impacts of the COVID-19 pandemic have reduced the availability and attractiveness of external funding sources, and we expect that until financial market conditions stabilize, accessing new financing could be challenging or at elevated costs. Additional funds may not be available on terms favorable to us or at all.

The table below sets forth selected cash flow data for the periods presented (in thousands):

	Three months ended	
	March 27, 2020	**March 29, 2019**
Net cash provided by (used in):		
Operating activities	$ (11,041)	$ 4,216
Investing activities	(11,224)	(1,674)
Financing activities	1,730	1,418
Effect of foreign exchange rate changes on cash, cash equivalents and restricted cash	(811)	(33)
Net increase in cash, cash equivalents and restricted cash	$ (21,346)	$ 3,927

Operating Activities

Net cash used in operations increased $15.3 million in the three months ended March 27, 2020, compared to the corresponding period in 2019, primarily due to increase in net loss and higher cash used for our working capital needs.

We expect that cash provided by or used in operating activities may fluctuate in future periods as a result of a number of factors, including the impact of COVID-19 on demand for our offerings, fluctuations in our operating results, shipment linearity, accounts receivable collections performance, inventory and supply chain management, and the timing and amount of compensation and other payments.

Investing Activities

Net cash used in investing activities increased $9.6 million in the three months ended March 27, 2020, compared to the corresponding period in 2019, due to an increase in purchases of property and equipment.

Financing Activities

Net cash provided by financing activities increased $0.3 million in the three months ended March 27, 2020, compared to the corresponding period in 2019, primarily due to higher proceeds from the exercise of options partially offset by higher payment of tax withholding obligations related to net share settlements of restricted stock units and higher repayment of debt.

Contractual Obligations and Commitments

Future payments under contractual obligations and other commercial commitments, as of March 27, 2020 are as follows (in thousands):

	Payments due in each fiscal year				
	Total Amounts Committed	2020 (Remaining nine months)	2021 and 2022	2023 and 2024	Thereafter
Convertible debt	$ 161,285	$ 45,785	$ —	$ 115,500	$ —
Operating leases	45,966	7,209	11,997	9,160	17,600
Purchase commitments	55,302	42,954	12,179	169	—
French debt	16,334	6,212	9,757	365	—
Interest on convertible debt	12,226	2,986	6,930	2,310	—
Other commitments (1)	1,742	999	742	1	—
Avid litigation settlement fees	2,000	2,000	—	—	—
French VDP Obligations	274	274	—	—	—
Finance lease	57	35	22	—	—
Total contractual obligations	$ 295,186	$ 108,454	$ 41,627	$ 127,505	$ 17,600
Other commercial commitments:					
Standby letters of credit	$ 2,656	$ 2,407	$ 249	$ —	$ —
Total commercial commitments	$ 2,656	$ 2,407	$ 249	$ —	$ —

(1) Primarily includes variable lease payments that do not depend on an index or rate, or usage of an underlying asset, and payments associated with lease arrangements with an initial term of twelve months or less.

Off-Balance Sheet Arrangements

We did not have any off-balance sheet arrangements as of March 27, 2020.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Market risk represents the risk of loss that may impact our operating results, financial position or liquidity due to adverse changes in market prices and rates. We are exposed to market risk because of changes in interest rates, foreign currency exchange rates, when other currencies held by our subsidiaries are measured against the U.S. dollar, and to changes in the value of financial instruments held by us.

Foreign Currency Exchange Risk

We market and sell our products and services through our direct sales force and indirect channel partners in North America, EMEA, APAC and Latin America. Accordingly, we are subject to exposure from adverse movements in foreign currency exchange rates, primarily the Euro, British pound, Israeli shekel and Japanese yen. Our U.S. dollar functional subsidiaries, which accounted for approximately 96% of our consolidated net revenue in the three months ended March 27, 2020, recorded net billings denominated in foreign currencies of approximately 27% of total company billings in the three months of 2020, compared to 15% in the corresponding period in 2019. In addition, a portion of our operating expenses, primarily the cost of personnel to deliver technical support on our products and professional services, sales and sales support and research and development, are denominated in foreign currencies, primarily the Euro, Israeli shekel and British pound.

We use derivative instruments, primarily forward contracts, to manage exposures to foreign currency exchange rates and we do not enter into foreign currency forward contracts for trading purposes.

Derivatives Not Designated as Hedging Instruments (Balance Sheet Hedges)

We enter into forward currency contracts to hedge foreign currency denominated monetary assets and liabilities. These derivative instruments are marked to market through earnings every period and mature generally within three months. Changes in the fair value of these foreign currency forward contracts are recognized in “Other expense, net” in the Consolidated Statement of Operations, and are largely offset by the changes in the fair value of the assets or liabilities being hedged.

The U.S. dollar equivalents of all outstanding notional amounts of foreign currency forward contracts are summarized as follows (in thousands):

	March 27, 2020	December 31, 2019
Derivatives not designated as hedging instruments:		
Purchase	$ 21,783	$ 14,806
Sell	$ 4,669	$ 2,629

Interest Rate Risk

Our exposure to market risk for changes in interest rates relates primarily to our outstanding debt arrangements with variable rate interests. The aggregate debt balance of such instruments at March 27, 2020 was $16.4 million, of which $0.1 million relates to obligations under finance leases with fixed interest rates. The remaining $16.3 million are debt instruments primarily financed by French government agencies, and to a lesser extent, term loans from other financing institutions. These debt instruments have maturities ranging from two to six years, with expiries ranging from 2020 through 2025. A majority of the loans are tied to the 1-month EURIBOR rate plus spread. See Note 11, “Convertible notes, Other Debts and Finance Leases” of the notes to our Condensed Consolidated Financial Statements for additional information. As of March 27, 2020, a hypothetical 1.0% increase in market interest rates on our debts subject to variable interest rate fluctuations would increase our interest expense by approximately $0.2 million annually.

As of March 27, 2020, we had $45.8 million aggregate principal amount of the 2020 Notes outstanding, which have a fixed 4.0% coupon rate and $115.5 million aggregate principal amount of the 2024 Notes outstanding, which have a fixed 2.0% coupon rate.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of disclosure controls and procedures

We maintain “disclosure controls and procedures,” as such term is defined in Rule 13a-15(e) under the Exchange Act, that are designed to ensure that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in SEC rules and forms, 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.

In designing and evaluating our disclosure controls and procedures, management recognized that disclosure controls and procedures, no matter how well conceived and operated, can provide only reasonable, and not absolute, assurance that the objectives of the disclosure controls and procedures are met. Additionally, in designing disclosure controls and procedures, our management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible disclosure controls and procedures. The design of any disclosure controls and procedures also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions.

Based on their evaluation as of the end of the period covered by this Form 10-Q, our Chief Executive Officer and Chief Financial Officer have concluded that our disclosure controls and procedures were effective at a reasonable assurance level.

Changes in Internal Control over Financial Reporting

Our Chief Executive Officer and Chief Financial Officer evaluated the changes in our internal control over financial reporting that occurred during the quarterly period covered by this Form 10-Q. Based on their evaluation, it is concluded that there had been no change in our internal control over financial reporting during the quarter ended March 27, 2020 that have materially affected, or is reasonably likely to materially affect, our internal control over financial reporting. Although most of our employees are working remotely due to the COVID-19 pandemic, we have not experienced any material impact to our internal controls over financial reporting. We are continually monitoring and assessing the COVID-19 situation on our internal controls to minimize the impact on their design and operating effectiveness.

PART II

OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

From time to time, we are involved in lawsuits as well as subject to various legal proceedings, claims, threats of litigation, and investigations in the ordinary course of business, including claims of alleged infringement of third-party patents and other intellectual property rights, commercial, employment, and other matters. While certain matters to which we are a party may specify the damages claimed, such claims may not represent reasonably possible losses. Given the inherent uncertainties of litigation, the ultimate outcome of these matters cannot be predicted at this time, nor can the amount of possible loss or range of loss, if any, be reasonably estimated.

An unfavorable outcome on any litigation matters could require us to pay substantial damages, or, in connection with any intellectual property infringement claims, could require us to pay ongoing royalty payments or could prevent us from selling certain of our products. As a result, a settlement of, or an unfavorable outcome on, any of the matters referenced above or other litigation matters could have a material adverse effect on our business, operating results, financial condition and cash flows.

Our industry is characterized by the existence of a large number of patents and frequent claims and related litigation regarding patent and other intellectual property rights. From time to time, third parties have asserted, and may in the future assert, exclusive patent, copyright, trademark and other intellectual property rights against us or our customers. Such assertions arise in the normal course of our operations. The resolution of any such assertions and claims cannot be predicted with certainty.

ITEM 1A. RISK FACTORS

The COVID-19 pandemic has disrupted and harmed, and may continue to disrupt and harm, our business, financial condition and operating results. We are unable to predict the extent to which the pandemic and related impacts will continue to adversely impact our business, financial condition and operating results and the achievement of our strategic objectives.

Our business, operations and financial performance have been negatively impacted by the COVID-19 pandemic and related public health responses, such as travel bans and restrictions, social distancing requirements and shelter-in-place orders. The pandemic and these related responses have caused, and are expected to continue to cause, decreased demand for our offerings and delayed purchasing decisions by our customers, a global slowdown of economic activity (including the decrease in demand for a broad variety of goods and services) and significant volatility and disruption of financial markets.

The COVID-19 pandemic has subjected our operations, financial performance and financial condition to a number of risks, including, but not limited to, those discussed below:

- Declines in demand for our offerings or delays in purchasing decisions as a result of COVID-19, including as a result of social distancing requirements and shelter-in-place orders limiting our ability to deploy our products, and general economic uncertainty causing a number of businesses to delay or reduce costs.

- Delays in payments or defaults by our customers or if customers terminate their relationships with us or do not renew their agreements on economic or other terms that are favorable to us.

- The responsive measures to the COVID-19 pandemic have caused us to modify our business practices by having employees work remotely, canceling all non-essential employee travel, and cancelling, postponing or holding virtually events and meetings. We may in the future be required to, or choose voluntarily to, take additional actions for the health and safety of our workforce, whether in response to government orders or based on our own determinations of what is in the best interests of our employees. To the extent our current or future measures result in decreased productivity, harm our company culture or otherwise negatively affect our business, our financial condition and operating results could be adversely affected.

Many of the public health measures in response to the COVID-19 pandemic were implemented in March 2020, and thus have had a more limited impact on our operating results for the quarter ended March 27, 2020, and we expect to see more significant impacts in the second quarter of the year. The severity, magnitude and duration of the COVID-19 pandemic, the public health responses and its economic consequences are uncertain, rapidly changing and difficult to predict, and the pandemic's impact on our operations and financial performance, as well as its impact on our ability to successfully execute our business strategies and initiatives, remains uncertain and difficult to predict. Further, the ultimate impact of the COVID-19 pandemic on our customers and on our business, operations and financial performance, depends on many factors that are not within our control, including, but not limited, to: government, business and individual actions that have been and continue to be taken in response to the pandemic (including restrictions on travel and transport, prohibitions on, or voluntary cancellation of, large gatherings of people and social distancing requirements, and modified workplace activities); the impact of the pandemic and actions taken in response local or regional economies, travel, and economic activity; the availability of government funding programs; general economic uncertainty in key markets and financial market volatility; volatility in our stock price, global economic conditions and levels of economic growth; and the pace of recovery when the COVID-19 pandemic subsides. As a result of the uncertainty and disrupted market conditions due to the COVID-19 pandemic, our business, operating results and financial condition has been and may continue to be adversely affected.

We depend on cable, satellite and telco, and broadcast and media industry spending for our revenue and any material decrease or delay in spending in any of these industries would negatively impact our operating results, financial condition and cash flows.

Our revenue has been derived from worldwide sales to service providers and broadcast and media companies, as well as, in recent years, streaming media companies. We expect that these markets will provide our revenue for the foreseeable future. Demand for our products will depend on the magnitude and timing of spending by customers in each of these markets for the purpose of creating, expanding or upgrading their systems. These spending patterns are dependent on a variety of factors, including:

- the impact of general economic conditions, actual and projected, including the impact of the COVID-19 pandemic and government and business responses thereto on the global economy and regional economies;

• access to financing;

• annual budget cycles of customers in each of the industries we serve;

• the impact of industry consolidation;

• customers suspending or reducing spending in anticipation of: (i) new video or cable industry standards; (ii) industry trends and technology shifts, such as virtualization and cloud-based solutions, and (iii) new products, such as products and services based on our VOS software platform or our CableOS software-based cable access solutions;

• delayed or reduced spending as customers transition to or contemplate adopting new business and operating models enabled by software- and cloud-based solutions, including software-as-a-service (SaaS) unified video processing solutions;

• federal, state, local and foreign government regulation of telecommunications, television broadcasting and streaming media;

• overall demand for communication services and consumer acceptance of new video and data technologies and services;

• competitive pressures, including pricing pressures;

• the impact of fluctuations in currency exchange rates; and

• discretionary end-user customer spending patterns.

In the past, specific factors contributing to reduced spending have included:

• uncertainty and deteriorated market conditions regionally and globally due to the COVID-19 pandemic;

• weak or uncertain economic and financial conditions in the U.S. or one or more international markets;

• uncertainty related to development of digital video industry standards;

• delays in evaluations of new services, new standards and systems architectures by many operators;

• emphasis by operators on generating revenue from existing customers, rather than from new customers, through construction, expansion or upgrades;

• a reduction in the amount of capital available to finance projects of our customers and potential customers;

• proposed and completed business combinations and divestitures by our customers and the length of regulatory review of each;

• completion of a new system or significant expansion or upgrade to a system; and

• bankruptcies and financial restructuring of major customers.

In the past, adverse economic conditions in one or more of the geographies in which we offer our products have adversely affected our customers' spending in those geographies and, as a result, our business. During challenging economic times such as the ongoing COVID-19 pandemic, and in tight credit markets, many customers have delayed and reduced and may continue to delay or reduce capital expenditures. This has resulted and could continue to result in reductions in revenue from our products, longer sales cycles, difficulties in collection of accounts receivable, slower adoption of new technologies and increased price competition. If global economic and market conditions, or economic conditions in the U.S., Europe or other key markets, remain uncertain or deteriorate further, we could experience a material and adverse effect on our business, results of operations, financial condition and cash flows. Additionally, since most of our international revenue is denominated in U.S. dollars, global economic and market conditions may impact currency exchange rates and cause our products to become relatively more expensive to customers in a particular country or region, which could lead to delayed or reduced spending in those countries or regions, thereby negatively impacting our business and financial condition.

In addition, industry consolidation has in the past constrained, and may in the future constrain or delay, spending by our customers. Further, if our product portfolio and product development plans do not position us well to capture an increased portion of the spending of customers in the markets on which we focus, our revenue may decline.

As a result of these various factors and potential issues related to customer spending, we may not be able to maintain or increase our revenue in the future, and our operating results, financial condition and cash flows could be materially and adversely affected.

The markets in which we operate are intensely competitive.

The markets for our products are extremely competitive and have been characterized by rapid technological change and declining average sales prices in the past.

Our competitors in our Video business include CommScope, Synamedia and MediaKind. In certain product lines, our competitors include companies such as ATEME and Elemental Technologies (an Amazon Web Services company). With respect to production and playout products, competitors include Evertz Microsystems, EVS, Grass Valley (which is being sold by Belden to a private equity firm) and Imagine Communications. In the OTT market, our competitors include end-to-end online video platforms such as Brightcove and Verizon Digital Media Services, who provide comprehensive OTT infrastructure solutions, some of which overlap with our products and services. Our competitors in our Cable Access business include CommScope, Casa Systems, Cisco Systems and Huawei Technologies.

A number of our principal business competitors in both of our business segments are substantially larger and/or may have access to greater financial, technical, marketing and other resources than we have. Consolidation in the Video industry has led to the acquisition of a number of our historic competitors over the last several years by substantially larger companies and private equity firms. With respect to our Cable Access business, our competitors are also substantially larger than us, and the acquisition of Arris by CommScope in 2019 has created a significantly larger combined business.

In addition, some of our larger competitors have more long-standing and established relationships with domestic and foreign customers. Many of these large enterprises are in a better position to withstand any significant reduction in spending by customers in our markets and may be better able to navigate the market uncertainty caused by the COVID-19 pandemic. They often have broader product lines and market focus, and may not be as susceptible to downturns in a particular market. These competitors may also be able to bundle their products together to meet the needs of a particular customer, and may be capable of delivering more complete solutions than we are able to provide. To the extent large enterprises that currently do not compete directly with us choose to enter our markets by acquisition or otherwise, competition would likely intensify.

Further, some of our competitors that have greater financial resources have offered, and in the future may offer, their products at lower prices than we offer for our competing products or on more attractive financing or payment terms, which has in the past caused, and may in the future cause, us to lose sales opportunities and the resulting revenue or to reduce our prices in response to that competition. Also, some competitors that are smaller than we are have engaged in, and may continue to engage in, aggressive price competition in order to gain customer traction and market share. Reductions in prices for any of our products could materially and adversely affect our operating margins and revenue.

Additionally, certain customers and potential customers have developed, and may continue to develop, their own solutions that may cause such customers or potential customers to not consider our product offerings or to displace our installed products with their own solutions. The growing availability of open source codecs and related software, as well as new server chipsets that incorporate encoding technology, has, in certain respects, lowered the barriers to entry for the video processing industry. The development of solutions by potential and existing customers and the reduction of the barriers to entry to enter the video processing industry could result in increased competition and adversely affect our results of operations and business.

If any of our competitors' products or technologies were to become the industry standard, our business could be seriously harmed. If our competitors are successful in bringing their products to market earlier than us, or if these products are more technologically capable than ours, our revenue could be materially and adversely affected.

We need to develop and introduce new and enhanced products and solutions in a timely manner to meet the needs of our customers and to remain competitive.

All of the markets we address are characterized by continuing technological advancement, changes in customer requirements and evolving industry standards. To compete successfully, we must continually design, develop, manufacture and sell new or enhanced products and solutions that provide increasingly higher levels of performance and reliability and meet our customers changing needs. However, we may not be successful in those efforts if, among other things, our products and solutions:

- are not cost effective;
- are not brought to market in a timely manner;
- are not in accordance with evolving industry standards;
- fail to meet market acceptance or customer requirements; or
- are ahead of the needs of their markets.

In our Video business segment, our current research and development efforts are focused on next-generation video processing and delivery across different deployment environments, particularly cloud-native and SaaS delivery models, and enhanced video compression, video quality, and multiscreen solutions. We also devote significant resources to production and playout and distribution solutions. With respect to our Cable Access business segment, our major research and development efforts are focused on cable access solutions for both video and data, particularly the ongoing development of our centralized and distributed CableOS software-based cable access solutions. The COVID-19 pandemic has disrupted our research and development efforts as our employees have transitioned to working from home, and the extension of shelter-in-place orders in regions in which we operate, such as the San Francisco Bay Area and France, may lead to continued disruption and delay of our research and development activities.

The success of our significant and costly development efforts will be predicated, in part, on the timing of market adoption of the new standards on which the resulting products are based, and for other products, the timing of customer adoption of our products and solutions, as well as our ability to timely develop the features and capabilities of our products and solutions. If new standards or some of our new products are adopted later than we predict or not adopted at all, or if adoption occurs earlier than we are able to deliver the applicable products or functionality, we risk spending significant research and development time and dollars on products or features that may never achieve market acceptance or that miss the customer demand window and thus do not produce the revenue that a timely introduction would have likely produced.

If we fail to develop and market new and enhanced products and solutions on a timely basis, our operating results, financial condition and cash flows could be materially and adversely affected.

***Our software-based cable access product initiatives expose us to certain technology transition risks that may adversely impact our operating results, financial condition and cash flows*.**

We believe our CableOS software-based cable access solutions, supporting centralized, distributed Remote PHY or hybrid configurations, will significantly reduce cable headend costs and increase operational efficiency, and are an important step in cable operators' transition to all-IP networks. If we are unsuccessful in developing and deploying our cable access solutions in a timely manner, or are otherwise delayed in making our solutions available to our customers, our business may be adversely impacted, particularly if our competitors develop and market similar products and solutions before we do.

We believe software-based cable access solutions will, over time, replace and make obsolete current CMTS solutions, which is a market our products have historically not addressed, as well as cable edge-QAM products. If demand for our software-based cable access solutions is weaker than expected, our near and long-term operating results, financial condition and cash flows could be adversely impacted. Moreover, if competitors adapt new cable industry technology standards into competing cable access solutions faster than we do, or promulgate a new or competitive architecture for next-generation cable access solutions that renders our CableOS solution obsolete, our business may be adversely impacted.

The sales cycle for our CableOS solutions tends to be long. For cable operators, upgrading or expanding network infrastructure is complex and expensive, and investing in a CableOS solution is a significant strategic decision that may require considerable time to evaluate, test and qualify. Potential customers need to ensure our CableOS solution will interoperate with the various components of its existing network infrastructure, including third-party equipment, servers and software. In addition, since we are a relatively new entrant into the CMTS market, we need to demonstrate significant performance, functionality and/or cost advantages with our CableOS solutions that outweigh customer switching costs. If sales cycles are significantly longer than anticipated or we are otherwise unsuccessful in growing our CableOS sales, our operating results, financial condition and cash flows could be materially and adversely affected.

Our future growth depends on market acceptance of several broadband services, on the adoption of new broadband technologies, and on several other broadband industry trends.

Future demand for many of our products will depend significantly on the growing market acceptance of emerging broadband services, including digital video, VOD, Ultra HD, IP video services (particularly streaming to tablet computers, connected TVs and mobile devices) and very high-speed data services. The market demand for such emerging services is rapidly growing, with many custom or proprietary systems in use, which increases the challenge of delivering interoperable products intended to address the requirements of such services.

The effective delivery of these services will depend, in part, on a variety of new network architectures, standards and devices, such as:

- the adoption of cloud-native media processing architectures;
- the adoption of advanced video compression standards, such as next generation H.264 compression and HEVC;
- the adoption of our cable access solutions;
- fiber to the premises, or FTTP, networks designed to facilitate the delivery of video services by telcos;
- the greater use of protocols such as IP;
- the further adoption of bandwidth-optimization techniques, such as DOCSIS 3.0 and DOCSIS 3.1 and associated specifications; and
- the introduction of new consumer devices, such as advanced set-top boxes, cloud DVRs, connected TVs, tablet computers, and a variety of smart phone mobile devices.

If adoption of these emerging services and/or technologies is not as widespread or as rapid as we expect, or if we are unable to develop new products based on these technologies on a timely basis, our operating results, financial condition and cash flows could be materially and adversely affected.

Furthermore, other technological, industry and regulatory trends and requirements may affect the growth of our business. These trends and requirements include the following:

- convergence, whereby network operators bundle video, voice and data services to consumers, including mobile delivery options;
- the increasing availability of traditional broadcast video content and video-on-demand on the Internet;
- adoption of high-bandwidth technology, such as DOCSIS 3.x, next generation LTE and FTTP;
- the use of digital video by businesses, governments and educational institutions;
- efforts by regulators and governments in the U.S. and internationally to encourage the adoption of broadband and digital technologies, as well as to regulate broadband access and delivery;
- consumer interest in higher resolution video such as Ultra HD or retina-display technologies on mobile devices;
- the need to develop partnerships with other companies involved in video infrastructure workflow and broadband services;
- the continued adoption of the television viewing behaviors of consumers in developed economies by the growing middle class across emerging economies;

- the extent and nature of regulatory attitudes towards issues such as network neutrality, competition between operators, access by third parties to networks of other operators, local franchising requirements for telcos to offer video, and other new services, such as mobile video; and

- the outcome of disputes and negotiations between content owners and service providers regarding rights of service providers to store and distribute recorded broadcast content, which outcomes may drive adoption of one technology over another in some cases.

If we fail to recognize and respond to these trends, by timely developing products, features and services required by these trends, we are likely to lose revenue opportunities and our operating results, financial condition and cash flows could be materially and adversely affected.

We depend significantly on our international revenue and are subject to the risks associated with international operations, including those of our resellers, contract manufacturers and outsourcing partners, which may negatively affect our operating results.

Revenue derived from customers outside of the U.S. for the three months ended March 27, 2020 and March 29, 2019 represented approximately 56%, and 62% of our revenue, respectively. Although no assurance can be given with respect to international sales growth in any one or more regions, we expect that international revenue will likely continue to represent, from year to year, a majority, and potentially increasing, percentage of our annual revenue for the foreseeable future. A significant percentage of our revenue is generated from sales to resellers, value-added resellers (“VARs”) and systems integrators, particularly in emerging market countries. Furthermore, the majority of our employees are based in our international offices and locations, and most of our contract manufacturing occurs outside of the U.S. In addition, we outsource a portion of our research and development activities to certain third-party partners with development centers located in different countries, particularly Ukraine and India.

Our international operations, the international operations of our resellers, contract manufacturers and outsourcing partners, and our efforts to maintain and increase revenue in international markets are subject to a number of risks, which are generally greater with respect to emerging market countries, including the following:

- growth and stability of the economy in one or more international regions, including regional economic impacts of the COVID-19 pandemic;

- fluctuations in currency exchange rates;

- changes in foreign government regulations and telecommunications standards;

- import and export license requirements, tariffs, taxes, economic sanctions, contractual limitations and other trade barriers;

- our significant reliance on resellers and others to purchase and resell our products and solutions, particularly in emerging market countries;

- availability of credit, particularly in emerging market countries;

- longer collection periods and greater difficulty in enforcing contracts and collecting accounts receivable, especially from smaller customers and resellers, particularly in emerging market countries;

- compliance with the U.S. Foreign Corrupt Practices Act (the “FCPA”), the U.K. Bribery Act and/or similar anti-corruption and anti-bribery laws, particularly in emerging market countries;

- the burden of complying with a wide variety of foreign laws, treaties and technical standards;

- fulfilling “country of origin” requirements for our products for certain customers;

- difficulty in staffing and managing foreign operations;

• business and operational disruptions or delays caused by political, social and economic instability and unrest, including risks related to terrorist activity, particularly in emerging market countries (e.g., recent significant civil, political and economic disturbances in Ukraine);

• changes in economic policies by foreign governments, including the imposition and potential continued expansion of economic sanctions by the U.S. and the European Union on the Russian Federation;

• changes in diplomatic and trade relationships, including the imposition of new trade restrictions, trade protection measures, import or export requirements, trade embargoes and other trade barriers, including those imposed by the U.S. against China;

• any negative economic impacts resulting from the political environment in the U.S. or the U.K.'s referendum to exit the European Union; and

• business and economic disruptions and delays caused by outbreaks of disease, epidemics and potential pandemics, such as the COVID-19 pandemic, which has led and may continue to lead to trade shows and in-person meetings being canceled or delayed and certain employees working remotely, and which has impacted our supply chain and may continue to impact our supply chain or general business in other manners.

We have certain international customers who are billed in their local currency, primarily the Euro, British pound and Japanese yen, which subjects us to foreign currency risk. In addition, a portion of our operating expenses relating to the cost of certain international employees, are denominated in foreign currencies, primarily the Euro, Israeli shekel, British pound, Singapore dollar, Chinese yuan and Indian rupee. Although we do hedge against the Euro, British pound, Israeli shekel and Japanese yen, gains and losses on the conversion to U.S. dollars of accounts receivable, accounts payable and other monetary assets and liabilities arising from international operations may contribute to fluctuations in our operating results. Furthermore, payment cycles for international customers are typically longer than those for customers in the U.S. Unpredictable payment cycles could cause us to fail to meet or exceed the expectations of security analysts and investors for any given period.

Most of our international revenue is denominated in U.S. dollars, and fluctuations in currency exchange rates could cause our products to become relatively more expensive to customers in a particular country or region, leading to a reduction in revenue or profitability from sales in that country or region. The potential negative impact of a strong U.S. dollar on our business may be exacerbated by the significant devaluation of a number of foreign currencies. Also, if the U.S. dollar were to weaken against many foreign currencies, there can be no assurance that a weaker dollar would lead to growth in customer spending in foreign markets.

Our operations outside the U.S. also require us to comply with a number of U.S. and international regulations that prohibit improper payments or offers of payments to foreign governments and their officials and political parties for corrupt purposes. For example, our operations in countries outside the U.S. are subject to the FCPA and similar laws, including the U.K. Bribery Act. Our activities in certain emerging countries create the risk of unauthorized payments or offers of payments by one of our employees, consultants, sales agents or channel partners that could be in violation of various anti-corruption laws, even though these parties may not be under our control. Under the FCPA and U.K. Bribery Act, companies may be held liable for the corrupt actions taken by their directors, officers, employees, channel partners, sales agents, consultants, or other strategic or local partners or representatives. We have internal control policies and procedures with respect to FCPA compliance, have implemented FCPA training and compliance programs for our employees, and include in our agreements with resellers a requirement that those parties comply with the FCPA. However, we cannot provide assurances that our policies, procedures and programs will prevent violations of the FCPA or similar laws by our employees or agents, particularly in emerging market countries, and as we expand our international operations. Any such violation, even if prohibited by our policies, could result in criminal or civil sanctions against us.

The effect of one or more of these international risks could have a material and adverse effect on our business, financial condition, operating results and cash flows.

We purchase several key components, subassemblies and modules used in the manufacture or integration of our products from sole or limited sources, and we rely on contract manufacturers and other subcontractors.

Our reliance on sole or limited suppliers, particularly foreign suppliers, and our reliance on contractors for manufacturing and installation of our products, involves several risks, including a potential inability to obtain an adequate supply of required components, subassemblies or modules; reduced control over costs, quality and timely delivery of components, subassemblies or modules; supplier discontinuation of components, subassemblies or modules we require; and timely installation of products. In addition, our financial results may be impacted by tariffs imposed by the U.S. on goods from other countries and tariffs imposed by other countries on U.S. goods, including the tariffs proposed by the U.S. government on various imports from China and by the Chinese government on certain U.S. goods, the scope and duration of which, if implemented, remain uncertain. If any such tariffs are imposed on products or components that we import, including those obtained from a sole supplier or a limited group of suppliers, we could experience reduced revenues or may have to raise our prices, either of which could have an adverse effect on our business, financial condition and operating results.

These risks could be heightened during a substantial economic slowdown, because our suppliers and subcontractors are more likely to experience adverse changes in their financial condition and operations during such a period. Further, these risks could materially and adversely affect our business if one of our sole sources, or a sole source of one of our suppliers or contract manufacturers, is adversely affected by a natural disaster or the outbreak of disease, epidemics and other pandemics, such as the COVID-19 pandemic, which has adversely impacted and may continue to adversely impact our supply chain. While we expend resources to qualify additional component sources, consolidation of suppliers and the small number of viable alternatives have limited the results of these efforts. Managing our supplier and contractor relationships is particularly difficult during time periods in which we introduce new products and during time periods in which demand for our products is increasing, especially if demand increases more quickly than we expect.

Plexus Services Corp. (“Plexus”), which manufactures our products at its facilities in Malaysia, currently serves as our primary contract manufacturer, and currently provides us with a majority, by dollar amount, of the products that we purchase from our contract manufacturers. Most of the products manufactured by our French and Israeli operations are outsourced to another third-party manufacturer in France and Israel, respectively. From time to time we assess our relationship with our contract manufacturers, and we do not generally maintain long-term agreements with any of our suppliers or contract manufacturers. Our agreement with Plexus has automatic annual renewals, unless prior notice is given by either party, and has been automatically renewed for a term expiring in October 2020.

Difficulties in managing relationships with any of our current contract manufacturers, particularly Plexus, that manufacture our products off-shore, or any of our suppliers of key components, subassemblies and modules used in our products, could impede our ability to meet our customers’ requirements and adversely affect our operating results. An inability to obtain adequate and timely deliveries of our products or any materials used in our products, or the inability of any of our contract manufacturers to scale their production to meet demand, such as the inability of certain of our contract manufacturers to operate at capacity due to the COVID-19 pandemic, which may continue in future periods, or any other circumstance that would require us to seek alternative sources of supply, had negatively impacted and could continue to negatively affect our ability to ship our products on a timely basis, which could damage relationships with current and prospective customers and harm our business and materially and adversely affect our revenue and other operating results. Furthermore, if we fail to meet customers’ supply expectations, our revenue would be adversely affected and we may lose sales opportunities, both short and long term, which could materially and adversely affect our business and our operating results, financial condition and cash flows. Increases, from time to time, in demand on our suppliers and subcontractors from our customers or from other parties have, on occasion, caused delays in the availability of certain components and products. In response, we may increase our inventories of certain components and products and expedite shipments of our products when necessary. These actions could increase our costs and could also increase our risk of holding obsolete or excess inventory, which, despite our use of a demand order fulfillment model, could materially and adversely affect our business, operating results, financial condition and cash flows.

The loss of one or more of our key customers, a failure to continue diversifying our customer base, or a decrease in the number of larger transactions could harm our business and our operating results.

Historically, a significant portion of our revenue has been derived from relatively few customers, due in part to the consolidation of media customers. Sales to our top 10 customers in the three months ended March 27, 2020 and March 29, 2019 accounted for approximately 48% and 41% of revenue, respectively. Although we continue to seek to broaden our customer base by penetrating new markets and further expanding internationally, we expect to see continuing industry consolidation and customer concentration.

During the three months ended March 27, 2020, Comcast accounted for 17% and Vodafone accounted for 12% of our net revenue. During the three months ended March 29, 2019, no single customer accounted for more than 10% of our net revenue. Further consolidation in the cable industry could lead to additional revenue concentration for us. The loss of any significant customer, or any material reduction in orders from any other significant customer, or our failure to qualify our new products with any significant customer could materially and adversely affect, either long term or in a particular quarter, our operating results, financial condition and cash flows. Further, while Comcast's election to license our CableOS software contains commitments in license fees to us, if Comcast deploys our solutions more slowly or at a scale that is lower than we anticipate, our operating results, financial condition and cash flows could be materially and adversely effected.

In addition, we are involved in most quarters in one or more relatively large individual transactions. A decrease in the number of the relatively larger individual transactions in which we are involved in any quarter could materially and adversely affect our operating results for that quarter.

As a result of these and other factors, we may be unable to increase our revenues from some or all of the markets we address, or to do so profitably, and any failure to increase revenues and profits from these customers could materially and adversely affect our operating results, financial condition and cash flows.

We rely on resellers, value-added resellers and systems integrators for a significant portion of our revenue, and disruptions to, or our failure to develop and manage our relationships with these customers or the processes and procedures that support them could adversely affect our business.

We generate a significant percentage of our revenue through sales to resellers, VARs and systems integrators that assist us with fulfillment or installation obligations. We expect that these sales will continue to generate a significant percentage of our revenue in the future. Accordingly, our future success is highly dependent upon establishing and maintaining successful relationships with a variety of channel partners.

We generally have no long-term contracts or minimum purchase commitments with any of our reseller, VAR or system integrator customers, and our contracts with these parties do not prohibit them from purchasing or offering products or services that compete with ours. Our competitors may provide incentives to any of our reseller, VAR or systems integrator customers to favor their products or, in effect, to prevent or reduce sales of our products. Any of our reseller, VAR or systems integrator customers may independently choose not to purchase or offer our products. Many of our resellers, and some of our VARs and system integrators are small, are based in a variety of international locations, and may have relatively unsophisticated processes and limited financial resources to conduct their business. Any significant disruption of our sales to these customers, including as a result of the inability or unwillingness of these customers to continue purchasing our products, or their failure to properly manage their business with respect to the purchase of, and payment for, our products, or their ability to comply with our policies and procedures as well as applicable laws, could materially and adversely affect our business, operating results, financial condition and cash flows. In addition, our failure to continue to establish or maintain successful relationships with reseller, VAR and systems integrator customers could likewise materially and adversely affect our business, operating results, financial condition and cash flows.

We have made, and may continue to make, acquisitions, and any acquisition could disrupt our operations, cause dilution to our stockholders and materially and adversely affect our business, operating results, cash flows and financial condition.

As part of our business strategy, from time to time we have acquired, and we may continue to acquire, businesses, technologies, assets and product lines that we believe complement or expand our existing business. Acquisitions involve numerous risks, including the following:

- unanticipated costs or delays associated with an acquisition;
- difficulties in the assimilation and integration of acquired operations, technologies and/or products;
- potential disruption of our business and the diversion of management's attention from the regular operations of the business during the acquisition process;
- the challenges of managing a larger and more geographically widespread operation and product portfolio after the closing of the acquisition;
- potential adverse effects on new and existing business relationships with suppliers, contract manufacturers, resellers, partners and customers;
- compliance with regulatory requirements, such as local employment regulations and organized labor in France;
- risks associated with entering markets in which we may have no or limited prior experience;

• the potential loss of key employees of acquired businesses and our own business as a result of integration;

• difficulties in bringing acquired products and businesses into compliance with applicable legal requirements in jurisdictions in which we operate and sell products;

• impact of known potential liabilities or unknown liabilities, including litigation and infringement claims, associated with companies we acquire;

• substantial charges for acquisition costs or for the amortization of certain purchased intangible assets, deferred stock compensation or similar items;

• substantial impairments to goodwill or intangible assets in the event that an acquisition proves to be less valuable than the price we paid for it;

• difficulties in establishing and maintaining uniform financial and other standards, controls, procedures and policies;

• delays in realizing, or failure to realize, the anticipated benefits of an acquisition; and

• the possibility that any acquisition may be viewed negatively by our customers or investors or the financial markets.

Competition within our industry for acquisitions of businesses, technologies, assets and product lines has been, and is likely to continue to be, intense. As such, even if we are able to identify an acquisition that we would like to consummate, we may not be able to complete the acquisition on commercially reasonable terms or because the target chooses to be acquired by another company. Furthermore, in the event that we are able to identify and consummate any future acquisitions, we may, in each of those acquisitions:

• issue equity securities which would dilute current stockholders' percentage ownership;

• incur substantial debt to finance the acquisition or assume substantial debt in the acquisition;

• incur significant acquisition-related expenses;

• assume substantial liabilities, contingent or otherwise; or

• expend significant cash.

These financing activities or expenditures could materially and adversely affect our operating results, cash flows and financial condition or the price of our common stock. Alternatively, due to difficulties in the capital or credit markets at the time, we may be unable to secure capital necessary to complete an acquisition on reasonable terms, or at all. Moreover, even if we were to obtain benefits from acquisitions in the form of increased revenue and earnings per share, there may be a delay between the time the expenses associated with an acquisition are incurred and the time we recognize such benefits.

In addition to the risks outlined above, if we are unable to successfully receive payment of any significant portion of our existing French R&D tax credit receivables from the French tax authority as expected, or are unable to successfully apply for or otherwise obtain the financial benefit of new French R&D tax credits in future years, our ability to achieve the anticipated benefits of the acquisition as well as our business, operating results and financial condition could be adversely affected.

As of March 27, 2020, we had approximately $238.6 million of goodwill recorded on our balance sheet associated with prior acquisitions. In the event we determine that our goodwill is impaired, we would be required to write down all or a portion of such goodwill, which could result in a material non-cash charge to our results of operations in the period in which such write-down occurs.

If we are unable to successfully address one or more of these risks, our business, operating results, financial condition and cash flows could be materially and adversely affected.

We may not be able to effectively manage our operations.

As of March 27, 2020, we had 807 employees in our international operations, representing approximately 69% of our worldwide workforce. In recent years, we have expanded our international operations significantly. For example, upon the closing of our acquisition of TVN on February 29, 2016, we added 438 employees, most of whom were based in France. Our ability to manage our business effectively in the future, including with respect to any future growth, our operation as both a hardware and increasingly software- and SaaS-centric business, the integration of any acquisition efforts such as our recent acquisition of TVN, and the breadth of our international operations, will require us to train, motivate and manage our employees successfully, to attract and integrate new employees into our overall operations, to retain key employees and to continue to improve and evolve our operational, financial and management systems. The COVID-19 pandemic has resulted in a significant majority of our employees working from home following shelter-in-place orders, which has required us to allocate additional resources towards IT and operations, and which may create new challenges for our operational and management systems. There can be no assurance that we will be successful in any of these efforts, and our failure to effectively manage our operations could have a material and adverse effect on our business, operating results, cash flows and financial condition.

We face risks associated with having outsourced engineering resources located in Ukraine.

We outsource a portion of our research and development activities for both our Video and Cable Access business segments to a third-party partner with engineering resources located in Ukraine. Political, social and economic instability and unrest or violence in Ukraine, including the ongoing conflict with Russian-backed separatists or conflict with the Russian Federation directly, could cause disruptions to the business and operations of our outsourcing partner, which could slow or delay the development work our partner is undertaking for us. Instability, unrest or conflict could limit or prevent our employees from traveling to, from, or within Ukraine to direct and coordinate our outsourced engineering teams, or cause us to shift all or portions of the development work occurring in Ukraine to other locations or countries. The resulting delays could negatively impact our product development efforts, operating results and our business.

In order to manage our growth, we must be successful in addressing management succession issues and attracting and retaining qualified personnel.

Our future success will depend, to a significant extent, on the ability of our management to operate effectively, both individually and as a group. We must successfully manage transition and replacement issues that may result from the departure or retirement of members of our executive management. We cannot provide assurances that changes of management personnel in the future would not cause disruption to operations or customer relationships or a decline in our operating results.

We are also dependent on our ability to retain and motivate our existing highly qualified personnel, in addition to attracting new highly qualified personnel. Competition for qualified management, technical and other personnel is often intense, particularly in Silicon Valley, Israel and Hong Kong where we have significant research and development activities, and we may not be successful in attracting and retaining such personnel. Competitors and others have in the past attempted, and are likely in the future to attempt, to recruit our employees. While our employees are required to sign standard agreements concerning confidentiality, non-solicitation and ownership of inventions, we generally do not have non-competition agreements with our personnel. The loss of the services of any of our key personnel, the inability to attract or retain highly qualified personnel in the future or delays in hiring such personnel, particularly senior management and engineers and other technical personnel, could negatively affect our business and operating results. Furthermore, a certain portion of our personnel in the U.S. is comprised of foreign nationals whose ability to work for us depends on obtaining the necessary visas. Our ability to hire and retain foreign nationals in the U.S., and their ability to remain and work in the U.S., is affected by various laws and regulations, including limitations on the availability of visas. Changes in U.S. laws or regulations affecting the availability of visas may adversely affect our ability to hire or retain key personnel and as a result may impair our operations.

We face risks associated with having facilities and employees located in Israel.

As of March 27, 2020, we maintained facilities in Israel with a total of 186 employees, or approximately 16% of our worldwide workforce. Our employees in Israel engage in a number of activities, for both our Video and Cable Access business segments, including research and development, product development, product management, supply chain management for certain product lines and sales activities.

As such, we are directly affected by the political, economic and military conditions affecting Israel. Any significant conflict involving Israel could have a direct effect on our business or that of our Israeli contract manufacturers, in the form of physical damage or injury, restrictions from traveling or reluctance to travel to from or within Israel by our Israeli and other employees or those of our subcontractors, or the loss of Israeli employees to active military duty. Most of our employees in Israel are currently obligated to perform annual reserve duty in the Israel Defense Forces, and approximately 9% of those employees were called for active military duty in 2019. In the event that more of our employees are called to active duty, certain of our research and development activities may be significantly delayed and adversely affected. Further, the interruption or curtailment of trade between Israel and its trading partners, as a result of terrorist attacks or hostilities, conflicts between Israel and any other Middle Eastern country or organization, or any other cause, could significantly harm our business. Additionally, current or future tensions or conflicts in the Middle East could materially and adversely affect our business, operating results, financial condition and cash flows.

Our operating results are likely to fluctuate significantly and, as a result, may fail to meet or exceed the expectations of securities analysts or investors, causing our stock price to decline.

Our operating results have fluctuated in the past and are likely to continue to fluctuate in the future, on an annual and a quarterly basis, as a result of several factors, many of which are outside of our control. Some of the factors that may cause these fluctuations include:

• the level and timing of spending of our customers in the U.S., Europe and in other markets;

• economic and financial conditions specific to each of the cable, satellite and telco, and broadcast and media industries, as well as general economic and financial market conditions, including the global economic uncertainty caused by the COVID-19 pandemic and government and business responses thereto;

• changes in market acceptance of and demand for our products or our customers' services or products;

• the timing and amount of orders, especially from large individual transactions and transactions with our significant customers;

• the mix of our products sold and the effect it has on gross margins;

• the timing of revenue recognition, including revenue recognition on sales arrangements and from transactions with significant service and support components, which may span several quarters;

• our transition to a SaaS subscription model for our Video business, which may cause near-term declines in revenue;

• the timing of completion of our customers' projects;

• the length of each customer product upgrade cycle and the volume of purchases during the cycle;

• competitive market conditions, including pricing actions by our competitors;

• the level and mix of our domestic and international revenue;

• new product introductions by our competitors or by us;

• uncertainty in both the U.K. and the European Union due to the U.K.'s exit from the European Union and the impact of the U.K.'s transitional period following this exit, which could adversely affect our results, financial condition and prospects;

• changes in domestic and international regulatory environments affecting our business;

• the evaluation of new services, new standards and system architectures by our customers;

• the cost and timely availability to us of components, subassemblies and modules;

• the mix of our customer base, by industry and size, and sales channels;

• changes in our operating and extraordinary expenses;

• the timing of acquisitions and dispositions by us and the financial impact of such transactions;

• impairment of our goodwill and intangibles;

• the impact of litigation, such as related litigation expenses and settlement costs;

• write-downs of inventory and investments;

• changes in our effective federal tax rate, including as a result of changes in our valuation allowance against our deferred tax assets, and changes in our effective state tax rates, including as a result of apportionment;

• changes to tax rules related to the deferral of foreign earnings and compliance with foreign tax rules;

• the impact of applicable accounting guidance on accounting for uncertainty in income taxes that requires us to establish reserves for uncertain tax positions and accrue potential tax penalties and interest; and

• the impact of applicable accounting guidance on business combinations that requires us to record charges for certain acquisition related costs and expenses and generally to expense restructuring costs associated with a business combination subsequent to the acquisition date.

The timing of deployment of our products by our customers can be subject to a number of other risks, including the availability of skilled engineering and technical personnel, the availability of third-party equipment and services, our customers' ability to negotiate and enter into rights agreements with video content owners that provide our customers with the right to deliver certain video content, and our customers' need for local franchise and licensing approvals.

We often recognize a substantial portion of our quarterly revenue in the last month of the quarter. We establish our expenditure levels for product development and other operating expenses based on projected revenue levels for a specified period, and expenses are relatively fixed in the short term. Accordingly, even small variations in the timing of revenue, particularly from relatively large individual transactions, can cause significant fluctuations in operating results in a particular quarter.

As a result of these factors and other factors, our operating results in one or more future periods may fail to meet or exceed the expectations of securities analysts or investors. In that event, the trading price of our common stock would likely decline.

Fluctuations in our future effective tax rates could affect our future operating results, financial condition and cash flows.

We are required to periodically review our deferred tax assets and determine whether, based on available evidence, a valuation allowance is necessary. The realization of our deferred tax assets, which are predominantly in the United States, is dependent upon the generation of sufficient U.S. and foreign taxable income in the future to offset these assets. Based on our evaluation, a history of operating losses in recent years has led to uncertainty with respect to our ability to realize certain of our net deferred tax assets, and as a result we recorded a net increase in valuation allowance of $23.9 million and $0.9 million in 2019 and 2018, respectively, against the net deferred tax assets. The increases in valuation allowance in 2019 and 2018 were offset partially by the valuation allowance release of $5.6 million and $1.5 million, respectively. The releases of valuation allowance were associated with its Israel subsidiary due to a reduced tax rate as a result of a local tax authority ruling.

The calculation of tax liabilities involves dealing with uncertainties in the application of complex global tax regulations. We recognize potential liabilities for anticipated tax audit issues in the United States and other tax jurisdictions based on our estimate of whether, and the extent to which, additional taxes will be due. In the event we determine that it is appropriate to create a reserve or increase an existing reserve for any such potential liabilities, the amount of the additional reserve will be charged as an expense in the period in which it is determined. If payment of these amounts ultimately proves to be unnecessary, the reversal of the liabilities would result in tax benefits being recognized in the period when we determine the liabilities are no longer necessary. If the estimate of tax liabilities proves to be less than the ultimate tax assessment for the applicable period, a further charge to expense in the period such shortfall is determined would result. Either such charge to expense could have a material and adverse effect on our operating results for the applicable period.

Our future effective income tax rates could be adversely affected if tax authorities challenge our international tax structure or if the relative mix of U.S. and international income changes for any reason. Accordingly, there can be no assurance that our income tax rate will be less than the U.S. federal statutory rate in future periods.

We are subject to taxation related risks in multiple jurisdictions.

We are a U.S.-based multinational company subject to tax in multiple U.S. and foreign tax jurisdictions. Significant judgment is required in determining our global provision for income taxes, deferred tax assets or liabilities and in evaluating our tax positions on a worldwide basis. While we believe our tax positions are consistent with the tax laws in the jurisdictions in which we conduct our business, it is possible that these positions may be contested or overturned by jurisdictional tax authorities, which may have a significant impact on our global provision for income taxes.

Tax laws are dynamic and subject to change as new laws are passed and new interpretations of the law are issued or applied. The U.S. recently enacted significant tax reform, and certain provisions of the new law may adversely affect us. In addition, governmental tax authorities are increasingly scrutinizing the tax positions of companies. Many countries in Europe, as well as a number of other countries and organizations such as the Organization for Economic Cooperation and Development, are actively considering changes to existing tax laws that, if enacted, could increase our tax obligations in countries where we do business. If U.S. or other foreign tax authorities change applicable tax laws, our overall taxes could increase, and our business, financial condition or results of operations may be adversely impacted.

We or our customers may face intellectual property infringement claims from third parties.

Our industry is characterized by the existence of a large number of patents and frequent claims and related litigation regarding patent and other intellectual property rights. In particular, leading companies in the telecommunications industry have extensive patent portfolios. Also, patent infringement claims and litigation by entities that purchase or control patents, but do not produce goods or services covered by the claims of such patents (so-called "non-practicing entities" or "NPEs"), have increased rapidly over the last decade or so. From time to time, third parties, including NPEs, have asserted, and may assert in the future, patent, copyright, trademark and other intellectual property rights against us or our customers. Our suppliers and their customers, including us, may have similar claims asserted against them. A number of third parties, including companies with greater financial and other resources than us, have asserted patent rights to technologies that are important to us.

Any intellectual property litigation, regardless of its outcome, could result in substantial expense and significant diversion of the efforts of our management and technical personnel. An adverse determination in any such proceeding could subject us to significant liabilities and temporary or permanent injunctions and require us to seek licenses from third parties or pay royalties that may be substantial. Furthermore, necessary licenses may not be available on terms satisfactory to us, or at all. An unfavorable outcome on any such litigation matter could require that we pay substantial damages, could require that we pay ongoing royalty payments, or could prohibit us from selling certain of our products. Any such outcome could have a material and adverse effect on our business, operating results, financial condition and cash flows.

Our suppliers and customers may have intellectual property claims relating to our products asserted against them. We have agreed to indemnify some of our suppliers and most of our customers for patent infringement relating to our products. The scope of this indemnity varies, but, in some instances, includes indemnification for damages and expenses (including reasonable attorney's fees) incurred by the supplier or customer in connection with such claims. If a supplier or a customer seeks to enforce a claim for indemnification against us, we could incur significant costs defending such claim, the underlying claim or both. An adverse determination in either such proceeding could subject us to significant liabilities and have a material and adverse effect on our operating results, cash flows and financial condition.

We may be the subject of litigation which, if adversely determined, could harm our business and operating results.

We may be subject to claims arising in the normal course of business. The costs of defending any litigation, whether in cash expenses or in management time, could harm our business and materially and adversely affect our operating results and cash flows. An unfavorable outcome on any litigation matter could require that we pay substantial damages, or, in connection with any intellectual property infringement claims, could require that we pay ongoing royalty payments or prohibit us from selling certain of our products. In addition, we may decide to settle any litigation, which could cause us to incur significant settlement costs. A settlement or an unfavorable outcome on any litigation matter could have a material and adverse effect on our business, operating results, financial condition and cash flows.

We may sell one or more of our product lines, from time to time, as a result of our evaluation of our products and markets, and any such divestiture could adversely affect our continuing business and our expenses, revenues, results of operation, cash flows and financial position.

We periodically evaluate our various product lines and may, as a result, consider the divestiture of one or more of those product lines. We have sold product lines in the past, and any prior or future divestiture could adversely affect our continuing business and expenses, revenues, results of operations, cash flows and financial position.

Divestitures of product lines have inherent risks, including the expense of selling the product line, the possibility that any anticipated sale will not occur, delays in closing any sale, the risk of lower-than-expected proceeds from the sale of the divested business, unexpected costs associated with the separation of the business to be sold from the seller’s information technology and other operating systems, and potential post-closing claims for indemnification or breach of transition services obligations of the seller. Expected cost savings, which are offset by revenue losses from divested businesses, may also be difficult to achieve or maximize due to the seller’s fixed cost structure, and a seller may experience varying success in reducing fixed costs or transferring liabilities previously associated with the divested business.

Our failure to adequately protect our proprietary rights and data may adversely affect us.

At March 27, 2020, we held 101 issued U.S. patents and 57 issued foreign patents, and had 57 patent applications pending. Although we attempt to protect our intellectual property rights through patents, trademarks, copyrights, licensing arrangements, maintaining certain technology as trade secrets and other measures, we can give no assurances that any patent, trademark, copyright or other intellectual property rights owned by us will not be invalidated, circumvented or challenged, that such intellectual property rights will provide competitive advantages to us, or that any of our pending or future patent applications will be issued with the scope of the claims sought by us, if at all. We can give no assurances that others will not develop technologies that are similar or superior to our technologies, duplicate our technologies or design around the patents that we own. In addition, effective patent, copyright and trade secret protection may be unavailable or limited in certain foreign countries in which we do business or may do business in the future.

We may enter into confidentiality or license agreements with our employees, consultants, and vendors and our customers, as needed, and generally limit access to, and distribution of, our proprietary information. Nevertheless, we cannot provide assurances that the steps taken by us will prevent misappropriation of our technology. In addition, we have taken in the past, and may take in the future, legal action to enforce our patents and other intellectual property rights, to protect our trade secrets, to determine the validity and scope of the proprietary rights of others, or to defend against claims of infringement or invalidity. Such litigation could result in substantial costs and diversion of management time and other resources, and could materially and adversely affect our business, operating results, financial condition and cash flows.

Our products include third-party technology and intellectual property, and our inability to acquire new technologies or use third-party technology in the future could harm our business.

In order to successfully develop and market certain of our planned products, we may be required to enter into technology development or licensing agreements with third parties. Although companies with technology useful to us are often willing to enter into technology development or licensing agreements with respect to such technology, we cannot provide assurances that such agreements may be negotiated on commercially reasonable terms, or at all. The failure to enter, or a delay in entering, into such technology development or licensing agreements, when necessary or desirable, could limit our ability to develop and market new products and could materially and adversely affect our business.

We incorporate certain third-party technologies, including software programs, into our products, and, as noted, intend to utilize additional third-party technologies in the future. In addition, the technologies that we license may not operate properly or as specified, and we may not be able to secure alternatives in a timely manner, either of which could harm our business. We could face delays in product releases until alternative technology can be identified, licensed or developed, and integrated into our products, if we are able to do so at all. These delays, or a failure to secure or develop adequate technology, could materially and adversely affect our business, operating results, financial condition and cash flows.

Our use of open source software in some of our products may expose us to certain risks.

Some of our products contain software modules licensed for use from third-party authors under open source licenses. Use and distribution of open source software may entail greater risks than use of third-party commercial software, as open source licensors generally do not provide warranties or other contractual protections regarding infringement claims or the quality of the code. Some open source licenses contain requirements that we make available source code for modifications or derivative works we create based upon the type of open source software we use. If we combine our proprietary software with open source software in a certain manner, we could, under certain of the open source licenses, be required to release the source code of our proprietary software to the public. This could allow our competitors to create similar products with lower development effort and in less time and ultimately could result in a loss of product sales for us.

Although we monitor our use of open source closely, it is possible our past, present or future use of open source has triggered or may trigger the foregoing requirements. Furthermore, the terms of many open source licenses have not been interpreted by U.S. courts, and there is a risk that such licenses could be construed in a manner that could impose unanticipated conditions or restrictions on our ability to commercialize our products. In such event, we could be required to seek licenses from third parties in order to continue offering our products, to re-engineer our products or to discontinue the sale of our products in the event re-engineering cannot be accomplished on a timely basis, any of which could materially and adversely affect our operating results, financial condition and cash flows.

We are subject to import and export control and trade and economic sanction laws and regulations that could subject us to liability or impair our ability to compete in international markets.

Our products are subject to U.S. export control laws, and may be exported outside the U.S. only with the required export license or through an export license exception, in most cases because we incorporate encryption technology into certain of our products. We are also subject to U.S. trade and economic sanction regulations which include prohibitions on the sale or supply of certain products and services to U.S. embargoed or sanctioned countries, governments, persons and entities. In addition, various countries regulate the import of certain technology and have enacted laws that could limit our ability to distribute our products, or could limit our customers’ ability to implement our products, in those countries. Although we take precautions and have processes in place to prevent our products and services from being provided in violation of such laws, our products may have been in the past, and could in the future be, provided inadvertently in violation of such laws, despite the precautions we take. If we fail to comply with these laws, we and certain of our employees could be subject to civil or criminal penalties, including the possible loss of export privileges, monetary penalties, and, in extreme cases, imprisonment of responsible employees for knowing and willful violations of these laws. Additionally, our business and operating results be adversely affected through penalties, reputational harm, loss of access to certain markets, or otherwise.

In addition, we may be subject to customs duties that could have a significant adverse impact on our operating results or, if we are able to pass on the related costs in any particular situation, would increase the cost of the related product to our customers. As a result, the future imposition of significant increases in the level of customs duties or the creation of import quotas on our products in Europe or in other jurisdictions, or any of the limitations on international sales described above, could have a material adverse effect on our business, operating results, financial condition and cash flows. Further, some of our customers in Europe have been, or are being, audited by local governmental authorities regarding the tariff classifications used for importation of our products. Import duties and tariffs vary by country and a different tariff classification for any of our products may result in higher duties or tariffs, which could have an adverse impact on our operating results and potentially increase the cost of the related products to our customers.

We may need additional capital in the future and may not be able to secure adequate funds at all or on terms acceptable to us.

We engage in the design, development and manufacture and sale of a variety of video and cable access products and system solutions, which has required, and will continue to require, significant research and development expenditures.

We are monitoring and managing our cash position in light of ongoing market conditions due to COVID-19. We believe that our existing cash of approximately $71.7 million at March 27, 2020 will satisfy our cash requirements for at least the next 12 months. However, we may need to raise additional funds to take advantage of presently unanticipated strategic opportunities, satisfy our other cash requirements from time to time, or strengthen our financial position. Our ability to raise funds may be adversely affected by a number of factors, including factors beyond our control, such as weakness in the economic conditions in markets in which we sell our products and continued uncertainty in financial, capital and credit markets. The impacts of the COVID-19 pandemic have reduced the availability and attractiveness of external funding sources, and we expect that until financial market conditions stabilize, accessing financing could be challenging or at elevated costs. There can be no assurance that equity or debt financing will be available to us on reasonable terms, if at all, when and if it is needed.

We may raise additional financing through public or private equity or convertible debt offerings, debt financings, or corporate partnership or licensing arrangements. To the extent we raise additional capital by issuing equity securities or convertible debt, our stockholders may experience dilution, and any new equity or convertible debt securities we issue could have rights, preferences, and privileges superior to holders of our common stock. To the extent that we raise additional funds through collaboration and licensing arrangements, it may be necessary to relinquish some rights to our technologies or products, or grant licenses on terms that are not favorable to us. To the extent we raise capital through debt financing arrangements, we may be required to pledge assets or enter into covenants that could restrict our operations or our ability to incur further indebtedness and the interest on such debt may adversely affect our operating results.

If adequate capital is not available, or is not available on reasonable terms, when needed, we may not be able to take advantage of acquisition or other market opportunities, to timely develop new products, or to otherwise respond to competitive pressures.

Cybersecurity incidents, including data security breaches or computer viruses, could harm our business by disrupting our business operations, compromising our products and services, damaging our reputation or exposing us to liability.

Cyber criminals and hackers may attempt to penetrate our network security, misappropriate our proprietary information or cause business interruptions. Because the techniques used by such computer programmers to access or sabotage networks change frequently and may not be recognized until launched against a target, we may be unable to anticipate these techniques or to implement adequate preventative measures. In the past, we have faced compromises to our network security, and companies are facing additional attacks as workforces become more distributed following shelter-in-place orders. While we have invested in and continue to update our network security and cybersecurity infrastructure and systems, if our cybersecurity systems fail to protect against unauthorized access, sophisticated cyber-attacks, phishing schemes, data protection breaches, computer viruses, denial-of-service attacks and similar disruptions from unauthorized tampering or human error, our ability to conduct our business effectively could be damaged in a number of ways, including:

- our intellectual property and other proprietary data, or financial assets, could be stolen;

- our ability to manage and conduct our business operations could be seriously disrupted;

- defects and security vulnerabilities could be introduced into our product, software and SaaS offerings, thereby damaging the reputation and perceived reliability and security of our products; and

- personally identifiable data of our customers, employees and business partners could be compromised.

Should any of the above events occur, our reputation, competitive position and business could be significantly harmed, and we could be subject to claims for liability from customers, third parties and governmental authorities. Additionally, we could incur significant costs in order to upgrade our cybersecurity systems and remediate damages. Consequently, our business, operating results, financial condition and cash flows could be materially and adversely affected. In addition, our business operations utilize and rely upon numerous third-party vendors, manufacturers, solution providers, partners and consultants, and any failure of such third parties’ cybersecurity measures could materially and adversely affect or disrupt our business.

Our operating results could be adversely affected by natural disasters affecting us or impacting our third-party manufacturers, suppliers, resellers or customers.

Our corporate headquarters is located in California, which is prone to earthquakes. In addition, global warming trends are contributing to an increase in erratic weather patterns globally and intensifying the impact of certain types of catastrophes, such as floods and wildfires. We have employees, consultants and contractors located in regions and countries around the world. In the event that any of our business, sales or research and development centers or offices in the U.S. or internationally are adversely affected by an earthquake, flood, wildfire or by any other natural disaster, we may sustain damage to our operations and properties, which could cause a sustained interruption or loss of affected operations, and cause us to suffer significant financial losses.

We rely on third-party contract manufacturers for the production of our products. Any significant disruption in the business or operations of such manufacturers or of their or our suppliers could adversely impact our business. Our principal contract manufacturers and several of their and our suppliers and our resellers have operations in locations that are subject to natural disasters, such as severe weather, tsunamis, floods, fires and earthquakes, which could disrupt their operations and, in turn, our operations.

In addition, if there is a natural disaster in any of the locations in which our significant customers are located, we face the risk that our customers may incur losses or sustained business interruption, or both, which may materially impair their ability to continue their purchase of products from us. Accordingly, natural disaster in one of the geographies in which we, or our third-party manufacturers, their or our suppliers or our customers, operate could have a material and adverse effect on our business, operating results, cash flows and financial condition.

Our business and industry are subject to various laws and regulations that could adversely affect our business, operating results, cash flows and financial condition.

Our business and industry are regulated under various federal, state, local and international laws. For example, we are subject to environmental regulations such as the European Union’s Waste Electrical and Electronic Equipment (WEEE) and Restriction on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) directives and similar legislation enacted in other jurisdictions worldwide. Our failure to comply with these laws could result in our being directly or indirectly liable for costs, fines or penalties and third-party claims, and could jeopardize our ability to conduct business in such regions and countries. We expect that our operations will be affected by other new environmental laws and regulations on an ongoing basis. Although we cannot predict the ultimate impact of any such new laws and regulations, they would likely result in additional costs, and could require that we redesign or change how we manufacture our products, any of which could have a material and adverse effect on our operating results, financial condition and cash flows.

We are subject to the Sarbanes-Oxley Act of 2002 which, among other things, requires an annual review and evaluation of our internal control over financial reporting. If we conclude in future periods that our internal control over financial reporting is not effective or if our independent registered public accounting firm is unable to provide an unqualified attestation as of future year-ends, we may incur substantial additional costs in an effort to correct such problems, and investors may lose confidence in our financial statements, and our stock price may decrease in the short term, until we correct such problems, and perhaps in the long term, as well.

We are subject to requirements under the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 that require us to conduct research, disclose, and report whether or not our products contain certain conflict minerals sourced from the Democratic Republic of Congo or its surrounding countries. The implementation of these requirements could adversely affect the sourcing, availability, and pricing of the materials used in the manufacture of components used in our products. In addition, we may incur certain additional costs to comply with the disclosure requirements, including costs related to conducting diligence procedures to determine the sources of conflict minerals that may be used or necessary to the production of our products and, if applicable, potential changes to products, processes or sources of supply as a consequence of such verification activities. It is also possible that we may face reputational harm if we determine that certain of our products contain minerals not determined to be conflict-free and/or we are unable to alter our products, processes or sources of supply to avoid such materials.

Changes in telecommunications legislation and regulations in the U.S. and other countries could affect our sales and the revenue we are able to derive from our products. In particular, on December 14, 2017, the U.S. Federal Communications Commission (FCC) voted to repeal the “net neutrality” rules and return to a “light-touch” regulatory framework. The FCC’s new rules, which took effect in June 2018, granted providers of broadband internet access services greater freedom to make changes to their services, including, potentially, changes that may discriminate against or otherwise harm our business. However, a number of parties have appealed these rules, which appeals are currently being reviewed by the D.C. Circuit Court of Appeals; thus the future impact of the FCC's repeal and any changes thereto remains uncertain. Additionally, on September 30, 2018, California enacted the California Internet Consumer Protection and Net Neutrality Act of 2018, making California the fourth state to enact a state-level net neutrality law since the FCC repealed its nationwide regulations, mandating that all broadband services in California must be provided in accordance with state net neutrality requirements. The U.S. Department of Justice has sued to block the law going into effect, and California has agreed to delay enforcement until the resolution of the FCC’s repeal of the federal rules. A number of other states are considering legislation or executive actions that would regulate the conduct of broadband providers. We cannot predict whether the FCC order or state initiatives will be modified, overturned, or vacated by legal action of the court, federal legislation, or the FCC. The repeal of the net neutrality rules or other regulations dealing with access by competitors to the networks of incumbent operators could slow or stop infrastructure and services investments or expansion by service providers. Increased regulation of our customers’ pricing or service offerings could limit their investments and, consequently, revenue from our products. The impact of new or revised legislation or regulations could have a material adverse effect on our business, operating results, financial condition and cash flows.

Some anti-takeover provisions contained in our certificate of incorporation and bylaws, as well as provisions of Delaware law, could impair a takeover attempt.

We have provisions in our certificate of incorporation and bylaws that could have the effect of rendering more difficult or discouraging an acquisition deemed undesirable by our Board. These include provisions:

• authorizing blank check preferred stock, which could be issued with voting, liquidation, dividend and other rights superior to our common stock;

• limiting the liability of, and providing indemnification to, our directors and officers;

• limiting the ability of our stockholders to call, and bring business before, special meetings;

• requiring advance notice of stockholder proposals for business to be conducted at meetings of our stockholders and for nominations of candidates for election to our Board;

• controlling the procedures for conducting and scheduling of Board and stockholder meetings; and

• providing our Board with the express power to postpone previously scheduled annual meetings and to cancel previously scheduled special meetings.

These provisions could delay hostile takeovers, changes in control of the Company or changes in our management. As a Delaware corporation, we are also subject to provisions of Delaware law, including Section 203 of the Delaware General Corporation law, which prevents some stockholders holding more than 15% of our outstanding common stock from engaging in certain business combinations without approval of the holders of substantially all of our outstanding common stock. Any provision of our certificate of incorporation or bylaws or Delaware law that has the effect of delaying or deterring a change in control could limit the opportunity for our stockholders to receive a premium for their shares of our common stock, and could also affect the price that some investors are willing to pay for our common stock.

The nature of our business requires the application of complex revenue and expense recognition rules and the current legislative and regulatory environment affecting generally accepted accounting principles is uncertain. Significant changes in current principles could affect our financial statements going forward and changes in financial accounting standards or practices may cause adverse, unexpected financial reporting fluctuations and harm our operating results.

United States generally accepted accounting principles (“U.S. GAAP”) are subject to interpretation by the FASB, the SEC and various bodies formed to promulgate and interpret appropriate accounting principles. We are also subject to evolving rules and regulations of the countries in which we do business. Changes to accounting standards or interpretations thereof may result in different accounting principles under U.S. GAAP that have a significant effect on our reported financial results and require us to incur costs and expenses in order to comply with the updated standards or interpretations.

In addition, we have in the past and may in the future need to modify our customer contracts, accounting systems and processes when we adopt future or proposed changes in accounting principles. The cost and effect of these changes may negatively impact our results of operations during the periods of transition.

We have implemented a new enterprise resource planning system, and if this new system proves ineffective, we may be unable to timely or accurately prepare financial reports, make payments to our suppliers and employees, or invoice and collect from our users.

We have implemented a new enterprise resource planning (ERP) system. Our ERP system is critical to our ability to accurately maintain books and records and to prepare our financial statements. If the ERP system does not work as planned, our ability to timely or accurately make payments to our suppliers and employees, and our ability to invoice, and collect from our customers could be harmed. Data integrity problems or other issues may be discovered which, if not corrected, could impact our business or financial results. In addition, we may experience periodic or prolonged disruption of our financial functions arising out of our reliance on our ERP system, periodic upgrades or updates, or other external factors that are outside of our control. If we encounter unforeseen problems with our ERP system or other related systems and infrastructure, it could adversely affect our financial reporting systems and our ability to produce financial reports, the effectiveness of internal controls over financial reporting, and our business, operating results and financial condition could be adversely affected.

Servicing our debt requires a significant amount of cash, and we may not have sufficient cash flow from our business to pay our substantial debt.

Our ability to make scheduled payments of the principal of, to pay interest on or to refinance our indebtedness, including the 2020 Notes and the 2024 Notes (together, the “Notes”), or to make cash payments in connection with any conversion of the Notes or in connection with any repurchase of Notes upon the occurrence of a fundamental change before the applicable maturity date at a repurchase price equal to 100% of the principal amount of such Notes to be repurchased, plus any accrued and unpaid interest thereon, as set forth in the applicable indenture governing the Notes, depends on our future performance, which is subject to economic, financial, competitive and other factors beyond our control. Our business may not continue to generate cash flow from operations in the future sufficient to service our debt and make necessary capital expenditures. If we are unable to generate such cash flow, we may be required to adopt one or more alternatives, such as selling assets, restructuring debt or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to refinance our indebtedness, including the Notes will depend on the capital markets and our financial condition at such time. We may not be able to engage in any of these activities or engage in these activities on desirable terms, which could result in a default on our debt obligations, including the Notes.

In addition, our ability to repurchase the Notes of the applicable series or to pay cash upon conversions of the Notes or at their respective maturity may be limited by law, regulatory authority, or agreements governing our future indebtedness. Our failure to repurchase such Notes at a time when the repurchase is required by the applicable indenture governing the Notes or to pay cash upon conversions of such Notes or at their respective maturity as required by the applicable indenture governing the Notes would constitute a default under such indenture. A default under such indenture, or the fundamental change itself, could also lead to a default under agreements governing our future indebtedness. Moreover, the occurrence of a fundamental change under the applicable indenture governing the Notes could constitute an event of default under any such agreement. If the repayment of the related indebtedness were to be accelerated after any applicable notice or grace periods, we may not have sufficient funds to repay the indebtedness and repurchase such series of Notes or make cash payments upon conversions thereof.

Despite our current debt levels, we may still incur substantially more debt or take other actions which would intensify the risks discussed above.

Despite our current consolidated debt levels, we and our subsidiaries may be able to incur substantial additional debt in the future, subject to the restrictions contained in our debt instruments, some of which may be secured debt. We are not restricted under the terms of each indenture governing our Notes from incurring additional debt, securing existing or future debt, recapitalizing our debt or taking a number of other actions that are not limited by the terms of the indenture governing the notes that could have the effect of diminishing our ability to make payments on our debt (including the Notes) when due. In addition, the Credit Agreement we entered into with JPMorgan Chase Bank, N.A., as lender, and Harmonic International GmbH, as co-borrower, on December 19, 2019, permits us to incur certain additional indebtedness and grant certain liens on our assets that could intensify the risks discussed above.

The conditional conversion feature of the Notes, if triggered, may adversely affect our financial condition and operating results.

In the event the conditional conversion feature of the Notes is triggered, holders of Notes will be entitled under the respective indenture governing such Notes to convert the Notes at any time during specified periods at their option. If one or more holders elect to convert their Notes, unless we elect to satisfy our conversion obligation by delivering solely shares of our common stock (other than paying cash in lieu of delivering any fractional share), we would be required to settle a portion or all of our conversion obligation through the payment of cash, which could adversely affect our liquidity. In addition, even if holders do not elect to convert their series of Notes, we could be required under applicable accounting rules to reclassify all or a portion of the outstanding principal of such series of Notes as a current rather than long-term liability, which would result in a material reduction of our net working capital.

The accounting method for convertible debt securities that may be settled in cash, such as the Notes, could have a material effect on our reported financial results.

In May 2008, the Financial Accounting Standards Board (“FASB”) issued FASB Staff Position No. APB 14-1, Accounting for Convertible Debt Instruments That May Be Settled in Cash upon Conversion (Including Partial Cash Settlement), which has subsequently been codified as Accounting Standards Codification 470-20, Debt with Conversion and Other Options (“ASC 470-20”), an entity must separately account for the liability and equity components of the convertible debt instruments (such as the Notes) that may be settled entirely or partially in cash upon conversion in a manner that reflects the issuer’s economic interest cost. The effect of ASC 470-20 on the accounting for each series of the Notes is that the equity component is required to be included in the additional paid-in capital section of stockholders’ equity on our consolidated balance sheet at the issuance date, and the value of the equity component is treated as debt discount for purposes of accounting for the debt component of each series of Notes. This requires us to record a greater amount of non-cash interest expense as a result of the amortization of the discounted carrying value of each series of Notes to their face amount over the respective terms of the Notes. We report lower net income in our financial results because ASC 470-20 requires interest to include both the amortization of the debt discount and the instrument's coupon interest rate, which could adversely affect our future financial results or the trading price of our common stock.

In addition, under certain circumstances, convertible debt instruments (such as the Notes) that may be settled entirely or partly in cash are currently accounted for utilizing the treasury stock method, the effect of which is that the shares issuable upon conversion of the Notes are not included in the calculation of diluted earnings per share except to the extent that the conversion value of the Notes exceeds their principal amount. Under the treasury stock method, for diluted earnings per share purposes, the transaction is accounted for as if the shares of common stock that would be necessary to settle such excess, if we elected to settle such excess in shares, are issued.

In July 2019, the FASB issued an exposure draft that proposes to change the accounting for the convertible debt instruments described above. Under the exposure draft, an entity may no longer be required to separately account for the liability and equity components of convertible debt instruments. This could have the impact of reducing non-cash interest expense, and thereby increasing net income. Additionally, as currently proposed, the treasury stock method for calculating earnings per share will no longer be allowed for convertible debt instruments whose principal amount may be settled using shares. Rather, the if-converted method may be required, which would decrease our diluted weighted-average earnings per share. We cannot be sure that the proposed changes in this exposure draft will be adopted, or will be adopted in their current form. We also cannot be sure whether other changes may be made to the current accounting standards related to the Notes, or otherwise, that could have an adverse impact on our financial statements.

Our common stock price may be extremely volatile, and the value of an investment in our stock may decline.

Our common stock price has been highly volatile. We expect that this volatility will continue in the future due to factors such as:

- general market and economic conditions, including market volatility due to the COVID-19 pandemic;
- actual or anticipated variations in operating results;
- increases or decreases in the general stock market or to the stock prices of technology companies;
- announcements of technological innovations, new products or new services by us or by our competitors or customers;
- changes in financial estimates or recommendations by stock market analysts regarding us or our competitors;
- announcements by us or our competitors of significant acquisitions, dispositions, strategic partnerships, joint ventures or capital commitments;
- announcements by our customers regarding end user market conditions and the status of existing and future infrastructure network deployments;
- additions or departures of key personnel; and
- future equity or debt offerings or our announcements of these offerings.

In addition, in recent years, the stock market in general, and The NASDAQ Global Select Market and the securities of technology companies in particular, have experienced extreme price and volume fluctuations. These fluctuations have often been unrelated or disproportionate to the operating performance of individual companies. These broad market fluctuations have in the past, and may in the future, materially and adversely affect our stock price, regardless of our operating results. In these circumstances, investors may be unable to sell their shares of our common stock at or above their purchase price over the short term, or at all.

Our stock price may decline if additional shares are sold in the market or if analysts drop coverage of or downgrade our stock.

Future sales of substantial amounts of shares of our common stock by our existing stockholders in the public market, or the perception that these sales could occur, may cause the market price of our common stock to decline. In addition, we issue additional shares upon exercise of stock options, including under our 2002 Employee Stock Purchase Plan (“ESPP”), and in connection with grants of restricted stock units (“RSUs”) on an ongoing basis. To the extent we do not elect to pay solely cash upon conversion of our Notes, we will also be required to issue additional shares of common stock upon conversion. Increased sales of our common stock in the market after exercise of outstanding stock options or grants of restricted stock units could exert downward pressure on our stock price. These sales also might make it more difficult for us to sell equity or equity-related securities in the future at a time and price we deem appropriate.

The trading market for our common stock relies in part on the availability of research and reports that third-party industry or securities analysts publish about us and our business. If we do not maintain adequate research coverage or if one or more of the analysts who do cover us downgrade our stock or publishes inaccurate or unfavorable research about our business, our stock price may decline. If one or more of these analysts cease coverage of us or fails to publish reports on us regularly, we could lose visibility in the market, which in turn could cause the liquidity of our stock and our stock price to decline.

ITEM 6. EXHIBITS

Exhibit Number	Exhibit Index
31.1	Section 302 Certification of Principal Executive Officer
31.2	Section 302 Certification of Principal Financial Officer
32.1*	Section 906 Certification of Principal Executive Officer
32.2*	Section 906 Certification of Principal Financial Officer
101	The following materials from Registrant's Quarterly Report on Form 10-Q for the quarter ended March 27, 2020, formatted in Extensible Business Reporting Language (XBRL) include:
	(i) Condensed Consolidated Balance Sheets at March 27, 2020 and December 31, 2019, (ii) Condensed Consolidated Statements of Operations for the three months ended March 27, 2020 and March 29, 2019, (iii) Condensed Consolidated Statements of Comprehensive Loss for the three months ended March 27, 2020 and March 29, 2019, (iv) Condensed Consolidated Statements of Stockholders' Equity for the three months ended March 27, 2020 and March 29, 2019, (v) Condensed Consolidated Statements of Cash Flows for the three months ended March 27, 2020 and March 29, 2019, and (vi) Notes to Condensed Consolidated Financial Statements.

* The certifications attached as Exhibits 32.1 and 32.2 that accompany this Quarterly Report on Form 10-Q, are deemed furnished and not filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of Harmonic Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Quarterly Report on Form 10-Q, irrespective of any general incorporation language contained in such filing.

SIGNATURES

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

HARMONIC INC.

By: /s/ Sanjay Kalra

Sanjay Kalra
Chief Financial Officer
Date: May 4, 2020

Exhibit 31.1

Harmonic Inc.
Certification of Principal Executive Officer
Pursuant to Section 302 of
The Sarbanes-Oxley Act of 2002

I, Patrick J. Harshman, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Harmonic 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 4, 2020

By: /s/ Patrick J. Harshman
Patrick J. Harshman
President and Chief Executive Officer

Exhibit 31.2

Harmonic Inc.
Certification of Principal Financial Officer
Pursuant to Section 302 of
The Sarbanes-Oxley Act of 2002

I, Sanjay Kalra, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Harmonic 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 4, 2020

By: /s/ Sanjay Kalra
Sanjay Kalra
Chief Financial Officer

Exhibit 32.1

Harmonic Inc.
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

As of the date hereof, I, Patrick J. Harshman, President and Chief Executive Officer of Harmonic Inc. (the “Company”), certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Company’s Quarterly Report on Form 10-Q for the quarter ended March 27, 2020, as filed with the Securities and Exchange Commission (the “Report”), 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 the Report fairly presents, in all material respects, the financial condition and results of operations of the Company. This written statement is being furnished to the Securities and Exchange Commission as an exhibit accompanying such Report and shall not be deemed filed pursuant to the Securities Exchange Act of 1934, as amended.

Date: May 4, 2020

/s/ Patrick J. Harshman

Patrick J. Harshman
President and Chief Executive Officer

Exhibit 32.2

Harmonic Inc.
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

As of the date hereof, I, Sanjay Kalra, Chief Financial Officer of Harmonic Inc. (the “Company”), certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that the Company’s Quarterly Report on Form 10-Q for the quarter ended March 27, 2020, as filed with the Securities and Exchange Commission (the “Report”), 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 the Report fairly presents, in all material respects, the financial condition and results of operations of the Company. This written statement is being furnished to the Securities and Exchange Commission as an exhibit accompanying such Report and shall not be deemed filed pursuant to the Securities Exchange Act of 1934, as amended.

Date: May 4, 2020

/s/ Sanjay Kalra

Sanjay Kalra
Chief Financial Officer