UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-Q

(Mark One)

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

For the Quarterly Period Ended September 25, 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)**

2590 Orchard Parkway
San Jose, CA 95131
(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 October 27, 2020 was 97,747,764.

TABLE OF CONTENTS

PART I

FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS

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

	September 25, 2020	December 31, 2019
ASSETS		
Current assets:		
Cash and cash equivalents	$ 70,817	$ 93,058
Accounts receivable, net	81,353	88,500
Inventories, net	36,802	29,042
Prepaid expenses and other current assets	25,071	40,762
Total current assets	214,043	251,362
Property and equipment, net	41,915	22,928
Operating lease right-of-use assets	24,531	27,491
Goodwill	241,425	239,780
Intangibles, net	1,256	4,461
Other long-term assets	36,252	41,305
Total assets	$ 559,422	$ 587,327
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Other debts and finance lease obligations, current	$ 11,402	$ 6,713
Accounts payable	31,555	40,933
Income taxes payable	826	1,226
Deferred revenue	42,729	37,117
Accrued and other current liabilities	51,286	62,535
Convertible notes, short-term	7,972	43,375
Total current liabilities	145,770	191,899
Convertible notes, long-term	128,018	88,629
Other debts and finance lease obligations, long-term	9,707	10,511
Income taxes payable, long-term	185	178
Other non-current liabilities	41,204	41,254
Total liabilities	324,884	332,471
Commitments and contingencies (Note 17)		
Convertible notes	81	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; 97,732 and 91,875 shares issued and outstanding at September 25, 2020 and December 31, 2019, respectively	98	92
Additional paid-in capital	2,348,638	2,327,359
Accumulated deficit	(2,114,676)	(2,071,940)
Accumulated other comprehensive income (loss)	397	(3,065)
Total stockholders' equity	234,457	252,446
Total liabilities and stockholders' equity	$ 559,422	$ 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		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Revenue:				
Appliance and integration	$ 63,251	$ 83,082	$ 153,227	$ 189,864
SaaS and service	31,641	32,643	94,076	90,832
Total net revenue	94,892	115,725	247,303	280,696
Cost of revenue:				
Appliance and integration	32,082	26,812	81,153	83,178
SaaS and service	13,886	13,373	42,715	36,201
Total cost of revenue	45,968	40,185	123,868	119,379
Total gross profit	48,924	75,540	123,435	161,317
Operating expenses:				
Research and development	20,206	20,197	61,827	62,911
Selling, general and administrative	28,773	31,148	86,996	88,478
Amortization of intangibles	752	785	2,264	2,357
Restructuring and related charges	814	861	1,572	1,194
Total operating expenses	50,545	52,991	152,659	154,940
Income (loss) from operations	(1,621)	22,549	(29,224)	6,377
Interest expense, net	(2,807)	(3,000)	(8,772)	(8,862)
Loss on debt extinguishment	—	(5,695)	(834)	(5,695)
Other expense, net	(167)	(1,594)	(813)	(2,333)
Income (loss) before income taxes	(4,595)	12,260	(39,643)	(10,513)
Provision for income taxes	786	603	3,093	981
Net income (loss)	$ (5,381)	$ 11,657	$ (42,736)	$ (11,494)
Net income (loss) per share:				
Basic	$ (0.06)	$ 0.13	$ (0.44)	$ (0.13)
Diluted	$ (0.06)	$ 0.12	$ (0.44)	$ (0.13)
Shares used in per share calculation:				
Basic	97,563	89,964	96,623	89,030
Diluted	97,563	97,596	96,623	89,030

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

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

	Three months ended		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Net income (loss)	$ (5,381)	$ 11,657	$ (42,736)	$ (11,494)
Losses reclassified into earnings	—	—	—	56
Change in foreign currency translation adjustments	3,518	(3,431)	3,238	(3,874)
Other comprehensive income (loss) before tax	3,518	(3,431)	3,238	(3,818)
Provision for (benefit from) income taxes	(255)	284	(224)	335
Other comprehensive income (loss), net of tax	3,773	(3,715)	3,462	(4,153)
Total comprehensive income (loss)	$ (1,608)	$ 7,942	$ (39,274)	$ (15,647)

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 September 25, 2020					
	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income (Loss)	Total Stockholders' Equity
	Shares	Amount				
Balance at June 26, 2020	96,863	$ 97	$ 2,342,856	$ (2,109,295)	$ (3,376)	$ 230,282
Net loss	—	—	—	(5,381)	—	(5,381)
Other comprehensive income, net of tax	—	—	—	—	3,773	3,773
Issuance of common stock under option, stock award and purchase plans	869	1	1,891	—	—	1,892
Stock-based compensation	—	—	3,972	—	—	3,972
Reclassification to mezzanine equity from equity for 4.00% Convertible Senior Notes due in 2020	—	—	(81)	—	—	(81)
Balance at September 25, 2020	97,732	$ 98	$ 2,348,638	$ (2,114,676)	$ 397	$ 234,457

	Three Months Ended September 27, 2019					
	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance at June 28, 2019	89,074	$ 89	$ 2,302,798	$ (2,089,167)	$ (1,654)	$ 212,066
Net income	—	—	—	11,657	—	11,657
Other comprehensive loss, net of tax	—	—	—	—	(3,715)	(3,715)
Issuance of common stock under option, stock award and purchase plans	1,241	1	2,975	—	—	2,976
Stock-based compensation	—	—	4,157	—	—	4,157
Issuance of warrant	—	—	16,142	—	—	16,142
Portion of repurchase price recorded in additional paid-in capital in connection with partial repurchase of 4.00% convertible notes due 2020	—	—	(27,111)	—	—	(27,111)
Conversion feature of 2.00% convertible notes due 2024	—	—	24,878	—	—	24,878
Balance at September 27, 2019	90,315	90	$ 2,323,839	$ (2,077,510)	$ (5,369)	$ 241,050

	Nine Months Ended September 25, 2020					
	Common Stock		Additional Paid-in Capital	Accumulated Deficit	Accumulated Other Comprehensive Income (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	—	—	—	(42,736)		(42,736)
Other comprehensive income, net of tax	—	—	—	—	3,462	3,462
Issuance of common stock under option, stock award and purchase plans	3,444	4	3,839	—	—	3,843
Stock-based compensation	—	—	13,768	—	—	13,768
Conversion feature of 4.375% Convertible Senior Notes due 2022	—	—	8,254	—	—	8,254
Portion of conversion feature of 4.00% Convertible Senior Notes due 2020 exchanged	—	—	(6,909)	—	—	(6,909)
Exercise of warrant	2,413	2	(2)	—	—	—
Reclassification from mezzanine equity to equity for 4.00% Convertible Senior Notes due in 2020	—	—	2,329	—	—	2,329
Balance at September 25, 2020	97,732	$ 98	$ 2,348,638	$ (2,114,676)	$ 397	$ 234,457

	Nine Months Ended September 27, 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	—	—	—	(11,494)	—	(11,494)
Other comprehensive loss, net of tax	—	—	—	—	(4,153)	(4,153)
Issuance of common stock under option, stock award and purchase plans	3,258	3	4,292	—	—	4,295
Stock-based compensation	—	—	8,843	—	—	8,843
Issuance of warrant	—	—	16,142	—	—	16,142
Portion of repurchase price recorded in additional paid-in capital in connection with partial repurchase of 4.00% convertible notes due 2020	—	—	(27,111)	—	—	(27,111)
Conversion feature of 2.00% convertible notes due 2024	—	—	24,878	—	—	24,878
Balance at September 27, 2019	90,315	$ 90	$ 2,323,839	$ (2,077,510)	$ (5,369)	$ 241,050

(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)

	Nine months ended	
	September 25, 2020	**September 27, 2019**
Cash flows from operating activities:		
Net loss	$ (42,736)	$ (11,494)
Adjustments to reconcile net loss to net cash provided by (used in) operating activities:		
Amortization of intangibles	3,214	6,242
Depreciation	8,683	8,480
Stock-based compensation	13,737	8,719
Amortization of discount on convertible and other debt	5,451	4,960
Amortization of non-cash warrant	1,307	13,137
Loss on debt extinguishment	834	5,695
Deferred income taxes, net	1,527	75
Foreign currency adjustments	2,537	(1,719)
Provision for excess and obsolete inventories	1,390	704
Provision for doubtful accounts, returns and discounts	1,966	988
Other non-cash adjustments, net	177	1,235
Changes in operating assets and liabilities:		
Accounts receivable	5,436	(20,521)
Inventories	(9,301)	(4,170)
Prepaid expenses and other assets	23,685	(5,703)
Accounts payable	(11,047)	(2,839)
Deferred revenue	6,066	8,002
Income taxes payable	(384)	(114)
Accrued and other liabilities	(14,961)	(10,536)
Net cash provided by (used in) operating activities	(2,419)	1,141
Cash flows from investing activities:		
Purchases of property and equipment	(26,176)	(4,973)
Net cash used in investing activities	(26,176)	(4,973)
Cash flows from financing activities:		
Proceeds from convertible debt	—	115,500
Payments of convertible debt	(25)	(109,603)
Payment of convertible debt issuance costs	(672)	(3,465)
Proceeds from other debts and finance leases	9,398	4,684
Repayment of other debts and finance leases	(6,342)	(6,387)
Proceeds from common stock issued to employees	5,227	5,573
Payment of tax withholding obligations related to net share settlements of restricted stock units	(1,384)	(1,278)
Net cash provided by financing activities	6,202	5,024
Effect of exchange rate changes on cash and cash equivalents	152	(486)
Net increase (decrease) in cash and cash equivalents	(22,241)	706
Cash and cash equivalents at beginning of period	93,058	65,989
Cash and cash equivalents at end of period	$ 70,817	$ 66,695
Supplemental disclosures of cash flow information:		
Income tax payments (refunds), net	$ (426)	$ 980
Interest payments, net	$ 3,216	$ 3,432
Supplemental schedule of non-cash investing and financing activities:		
Capital expenditures incurred but not yet paid	$ 3,284	$ 543
Issuance of warrant	$ —	$ 16,142
Fair value of Convertible Senior Notes due 2022 used to settle Convertible Senior Notes due 2020	$ 44,357	$ —

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 November 2, 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 nine months ended September 25, 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 No. 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 No. 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 2020, the FASB issued ASU No. 2020-06, Accounting for Convertible Instruments in an Entity’s Own Equity, which simplifies the accounting for convertible instruments and contracts on an entity’s own equity. Among other changes, ASU No. 2020-06 removes from U.S. GAAP the liability and equity separation model for convertible instruments with a cash conversion feature, and as a result, after adoption, entities will no longer separately present in equity an embedded conversion feature for such debt. Similarly, the embedded conversion feature will no longer be amortized into income as interest expense over the life of the instrument. Instead, entities will account for a convertible debt instrument wholly as debt unless (1) a convertible instrument contains features that require bifurcation as a derivative under ASC Topic 815, Derivatives and Hedging, or (2) a convertible debt instrument was issued at a substantial premium. Among other potential impacts, this change is expected to reduce reported interest expense, increase reported net income, and result in a reclassification of certain conversion feature balance sheet amounts from stockholders’ equity to liabilities as it relates to the Company’s convertible senior notes. Additionally, ASU No. 2020-06 requires the application of the if-converted method to calculate the impact of convertible instruments on diluted earnings per share (EPS), which would result in an increase in diluted shares for purposes of calculating diluted EPS for the Company. The new ASU is effective for interim and annual periods beginning after December 15, 2021, with early adoption permitted after December 15, 2020. Adoption of the new ASU can either be on a modified retrospective or full retrospective basis. The Company is currently evaluating the timing, method of adoption and overall impact of this standard on its consolidated financial statements.

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	
	September 25, 2020	December 31, 2019
Contract assets	$ 4,067	$ 13,969
Deferred revenue	49,650	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 September 25, 2020 and September 27, 2019, the Company recognized revenue of $5.7 million and $6.1 million, respectively, that was included in the deferred revenue balance at the beginning of each fiscal year. During the nine months ended September 25, 2020 and September 27, 2019, the Company recognized revenue of $32.4 million and $37.4 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 September 25, 2020, the aggregate amount of the transaction price under this agreement allocated to the remaining performance obligations is $85.5 million, and the Company will recognize this revenue as the related performance obligations are delivered over the next eleven quarters.

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		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Operating lease cost	$ 1,873	$ 2,641	$ 6,556	$ 6,868
Variable lease cost	681	837	2,183	2,360
Total lease cost	$ 2,554	$ 3,478	$ 8,739	$ 9,228

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

	Three months ended		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Cash paid for amounts included in the measurement of operating lease liabilities	$ 3,134	$ 2,655	$ 7,772	$ 6,937
Right-of-use assets obtained in exchange for operating lease obligations	$ 69	$ —	$ 1,740	$ 10,305

During the second quarter of fiscal 2019, the Company entered into a lease for a new headquarters facility. The new lease commenced in May 2019, as the facility was made available to the Company for constructing leasehold improvements. During the third quarter of 2020, the Company completed the construction of leasehold improvements for the new headquarters facility and exited the lease for the old headquarters.

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 September 25, 2020 that the EDC investment was impaired. The Company's maximum exposure to loss from the EDC's investment at September 25, 2020 and December 31, 2019 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.

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

		Three months ended		Nine months ended	
	Financial Statement Location	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Derivatives not designated as hedging instruments:					
Gains (losses) recognized in operations	Other expense, net	$ 618	$ (1,357)	$ 285	$ (1,966)

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

	September 25, 2020	December 31, 2019
Derivatives not designated as hedging instruments:		
Purchase	$ 36,107	$ 14,806
Sell	$ —	$ 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	September 25, 2020	December 31, 2019	Balance Sheet Location	September 25, 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	$ 273	$ 112
Total derivatives		$ —	$ 43		$ 273	$ 112

Offsetting of Derivative 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 September 25, 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	$ 273	—	$ 273

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 September 25, 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 September 25, 2020				
Accrued and other current liabilities				
Derivative liabilities	$ —	$ 273	$ —	$ 273
Total liabilities measured and recorded at fair value	$ —	$ 273	$ —	$ 273
	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 $0.1 million and $0.8 million as of September 25, 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 4.375% Convertible Senior Notes due 2022, which were issued in June 2020 (the "2022 Notes"), was approximately $42.9 million as of September 25, 2020. The fair value of the Company's 4.00% Convertible Senior Notes due 2020 (the "2020 Notes") was approximately $8.7 million and $66.8 million as of September 25, 2020 and December 31, 2019, respectively. The fair value of Company's 2.00% Convertible Senior Notes due 2024 (the "2024 Notes") was approximately $105.8 million and $131.9 million as of September 25, 2020 and December 31, 2019, respectively. The 2020 Notes, 2022 Notes and 2024 Notes are classified as Level 2 valuations. The Company's other debts, including debt 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 September 25, 2020 and December 31, 2019 were in the aggregate of $21.1 million and $17.2 million, respectively. (See Note 11, "Convertible Notes, Other debts and Finance Leases" for additional information).

During the nine months ended September 25, 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):

	September 25, 2020	December 31, 2019
Accounts receivable, net:		
Accounts receivable	$ 84,240	$ 91,513
Less: allowances for doubtful accounts and sales returns	(2,887)	(3,013)
Total	$ 81,353	$ 88,500

	September 25, 2020	December 31, 2019
Inventories, net:		
Raw materials	$ 4,791	$ 4,179
Work-in-process	1,954	1,633
Finished goods	21,784	14,080
Service-related spares	8,273	9,150
Total	$ 36,802	$ 29,042

	September 25, 2020	December 31, 2019
Prepaid expenses and other current assets:		
French R&D tax credits receivable(1)	$ 6,170	$ 7,343
Contract assets(2)	4,067	13,969
Deferred cost of revenue	2,062	2,631
Prepaid maintenance, royalty and property taxes	2,718	1,594
Capitalized sales commissions	1,502	1,309
Other	8,552	13,916
Total	$ 25,071	$ 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 total R&D tax credits receivable at September 25, 2020 were approximately $19.5 million and are expected to be recoverable from 2021 through 2024. See "Other long-term assets" for the long-term portion of the French R&D tax credits receivable.

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

	September 25, 2020	December 31, 2019
Property and equipment, net:		
Machinery and equipment	$ 71,874	$ 75,229
Capitalized software	36,345	34,190
Construction in progress*	1,870	5,506
Leasehold improvements	37,436	15,170
Furniture and fixtures	2,779	6,036
Property and equipment, gross	150,304	136,131
Less: accumulated depreciation and amortization	(108,389)	(113,203)
Total	$ 41,915	$ 22,928

*During the third quarter of 2020, the Company completed construction of its leasehold improvements for the new headquarters facility and transferred $22.9 million of assets from Construction in progress to Leasehold improvements.

	September 25, 2020	December 31, 2019
Other long-term assets:		
French R&D tax credits receivable[3]	$ 13,345	$ 15,899
Deferred tax assets	9,876	10,575
Equity investment	3,593	3,593
Other	9,438	11,238
Total	$ 36,252	$ 41,305

(3) See “Prepaid expenses and other current assets” for details related to French R&D tax credits receivable.

	September 25, 2020	December 31, 2019
Accrued and other current liabilities:		
Accrued employee compensation and related expenses	$ 18,806	$ 19,454
Operating lease liability	6,653	8,881
Customer deposits	3,552	3,557
Accrued warranty	3,581	4,308
Accrued royalty payments	2,627	2,642
Accrued Avid litigation settlement	—	2,000
Contingent inventory reserves	1,323	2,208
Others	14,744	19,485
Total	$ 51,286	$ 62,535

	September 25, 2020	December 31, 2019
Other non-current liabilities:		
Operating lease liability	$ 23,833	$ 25,766
Deferred revenue	6,921	6,333
Others	10,450	9,155
Total	$ 41,204	$ 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 were no impairment indicators identified as of September 25, 2020.

The changes in the carrying amount of goodwill for the nine months ended September 25, 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	1,662	(17)	1,645
Balance as of September 25, 2020	$ 180,644	$ 60,781	$ 241,425

Intangible Assets, Net

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

	September 25, 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	n/a	$ 30,657	$ (30,657)	$ —	$ 31,707	$ (30,757)	$ 950
Customer relationships/contracts	0.4	44,715	(43,459)	1,256	44,577	(41,092)	3,485
Trademarks and trade names	n/a	635	(635)	—	609	(583)	26
Maintenance agreements and related relationships	n/a	5,500	(5,500)	—	5,500	(5,500)	—
Order backlog	n/a	3,137	(3,137)	—	3,085	(3,085)	—
Total identifiable intangibles, net		$ 85,694	$ (84,438)	$ 1,256	$ 85,478	$ (81,017)	$ 4,461

Amortization expense for the identifiable purchased intangible assets for the three and nine months ended September 25, 2020 and September 27, 2019 was allocated as follows (in thousands):

	Three months ended		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Included in cost of revenue	$ —	$ 1,295	$ 950	$ 3,885
Included in operating expenses	752	785	2,264	2,357
Total amortization expense	$ 752	$ 2,080	$ 3,214	$ 6,242

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 three months)	$ —	$ 754	$ 754
2021	—	502	502
Total future amortization expense	$ —	$ 1,256	$ 1,256

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 plan expenses 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		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Restructuring and related charges in:				
Cost of revenue	$ 302	$ 331	$ 231	$ 723
Operating expenses - Restructuring and related charges	814	861	1,572	1,194
Total restructuring and related charges	$ 1,116	$ 1,192	$ 1,803	$ 1,917

As of September 25, 2020 and December 31, 2019, the Company's total restructuring liability was $2.8 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 $0.9 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 nine months ended September 25, 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	—	1,679	77	47	1,803
Cash payments	(681)	(2,121)	(766)	(77)	(3,645)
Others	—	(161)	(36)	—	(197)
Balance at September 25, 2020	$ 39	$ 2,691	$ 81	$ —	$ 2,811

NOTE 11: CONVERTIBLE NOTES, OTHER DEBTS AND FINANCE LEASES

4.375% Convertible Senior Notes due 2022

In June 2020, the Company issued the 2022 Notes with an aggregate principal amount of $37.7 million in a non-cash exchange for its 2020 Notes with an equal principal amount pursuant to an indenture, dated June 2, 2020 (the "2022 Notes Indenture"), by and between the Company and U.S. Bank National Association, as trustee. The 2022 Notes bear interest at a rate of 4.375% per year, payable in cash on June 1 and December 1 of each year, commencing December 1, 2020. The 2022 Notes will mature on December 1, 2022, unless earlier repurchased by the Company, redeemed by the Company or converted pursuant to their terms.

The 2022 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 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 as set forth in the 2022 Notes Indenture.

Prior to the close of business on the business day immediately preceding September 1, 2022, the 2022 Notes will be convertible only under the following circumstances: (1) during any fiscal quarter commencing after the fiscal quarter ending on June 26, 2020 (and only during such fiscal quarter), if the last reported sale price of Common Stock for at least 20 trading days (whether or not consecutive) during a period of 30 consecutive trading days ending on the last trading day of the immediately preceding fiscal quarter is greater than or equal to 130% of the conversion price on each applicable trading day; (2) during the five business day period after any five consecutive trading day period (the "measurement period") in which the trading price per $1,000 principal amount of 2022 Notes for each trading day of the measurement period was less than 98% of the product of the last reported sale price of Common Stock and the conversion rate on each such trading day; or (3) upon the occurrence of specified corporate events. Commencing on September 1, 2022 until the close of business on the second scheduled trading day immediately preceding the maturity date, the 2022 Notes will be convertible in multiples of $1,000 principal amount regardless of the foregoing circumstances.

As the 2022 Notes were issued in exchange for the 2020 Notes, which was accounted for as an extinguishment, the 2022 Notes were initially accounted for at fair value, which was estimated to be $44.4 million. In accordance with the accounting guidance on embedded conversion features, the conversion feature associated with the 2022 Notes was initially valued at $8.3 million and bifurcated from the host debt instrument and recorded in "Additional paid-in capital". The remaining amount of $36.0 million, which represents the fair value of the liability component of the 2022 Notes, was recorded as the initial carrying value of the 2022 Notes. The initial debt discount on the 2022 Notes is $1.7 million, calculated as the difference between the stated principal amount of $37.7 million and the initial carrying value of the liability component of $36.0 million. The debt discount is being amortized to interest expense at the effective interest rate over the contractual terms of the 2022 Notes. The following table presents the components of the 2022 Notes as of September 25, 2020 (in thousands, except for years and percentages):

		September 25, 2020
Liability:		
Principal amount	$	37,707
Less: Debt discount, net of amortization		(1,521)
Less: Debt issuance costs, net of amortization		(477)
Carrying amount	$	35,709
Remaining amortization period (years)		2.2
Effective interest rate on liability component		6.95%

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 September 25, 2020 and December 31, 2019 (in thousands, except for years and percentages):

	September 25, 2020	December 31, 2019
Liability:		
Principal amount	$ 115,500	$ 115,500
Less: Debt discount, net of amortization	(20,415)	(23,652)
Less: Debt issuance costs, net of amortization	(2,776)	(3,219)
Carrying amount	$ 92,309	$ 88,629
Remaining amortization period (years)	3.9	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 in the three and nine months ended September 27, 2019.

In June 2020, the Company exchanged $37.7 million in aggregate principal amount of the 2020 Notes for $37.7 million in aggregate principal amount of its 2022 Notes. Following the exchange, there was a total of $8.1 million aggregate principal amount of the 2020 Notes remaining outstanding. The exchange of the 2020 Notes was accounted for as a debt extinguishment. The fair value of the consideration transferred in the form of the 2022 Notes of $44.4 million was allocated between the equity and liability components of the 2020 Notes by determining the fair value of the liability component immediately prior to the extinguishment, which was $37.4 million. The remaining amount of $7.0 million was allocated to additional paid-in capital. The exchange of the 2020 Notes resulted in the recognition of a $0.8 million loss on debt extinguishment for nine months ended September 25, 2020 which is recorded in "loss on debt extinguishment" in the Condensed Consolidated Statement of Operations.

The remaining 2020 Notes are convertible into cash, shares of the Common Stock, or a combination thereof, at the Company's election, at a conversion rate of 173.9978 shares of Common Stock per $1,000 principal amount of 2020 Notes (which is equivalent to a 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.

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. As of September 25, 2020, the 2020 Notes were convertible because this condition had been met.

In accordance with the accounting guidance on embedded conversion features, the conversion feature associated with the issuance of 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 September 25, 2020 and December 31, 2019 (in thousands, except for years and percentages):

	September 25, 2020	December 31, 2019
Liability:		
Principal amount	$ 8,053	$ 45,785
Less: Debt discount, net of amortization	(72)	(2,151)
Less: Debt issuance costs, net of amortization	(9)	(259)
Carrying amount	$ 7,972	$ 43,375
Remaining amortization period (years)	0.2	0.9
Effective interest rate on liability component	9.94%	9.94%

The 2020 Notes, the 2022 Notes or the 2024 Notes become convertible during a fiscal quarter when 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 is greater than or equal to 130% of the conversion price of the respective notes on each applicable trading day. When this occurs, the Company reclassifies the unamortized debt discount for the applicable notes from "Additional paid-in-capital" to convertible debt in the mezzanine equity section in the Condensed Consolidated Balance Sheet as of that period end. The 2020 Notes were convertible during the fiscal quarter ended March 27, 2020, as this condition had been met, and again became convertible commencing September 1, 2020. The 2022 Notes and the 2024 Notes were not convertible as of September 25, 2020 or during any prior fiscal quarters.

The following table presents interest expense recognized for the 2020 Notes, 2022 Notes and the 2024 Notes (in thousands):

	Three months ended		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Contractual interest expense	$ 1,070	$ 1,235	$ 3,141	$ 3,800
Amortization of debt discount	1,366	1,513	4,549	4,425
Amortization of debt issuance costs	212	185	638	535
Total interest expense recognized	$ 2,648	$ 2,933	$ 8,328	$ 8,760

Other Debts and Finance Leases

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

	September 25, 2020	December 31, 2019
Financing from French government agencies related to various government incentive programs (1)	$ 14,533	$ 16,566
Relief loans (2)	6,375	—
Term loans	179	587
Obligations under finance leases	22	71
Total debt obligations	21,109	17,224
Less: current portion	(11,402)	(6,713)
Long-term portion	$ 9,707	$ 10,511

(1) As of September 25, 2020 and December 31, 2019, loans backed by French R&D tax credit receivables were $13.0 million and $15.1 million, respectively. As of September 25, 2020, the French Subsidiary had an aggregate of $19.5 million of R&D tax credit receivables from the French government from 2021 through 2024. 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 2021 through 2023. The remaining loans of $1.5 million at September 25, 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.
(2) Refer to the below section "Relief Loans" for the description of these loans.

Future minimum repayments

The table below presents the future minimum repayments of debts and finance lease obligations in France as of September 25, 2020 (in thousands):

Years ending December 31,	Finance lease obligations	Other Debt obligations
2020 (remaining three months)	$ —	$ 300
2021	22	11,183
2022	—	5,159
2023	—	3,670
2024	—	117
Thereafter	—	658
Total	$ 22	$ 21,087

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. As of September 25, 2020, the Credit Agreement provided 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. On October 30, 2020, the Company amended the Credit Agreement to, among other things, extend the maturity date to October 30, 2022 and amend the interest rates for the revolving loans. See Note 18, "Subsequent Events" for additional information regarding the amendment. 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.

As of September 25, 2020, the revolving loans bore 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 September 25, 2020, the Company was in compliance with the covenants under the Credit Agreement.

As of September 25, 2020, there was $0.2 million of outstanding letters of credit issued under the Credit Agreement. There were no revolving borrowings under the Credit Agreement as of September 25, 2020.

As of September 25, 2020, the Company has outstanding unsecured letters of credit issued by other banks in the amount of $2.4 million.

Relief Loans

In June 2020, Harmonic France was granted a loan from Société Générale S.A. (the "SG Loan") in the aggregate amount of 5,000,000 Euros, pursuant to a state guarantee program introduced in March 2020 to provide relief to companies from the financial consequences of the COVID-19 pandemic. The SG Loan initially matures in 12 months (with an option to extend for up to five years) and bears an effective interest rate of 0.51% per annum payable annually. The SG Loan may be repaid at any time prior to maturity with no repayment penalties. There are no restrictions on the use of funds from the SG Loan. The purpose of the funds from the SG Loan is to allow the preservation of activity and employment in France. As of September 25, 2020, there was $5.8 million outstanding under the loan, which is recorded in "Other debts and finance lease obligations, current" in the Condensed Consolidated Balance Sheets.

In April 2020, Harmonic International GmbH was granted a loan of CHF 500,000 from UBS Switzerland AG (the "UBS Loan") in accordance with Article 3 of the COVID-19 joint security regulation with an initial maturity of five years. The exclusive purpose of the UBS Loan is to guarantee the Company's current liability requirements. The UBS Loan does not bear any interest. The UBS Loan is to be repaid in full no later than April 8, 2025. As of September 25, 2020, there was $0.5 million outstanding under the loan, which is recorded in "Other debts and finance lease obligations, long-term" in the Condensed Consolidated Balance Sheets.

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.

The Company's stockholders approved an amendment to the ESPP at the Company's 2020 annual meeting of stockholders (the "2020 Annual Meeting") to increase the number of shares of common stock reserved for issuance under the ESPP by 1,000,000 shares. The Company's stockholders also approved an amendment to the 1995 Stock Plan at the 2020 Annual Meeting to increase the number of shares of common stock reserved for issuance thereunder by 4,000,000 shares. As of September 25, 2020, there were 1.2 million and 6.9 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 nine months ended September 25, 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	(208)	5.82		
Balance at September 25, 2020	1,553	5.84	1.44	$ 1,004
Vested and exercisable	1,553	$ 5.84	1.44	$ 1,004

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 nine months ended September 25, 2020.

There were no realized tax benefits attributable to stock options exercised in jurisdictions where this expense is deductible for tax purposes for the nine months ended September 25, 2020 and September 27, 2019, respectively.

Restricted Stock Units (“RSUs”) Activities

The following table summarizes the Company’s RSUs activities and related information during the nine months ended September 25, 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	2,900	5.84
Vested	(2,496)	5.39
Forfeited	(389)	4.57
Balance at September 25, 2020	3,616	$ 5.63

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 507,555 shares of PRSUs to certain employees for the nine months ended September 25, 2020, all of which were fully vested at the time of grant to settle amounts earned under the Company’s 2019 and 2020 incentive bonus plans. The stock-based compensation recognized for these PRSUs was $3.2 million for the nine months ended September 25, 2020. There were 120,261 PRSUs issued to settle amounts earned under the Company's incentive plans in the nine months ended September 27, 2019.

In the first quarter of 2020, the Company granted 67,910 PRSUs 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 and nine months ended September 25, 2020 was $0.1 million and $0.5 million, respectively. The unrecognized stock-based compensation of the PRSUs as of September 25, 2020 was $0.2 million which includes $0.1 million of unrecognized expense from PRSUs granted in 2019. A total of 85,000 PRSUs were granted in 2019, out of which 40,000 shares have vested as of September 25, 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 and nine months ended September 25, 2020 was $0.2 million and $0.5 million, respectively. The unrecognized stock-based compensation of the MRSUs as of September 25, 2020 was $1.4 million which includes $0.6 million of unrecognized expense from MRSUs granted in 2019. None of these MRSUs have vested as of September 25, 2020. The stock-based compensation recognized for the MRSUs for the three and nine months ended September 27, 2019 was $0.1 million and $0.2 million respectively. The unrecognized stock-based compensation of the MRSUs as of September 27, 2019 was $0.9 million.

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		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Service cost	$ 65	$ 57	$ 187	$ 171
Interest cost	9	20	27	59
Net periodic benefit cost	$ 74	$ 77	$ 214	$ 230

The present value of the Company’s pension obligation as of September 25, 2020 was $5.7 million, of which $0.1 million was reported as a component of “Accrued and other current liabilities” and $5.6 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 nine months ended September 25, 2020 and September 27, 2019 were $243,000 and $245,000, respectively.

Stock-based Compensation

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

	Three months ended		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Stock-based compensation in:				
Cost of revenue	$ 284	$ 410	$ 1,366	$ 830
Research and development expense	1,110	1,120	3,720	2,318
Selling, general and administrative expense	2,536	2,566	8,651	5,571
Total stock-based compensation in operating expense	3,646	3,686	12,371	7,889
Total stock-based compensation	$ 3,930	$ 4,096	$ 13,737	$ 8,719

As of September 25, 2020, total unrecognized stock-based compensation cost related to unvested RSUs was $16.1 million and is expected to be recognized over a weighted-average period of approximately 1.75 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			
	December 31, 2020	July 1, 2020	December 31, 2019	July 1, 2019
Expected term (years)	0.5	0.5	0.5	0.5
Volatility	62%	50%	33%	43%
Risk-free interest rate	0.2%	1.6%	2.1%	2.5%
Expected dividends	0.0%	0.0%	0.0%	0.0%
Estimated weighted average fair value per share at purchase date	$ 1.54	$ 2.26	$ 1.36	$ 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		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Income (loss) before income taxes	$ (4,595)	$ 12,260	$ (39,643)	$ (10,513)
Provision for income taxes	786	603	3,093	981
Effective income tax rate	(17.1)%	4.9%	(7.8)%	(9.3)%

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 its 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 (7.8)% for the nine months ended September 25, 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 (9.3)% for the nine months ended September 27, 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 nine months ended September 27, 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 period.

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), concluding that parties in an intercompany cost-sharing arrangement are not required to share stock-based compensation expenses. 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 which was denied on June 22, 2020. 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 September 25, 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 on the Condensed Consolidated Statements of Operations. The net interest and penalty charges recorded as of September 25, 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 recognized 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 INCOME (LOSS) PER SHARE

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

	Three months ended		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Numerator:				
Net income (loss)	$ (5,381)	$ 11,657	$ (42,736)	$ (11,494)
Denominator:				
Weighted average number of common shares outstanding				
Basic	97,563	89,964	96,623	89,030
Effect of dilutive securities from stock options, restricted stock units and ESPP	—	1,855	—	—
Effect of dilutive securities from convertible debt	—	3,468	—	—
Effect of dilutive securities from warrant	—	2,309	—	—
Diluted shares	97,563	97,596	96,623	89,030
Net income (loss) per share:				
Basic	$ (0.06)	$ 0.13	$ (0.44)	$ (0.13)
Diluted	$ (0.06)	$ 0.12	$ (0.44)	$ (0.13)

Basic net loss per share was the same as diluted net loss per share for the three and nine months ended September 25, 2020 and nine months ended September 27, 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		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Stock options	1,558	678	1,637	2,699
RSUs	3,336	8	3,066	2,860
Stock purchase rights under the ESPP	525	—	516	475
Convertible Debt	—	—	390	1,156
Warrants (1)	—	—	—	4,128
Total	5,419	686	5,609	11,318

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

The Company’s intent is to settle the principal amount of the 2020 Notes, the 2022 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 1,400,522 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 6,557,739 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 2022 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, the 2022 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 and nine months ended September 25, 2020, the Company recorded $0.4 million and $1.3 million, respectively, as a reduction to net revenues in connection with amortization of the Warrant. During the three and nine months ended September 27, 2019, the Company recorded $13.1 million, 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 the Company’s 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		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Video				
Revenue	$ 54,641	$ 60,055	$ 156,466	$ 198,856
Gross profit	29,825	34,646	83,756	114,692
Operating income (loss)	(1,699)	(1,696)	(12,203)	4,731
Cable Access				
Revenue	$ 40,251	$ 55,670	$ 90,837	$ 81,840
Gross profit	19,682	42,925	42,224	52,056
Operating income	5,876	31,611	1,733	18,523
Total				
Revenue	$ 94,892	$ 115,725	$ 247,303	$ 280,696
Gross profit	49,507	77,571	125,980	166,748
Operating income (loss)	$ 4,177	$ 29,915	$ (10,470)	$ 23,254

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

	Three months ended		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Total segment operating income (loss)	$ 4,177	$ 29,915	$ (10,470)	$ 23,254
Unallocated corporate expenses	(1,116)	(1,190)	(1,803)	(1,916)
Stock-based compensation	(3,930)	(4,096)	(13,737)	(8,719)
Amortization of intangibles	(752)	(2,080)	(3,214)	(6,242)
Income (loss) from operations	(1,621)	22,549	(29,224)	6,377
Non-operating expense, net	(2,974)	(10,289)	(10,419)	(16,890)
Income (loss) before income taxes	$ (4,595)	$ 12,260	$ (39,643)	$ (10,513)

Unallocated Corporate Expenses

Together with amortization of intangibles and stock-based compensation, the Company does not allocate restructuring and related charges to the operating income (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		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019

	Three months ended		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Net Revenue (in thousands) [1]				
United States	$ 44,933	$ 73,566	$ 114,559	$ 139,391
Other Countries	49,959	42,159	132,744	141,305
Total	$ 94,892	$ 115,725	$ 247,303	$ 280,696

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

Market Information

	Three months ended		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Market (in thousands)				
Service Provider	$ 59,083	$ 77,886	$ 145,011	$ 165,536
Broadcast and Media	35,809	37,839	102,292	115,160
Total	$ 94,892	$ 115,725	$ 247,303	$ 280,696

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		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Balance at beginning of period	$ 3,818	$ 4,802	$ 4,314	$ 4,869
Accrual for current period warranties	673	1,170	2,342	4,143
Warranty costs incurred	(910)	(1,391)	(3,075)	(4,431)
Balance at end of period	$ 3,581	$ 4,581	$ 3,581	$ 4,581

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 $50.9 million of non-cancelable commitments to purchase inventories and other commitments as of September 25, 2020.

Standby Letters of Credit and Guarantees

As of September 25, 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 September 25, 2020 and December 31, 2019, there were $0.2 million of outstanding letters of credit issued under the Credit Agreement. There were no revolving borrowings under the Credit Agreement as of September 25, 2020 and December 31, 2019.

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 $2.3 million guarantee issued by the Company. There were no amounts outstanding under this credit facility as of September 25, 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 September 25, 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, audits of royalty payments for licensed technology 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.

NOTE 18. SUBSEQUENT EVENTS

Second Amendment to Credit Agreement

On October 30, 2020, the Company amended the Credit Agreement to, among other things, extend the maturity date to October 30, 2022 and amend the interest rates for the revolving loans. As amended, the revolving loans bear interest, at the Company's election, at a floating rate per annum equal to either (1) 2.00% 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) 3.00% plus LIBOR for an interest period of one, two or three months.

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 48 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 certain deployments and new engagements with some cable operators in the first half of 2020. In our Video segment, sales of video appliances and integration fell 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 in the first half of 2020. In the third quarter of fiscal 2020, we experienced an increase in sales activities, transactions and deployments in both business segments due to the loosening of certain COVID-19 restrictions, and customer adaptation to such restrictions. 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 business travel, 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 evolving severity of the pandemic in different countries and regions of the world, 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 and nine months ended September 25, 2020 accounted for 54% and 47% of our net revenue, respectively, compared to 57% and 46% for the corresponding periods 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 and nine months ended September 25, 2020, Comcast accounted for 20% and 19% of our revenue, respectively, and Vodafone accounted for 12% and 10% of our net revenue. During the three and nine months ended September 27, 2019, Comcast accounted for 44% and 24% 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 $20.8 million, or 18%, in the three months ended September 25, 2020, compared to the corresponding period in 2019, due to a decrease of $15.4 million in Cable Access segment revenue and a decrease in Video segment revenue of $5.4 million. Our net revenue decreased $33.4 million, or 12%, in the nine months ended September 25, 2020, compared to the corresponding period in 2019, primarily due to a decrease in Video segment revenue of $42.4 million, partially offset by an increase of $8.9 million in Cable Access segment revenue. The decrease in Cable Access segment revenue in the three months ended September 25, 2020, was primarily due to the recognition of $37.5 million in software license revenue from the Comcast CableOS software license agreement during the third quarter of fiscal 2019, partially offset by the addition of new customer deployments and increased penetration of existing customers. The increase in Cable Access segment revenue in the nine months ended September 25, 2020 was primarily due to significant progress ramping our CableOS solutions over the past year. The decrease in Video segment revenue in the three and nine months ended September 25, 2020 was primarily due to impact from the COVID-19 pandemic, as we experienced reduced appliance demand beginning 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 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 September 25, 2020 was $70.8 million. During the nine months ended September 25, 2020, we used $2.4 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"). During the second quarter of fiscal 2020, we exchanged $37.7 million of the 2020 Notes for 4.375% Convertible Senior Notes due 2022 (the "2022 Notes"). Additionally, during the second quarter of fiscal 2020, we received $5.6 million from Société Générale S.A. in France and $0.5 million from UBS Switzerland AG in Switzerland in connection with relief loan programs related to the COVID-19 pandemic. 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 September 25, 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 November 2, 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 nine months ended September 25, 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.

RESULTS OF OPERATIONS

Net Revenue

The following table presents the breakdown of revenue by segment for the three and nine months ended September 25, 2020 and September 27, 2019 (in thousands, except percentages):

	Three months ended				Nine months ended			
	September 25, 2020	September 27, 2019	Q3 FY20 vs Q3 FY19		September 25, 2020	September 27, 2019	Q3 FY20 YTD vs Q3 FY19 YTD	
Segment:								
Video	$ 54,641	$ 60,055	$ (5,414)	(9)%	$ 156,466	$ 198,856	$ (42,390)	(21)%
Cable Access	40,251	55,670	(15,419)	(28)%	90,837	81,888	8,949	11 %
Total segment revenue	94,892	115,725	(20,833)	(18)%	247,303	280,744	(33,441)	(12)%
Amortization of warrants	—	—	—	— %	—	(48)	48	(100)%
Total net revenue	$ 94,892	$ 115,725	$ (20,833)	(18)%	$ 247,303	$ 280,696	$ (33,393)	(12)%
Segment revenue as a % of total segment revenue:								
Video	58%	52%			63%	71%		
Cable Access	42%	48%			37%	29%		

The following table presents the breakdown of revenue by geographical region for the three and nine months ended September 25, 2020 and September 27, 2019 (in thousands, except percentages):

	Three months ended				Nine months ended			
	September 25, 2020	September 27, 2019	Q3 FY20 vs Q3 FY19		September 25, 2020	September 27, 2019	Q3 FY20 YTD vs Q3 FY19 YTD	
Geography:								
Americas	$ 54,521	$ 78,699	$ (24,178)	(31)%	$ 134,478	$ 155,324	$ (20,846)	(13)%
EMEA	29,771	24,322	5,449	22 %	82,301	77,603	4,698	6 %
APAC	10,600	12,704	(2,104)	(17)%	30,524	47,769	(17,245)	(36)%
Total net revenue	$ 94,892	$ 115,725	$ (20,833)	(18)%	$ 247,303	$ 280,696	$ (33,393)	(12)%
Regional revenue as a % of total net revenue:								
Americas	58%	68%			55%	55%		
EMEA	31%	21%			33%	28%		
APAC	11%	11%			12%	17%		

Our Video segment net revenue decreased 9% and 21% in the three and nine months ended September 25, 2020, respectively, compared to the corresponding periods in 2019, which was largely due to the impact from the COVID-19 pandemic, as we experienced reduced appliance demand beginning in March 2020. 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 decreased 28% in the three months ended September 25, 2020 compared to the corresponding period in 2019, primarily due to the recognition of $37.5 million in software license revenue from the Comcast CableOS software license agreement during the third quarter of fiscal 2019, partially offset by the addition of new customer deployments and increased penetration of existing customers. Our Cable Access segment revenue increased 11% in the nine months ended September 25, 2020, respectively, compared to the corresponding period in 2019, primarily due to significant progress ramping our CableOS solutions over the past year.

Net revenue in the Americas decreased 31% and 13% in the three and nine months ended September 25, 2020, respectively, compared to the corresponding periods in 2019, primarily due to the recognition of $37.5 million in software license revenue from the Comcast CableOS software license agreement during the third quarter of fiscal 2019, partially offset by the addition of new customer deployments and increased penetration of existing customers.

EMEA net revenue increased 22% and 6% in the three and nine months ended September 25, 2020, respectively, compared to the corresponding periods in 2019, primarily due to ramping of our CableOS solutions in the region.

APAC net revenue decreased 17% and 36% in the three and nine months ended September 25, 2020, respectively, compared to the corresponding periods in 2019, primarily due to the impacts of the COVID-19 pandemic being felt throughout APAC as shutdowns continued in the region 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 and nine months ended September 25, 2020 and September 27, 2019 (in thousands, except percentages):

	Three months ended		Q3 FY20 vs Q3 FY19		Nine months ended		Q3 FY20 YTD vs Q3 FY19 YTD	
	September 25, 2020	September 27, 2019			September 25, 2020	September 27, 2019		
Gross profit	$ 48,924	$ 75,540	$ (26,616)	(35)%	$ 123,435	$ 161,317	$ (37,882)	(23)%
As a percentage of net revenue (“gross margin”)	51.6%	65.3%	(13.7)%		49.9%	57.5%	(7.6)%	

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 profit in the three and nine months ended September 25, 2020 decreased 35% and 23%, respectively, compared to the corresponding periods in 2019 primarily due to the recognition of $37.5 million in software license gross profit from the Comcast CableOS software license agreement during the third quarter of fiscal 2019, offset by increased gross profit from new CableOS customer deployments and increased penetration of existing CableOS customers and due to the impact reduced Video revenues in 2020.

Gross margin in the three and nine months ended September 25, 2020 decreased 13.7% and 7.6%, respectively, compared to the corresponding periods in 2019. Cable Access gross margins decreased in the three and nine months ended September 25, 2020 primarily due to the recognition of $37.5 million in software license revenue from the Comcast CableOS software license agreement during the third quarter of fiscal 2019, offset by improved product mix. Video gross margins decreased in the three and nine months ended September 25, 2020 primarily due to product 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 and nine months ended September 25, 2020 and September 27, 2019 (in thousands, except percentages):

	Three months ended		Q3 FY20 vs Q3 FY19		Nine months ended		Q3 FY20 YTD vs Q3 FY19 YTD	
	September 25, 2020	September 27, 2019			September 25, 2020	September 27, 2019		
Research and development	$ 20,206	$ 20,197	$ 9	—%	$ 61,827	$ 62,911	$ (1,084)	(2)%
As a percentage of net revenue	21.3%	17.5%			25.0%	22.4%		

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 remained relatively flat in the three and nine months ended September 25, 2020, compared to the corresponding periods in 2019, primarily due to a decrease in expenses as a result of our continuing transformation from a capital-intensive hardware development model to a predominantly software development model, and lower travel and entertainment expenses as a result of the COVID-19 pandemic. These decreases were mostly offset by higher employee compensation costs due to headcount increases, higher outside consulting spending attributable to our Cable Access segment, and for the nine months ended September 25, 2020, higher stock-based compensation expense related to performance-based RSUs.

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 and nine months ended September 25, 2020 and September 27, 2019 (in thousands, except percentages):

	Three months ended		Q3 FY20 vs Q3 FY19		Nine months ended		Q3 FY20 YTD vs Q3 FY19 YTD	
	September 25, 2020	September 27, 2019			September 25, 2020	September 27, 2019		
Selling, general and administrative	$ 28,773	$ 31,148	$ (2,375)	(8)%	$ 86,996	$ 88,478	$ (1,482)	(2)%
As a percentage of net revenue	30.3%	26.9%			35.2%	31.5%		

Selling, general and administrative expenses decreased 8% and 2% in the three and nine months ended September 25, 2020, respectively, compared to the corresponding periods in 2019. The decreases in both the three- and nine-month periods are primarily due to lower travel, entertainment and trade show expenses due to the COVID-19 pandemic and lower commissions due to lower revenue and gross profit. The decrease in the nine months ended September 25, 2020 was partially offset by an increase in stock-based compensation related to performance-based RSUs.

Segment Operating Income (Loss)

The following table presents a breakdown of operating income (loss) by segment for the three and nine months ended September 25, 2020 and September 27, 2019 (in thousands, except percentages):

	Three months ended		Q3 FY20 vs Q3 FY19		Nine months ended		Q3 FY20 YTD vs Q3 FY19 YTD	
	September 25, 2020	September 27, 2019			September 25, 2020	September 27, 2019		
Video	$ (1,699)	$ (1,696)	$ (3)	— %	$ (12,203)	$ 4,731	$ (16,934)	(358)%
Cable Access	5,876	31,611	(25,735)	(81)%	1,733	18,571	(16,838)	(91)%
Total segment operating income (loss)	$ 4,177	$ 29,915	$ (25,738)	(86)%	$ (10,470)	$ 23,302	$ (33,772)	(145)%
Segment operating income (loss) as a % of segment revenue ("operating margin"):								
Video	(3.1)%	(2.8)%	(0.3)%		(7.8)%	2.4%	(10.2)%	
Cable Access	14.6 %	56.8 %	(42.2)%		1.9 %	22.7%	(20.8)%	

The operating margin for the Video segment in the three and nine months ended September 25, 2020 decreased 0.3% and 10.2%, respectively, compared to the corresponding periods in 2019 primarily due to the decrease in gross profits, partially offset by lower research and development, selling, general and administrative expenses.

The operating margin for the Cable Access segment decreased 42.2% and 20.8% in the three and nine months ended September 25, 2020, respectively, compared to the corresponding periods in 2019, primarily due to the recognition of $37.5 million in software license revenue from the Comcast CableOS software license agreement entered into with Comcast during the third quarter of fiscal 2019, offset by improved product mix.

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

	Three months ended		Nine months ended	
	September 25, 2020	September 27, 2019	September 25, 2020	September 27, 2019
Total segment operating income (loss)	$ 4,177	$ 29,915	$ (10,470)	$ 23,302
Amortization of warrants	—	—	—	(48)
Unallocated corporate expenses	(1,116)	(1,190)	(1,803)	(1,916)
Stock-based compensation	(3,930)	(4,096)	(13,737)	(8,719)
Amortization of intangibles	(752)	(2,080)	(3,214)	(6,242)
Income (loss) from operations	(1,621)	22,549	(29,224)	6,377
Non-operating expense, net	(2,974)	(10,289)	(10,419)	(16,890)
Income (loss) before income taxes	$ (4,595)	$ 12,260	$ (39,643)	$ (10,513)

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 (loss) 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 and nine months ended September 25, 2020 and September 27, 2019 (in thousands, except percentages):

	Three months ended		Q3 FY20 vs Q3 FY19		Nine months ended		Q3 FY20 YTD vs Q3 FY19 YTD	
	September 25, 2020	September 27, 2019			September 25, 2020	September 27, 2019		
Amortization of intangibles	$ 752	$ 785	$ (33)	(4)%	$ 2,264	$ 2,357	$ (93)	(4)%
As a percentage of net revenue	0.8%	0.7%			0.9%	0.8%		

The amortization of intangibles expense in the three and nine months ended September 25, 2020 remained relatively flat compared to the corresponding periods 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				Nine months ended			
	September 25, 2020	September 27, 2019	Q3 FY20 vs Q3 FY19		September 25, 2020	September 27, 2019	Q3 FY20 YTD vs Q3 FY19 YTD	
Restructuring and related charges in:								
Cost of revenue	$ 302	$ 331	$ (29)	(9)%	$ 231	$ 723	(492)	(68)%
Operating expenses-Restructuring and related charges	814	861	(47)	(5)%	1,572	1,194	378	32 %
Total restructuring and related charges	$ 1,116	$ 1,192	$ (76)	(6)%	$ 1,803	$ 1,917	(114)	(6)%

Restructuring and related charges in the three and nine months ended September 25, 2020 decreased by 6% for both periods compared to the corresponding periods in 2019 primarily due to lower severance and employee benefit costs recorded in conjunction with restructuring activities during the three and nine months ended of fiscal 2020.

Interest Expense, Net

Interest expense, net was $2.8 million and $8.8 million in each of the three and nine months ended September 25, 2020, respectively. Interest expense, net was $3.0 million and $8.9 million in each of the three and nine months ended September 27, 2019, respectively. Interest expense, net remained consistent compared to the corresponding periods in 2019, primarily because the higher amortization of debt discount and issuance costs for the 2024 Notes issued in September 2019 and the 2022 Notes issued in June 2020, 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.

Loss on Debt Extinguishment

The loss on debt extinguishment of $0.8 million in the nine months ended September 25, 2020, relates to the exchange of a portion of the 2020 Notes in June 2020. The loss on debt extinguishment of $5.7 million in the three and nine months ended September 27, 2019, relates to the repurchase of a portion of the 2020 Notes in September 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 $0.2 million and $0.8 million for the three and nine months ended September 25, 2020, respectively, compared to $1.6 million and $2.3 million for the three and nine months ended September 27, 2019, respectively. The decrease in Other expense, net during the three and nine months ended September 25, 2020, compared to the corresponding periods in 2019, was primarily due to lower foreign exchange losses resulting from the impact of the change in Euro against the U.S. dollar in 2020.

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 income taxes and the effective income tax rate for the three and nine months ended September 25, 2020 and September 27, 2019 (in thousands, except percentages):

	Three months ended		Q3 FY20 vs Q3 FY19		Nine months ended		Q3 FY20 YTD vs Q3 FY19 YTD	
	September 25, 2020	September 27, 2019			September 25, 2020	September 27, 2019		
Provision for income taxes	$ 786	$ 603	$ 183	30%	$ 3,093	$ 981	$ 2,112	215%
Effective income tax rate	(17.1)%	4.9%			(7.8)%	(9.3)%		

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 our 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 (7.8)% for the nine months ended September 25, 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 (9.3)% for the nine months ended September 27, 2019 was different from the U.S. federal statutory rate of 21%, primarily due to the geographical mix of income and losses, 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. In addition, during the nine months ended September 27, 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 period.

Liquidity and Capital Resources

As of September 25, 2020, our principal sources of liquidity consisted of cash and cash equivalents of $70.8 million, net accounts receivable of $81.4 million, our $25.0 million revolving credit facility with JPMorgan Chase Bank, N.A., and financing from French government agencies.

In June 2020, we exchanged $37.7 million in aggregate principal amount of the 2020 Notes for $37.7 million in aggregate principal amount of the 2022 Notes. The 2022 Notes bear interest at a rate of 4.375% per year, payable in cash on June 1 and December 1 of each year, commencing December 1, 2020. As of September 25, 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 $8.1 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 debt with French government agencies and to a lesser extent, with other financial institutions, primarily in France, in the aggregate of $14.7 million at September 25, 2020. In the second quarter of fiscal 2020, we received $5.6 million from Société Générale S.A. in France and $0.5 million from UBS Switzerland AG in Switzerland in connection with relief loan programs related to the COVID-19 pandemic. See Note 11, "Convertible notes, Other Debts and Finance Leases" of the notes to our Condensed Consolidated Financial Statements for additional information.

During the three and nine months ended September 25, 2020, we also deferred $0.5 million and $1.3 million, respectively, in employer's share of payroll taxes incurred from March 27, 2020 to December 31, 2020 under the "Coronavirus Aid, Relief, and Economic Security" Act that was signed into law in the United States on March 27, 2020.

Our cash and cash equivalents of $70.8 million as of September 25, 2020 consisted of bank deposits held throughout the world, of which $54.4 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 $70.8 million at September 25, 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):

	Nine months ended	
	September 25, 2020	September 27, 2019
Net cash provided by (used in):		
Operating activities	$ (2,419)	$ 1,141
Investing activities	(26,176)	(4,973)
Financing activities	6,202	5,024
Effect of foreign exchange rate changes on cash and cash equivalents	152	(486)
Net increase (decrease) in cash and cash equivalents	$ (22,241)	$ 706

Operating Activities

Net cash provided by (used in) operating activities decreased $3.6 million in the nine months ended September 25, 2020, compared to the corresponding period in 2019, primarily due to an increase in net loss.

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 $21.2 million in the nine months ended September 25, 2020, compared to the corresponding period in 2019, due to an increase in purchases of property and equipment primarily relating to the new headquarters which was under construction until the beginning of the third quarter of fiscal 2020.

Financing Activities

Net cash provided by financing activities increased $1.2 million in the nine months ended September 25, 2020, compared to the corresponding period in 2019, primarily due to proceeds received from relief loan programs related to the COVID-19 pandemic and higher proceeds from the exercise of options partially offset by higher repayment of debt and tax withholding obligations related to net share settlements of restricted stock units.

Contractual Obligations and Commitments

Future payments under contractual obligations and other commercial commitments, as of September 25, 2020 are as follows (in thousands):

	Payments due in each fiscal year				
	Total Amounts Committed	2020 (Remaining three months)	2021 and 2022	2023 and 2024	Thereafter
Convertible debt	$ 161,260	$ 8,053	$ 37,707	$ 115,500	$ —
Operating leases	41,582	1,793	12,306	9,512	17,971
Purchase commitments	50,867	31,975	17,636	1,256	—
French debt and other debt	21,087	300	16,342	3,787	658
Interest on convertible debt	13,516	977	7,919	4,620	—
Other commitments [1]	1,897	445	1,340	112	—
Total contractual obligations	$ 290,209	$ 43,543	$ 93,250	$ 134,787	$ 18,629
Other commercial commitments:					
Standby letters of credit	$ 2,700	$ 215	$ 2,485	$ —	$ —
Total commercial commitments	$ 2,700	$ 215	$ 2,485	$ —	$ —

(1) Primarily includes 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 September 25, 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 95% of our consolidated net revenue in the nine months ended September 25, 2020, recorded net billings denominated in foreign currencies of approximately 23% of total company billings in the nine months ended September 25, 2020, compared to 16% 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):

		September 25, 2020		December 31, 2019
Derivatives not designated as hedging instruments:				
Purchase	$	36,107	$	14,806
Sell	$	—	$	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 September 25, 2020 was $13.0 million, which are financed by French government agencies. These debt instruments have maturities ranging from one to three years, with expiries ranging from 2021 through 2023. These 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 September 25, 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 September 25, 2020, we had $8.1 million aggregate principal amount of the 2020 Notes outstanding, which have a fixed 4.0% coupon rate, $37.7 million aggregate principal amount of the 2022 Notes which have a fixed 4.375% coupon rate, and$115.5 million aggregate principal amount of the 2024 Notes outstanding, which have a fixed 2.0% coupon rate. Additionally, in the second quarter of fiscal 2020, we received $5.6 million from Société Générale S.A. in France which bears an effective interest rate of 0.51% per annum, and $0.5 million from UBS Switzerland AG in Switzerland which does not bear any interest, in connection with relief loan programs related to the COVID-19 pandemic.

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 September 25, 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, audits of royalty payments for licensed technology and investigations in the ordinary course of business, including claims of alleged infringement of third-party patents and other intellectual property rights, and 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.

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, including the impact of any unsuccessful reopening of economic activity or subsequent outbreaks of COVID-19. 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 has been 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 nine months ended September 25, 2020 and September 27, 2019 represented approximately 54%, and 50% 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/or economic instability and unrest (e.g., Hong Kong), including risks related to terrorist activity, particularly in emerging market countries;

- 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 between the U.S. and 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 2021.

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 nine months ended September 25, 2020 and September 27, 2019 accounted for approximately 47% and 46% 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 and nine months ended September 25, 2020, Comcast accounted for 20% and 19% of our net revenue, and Vodafone accounted for 12% and 10% of our net revenue. During the three and nine months ended September 27, 2019, Comcast accounted for 44% and 24% 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 September 25, 2020, we had approximately $241.4 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 September 25, 2020, we had 802 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 have, and may continue to 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 September 25, 2020, we maintained facilities in Israel with a total of 190 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 our Israel operating 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 effective 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. 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, and have initiated audits to determine whether we have missed a royalty payment for technology that we license. 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 September 25, 2020, we held 95 issued U.S. patents and 58 issued foreign patents, and had 53 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. In March 2020, we received an administrative subpoena from the U.S. Treasury Department's Office of Foreign Assets Control (OFAC) requesting information about transactions involving Iran. The transactions were by the French company Thomson Video Networks, which we acquired in early 2016. Pursuant to regulations that remained in place until 2018, foreign subsidiaries of U.S. companies were allowed to engage in transactions with Iran if certain requirements were met. Harmonic is fully cooperating in the OFAC investigation. If we are found to have violated U.S. export control laws as a result of the pending OFAC investigation or future investigations, 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. While we do not anticipate the impact of the OFAC investigation to be material on our business, our business and operating results could 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 $70.8 million at September 25, 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, the 2022 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 August 2020, the FASB issued ASU No. 2020-06, Accounting for Convertible Instruments in an Entity's Own Equity, which simplifies the accounting for convertible instruments and contracts on an entity's own equity. Among other changes, ASU No. 2020-06 removes from U.S. GAAP the liability and equity separation model for convertible instruments with a cash conversion feature, and as a result, after adoption, entities will no longer separately present in equity an embedded conversion feature for such debt. Similarly, the embedded conversion feature will no longer be amortized into income as interest expense over the life of the instrument. Instead, entities will account for a convertible debt instrument wholly as debt unless (1) a convertible instrument contains features that require bifurcation as a derivative under ASC Topic 815, Derivatives and Hedging, or (2) a convertible debt instrument was issued at a substantial premium. Among other potential impacts, this change is expected to reduce reported interest expense, increase reported net income, and result in a reclassification of certain conversion feature balance sheet amounts from stockholders' equity to liabilities as it relates to the Notes. Additionally, ASU No. 2020-06 requires the application of the if-converted method to calculate the impact of convertible instruments on diluted earnings per share (EPS), which would result in an increase in diluted shares for purposes of calculating our diluted EPS. The new ASU is effective for interim and annual periods beginning after December 15, 2021, with early adoption permitted after December 15, 2020. Adoption of the new ASU can either be on a modified retrospective or full retrospective basis. We are currently evaluating the timing, method of adoption and overall impact of this standard on our consolidated 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 and the 2020 presidential election;
- 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 5. OTHER INFORMATION

On October 30, 2020, the Company entered into a Second Amendment to that certain Credit Agreement, dated as of December 19, 2019, by and among the Company and Harmonic International GmbH, as co-borrowers, and JPMorgan Chase Bank, N.A., as lender (the "Amendment No. 2"), to, among other things, extend the maturity date for the revolving credit facility from October 31, 2020 to October 30, 2022 and amend the interest rates for the revolving loans. As amended, the revolving loans bear interest, at the Company's election, at a floating rate per annum equal to either (1) 2.00% 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) 3.00% plus LIBOR for an interest period of one, two or three months.

Amendment No. 2 is filed as Exhibit 10.1 to this Form 10-Q and is incorporated by reference herein. The summary of the foregoing description of Amendment No. 2 is qualified in its entirety by reference to the text of Amendment No. 2.

ITEM 6. EXHIBITS

Exhibit Number	Exhibit Index
10.1	Second Amendment to Credit Agreement, dated as of October 30, 2020, by and among Harmonic Inc., Harmonic International GmbH and JPMorgan Chase Bank, N.A.
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 September 25, 2020, formatted in Inline Extensible Business Reporting Language (iXBRL) include:
	(i) Condensed Consolidated Balance Sheets at September 25, 2020 and December 31, 2019, (ii) Condensed Consolidated Statements of Operations for the three and nine months ended September 25, 2020 and September 27, 2019, (iii) Condensed Consolidated Statements of Comprehensive Income (Loss) for the three and nine months ended September 25, 2020 and September 27, 2019, (iv) Condensed Consolidated Statements of Stockholders' Equity for the three and nine months ended September 25, 2020 and September 27, 2019, (v) Condensed Consolidated Statements of Cash Flows for the nine months ended September 25, 2020 and September 27, 2019, and (vi) Notes to Condensed Consolidated Financial Statements.
104	Cover Page Interactive Data File (formatted as inline XBRL and contained in Exhibit 101)

* 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: November 2, 2020

SECOND AMENDMENT TO CREDIT AGREEMENT

THIS SECOND AMENDMENT TO CREDIT AGREEMENT (the "Amendment"), dated as of October 30, 2020 (the "Second Amendment Effective Date"), is among HARMONIC INC. and HARMONIC INTERNATIONAL GmbH, as Borrowers, the other Loan Parties party hereto, and JPMORGAN CHASE BANK, N.A., as Lender.

RECITALS:

Borrowers and Lender have entered into that certain Credit Agreement dated as of December 19, 2019 (as amended by the First Amendment to Credit Agreement, dated as of May 28, 2020, as further amended by the Limited Consent to Credit Agreement, dated as of June 25, 2020, and as the same may hereafter be amended or otherwise modified, the "Agreement"). Borrowers and Lender now desire to amend the Agreement to, among other things, extend the Revolving Credit Maturity Date to October 30, 2022 as herein set forth.

NOW, THEREFORE, in consideration of the premises herein contained and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto agree as follows effective as of the Second Amendment Effective Date unless otherwise indicated:

ARTICLE 1.

Definitions

Section 1.1. Definitions. Capitalized terms used in this Amendment, to the extent not otherwise defined herein, shall have the same meanings as in the Agreement, as amended hereby.

ARTICLE 2.

Amendment

Section 2.1. Section 1.01.

(a) Section 1.01 of the Agreement is, effective as of the Second Amendment Effective Date, hereby amended to add the following definition in its proper alphabetical order:

"Benchmark Transition Event" means the occurrence of one or more of the following events with respect to the LIBO Rate:

(1) a public statement or publication of information by or on behalf of the administrator of the LIBO Screen Rate announcing that such administrator has ceased or will cease to provide the LIBO Screen Rate, permanently or indefinitely, provided that, at the time of such statement or publication, there is no successor administrator that will continue to provide the LIBO Screen Rate;

(2) a public statement or publication of information by the regulatory supervisor for the administrator of the LIBO Screen Rate, the U.S. Federal Reserve System, an insolvency official with jurisdiction over the administrator for the LIBO Screen Rate, a

resolution authority with jurisdiction over the administrator for the LIBO Screen Rate or a court or an entity with similar insolvency or resolution authority over the administrator for the LIBO Screen Rate, which states that the administrator of the LIBO Screen Rate has ceased or will cease to provide the LIBO Screen Rate permanently or indefinitely, provided that, at the time of such statement or publication, there is no successor administrator that will continue to provide the LIBO Screen Rate; or

(b) (3) a public statement or publication of information by the regulatory supervisor for the administrator of the LIBO Screen Rate announcing that the LIBO Screen Rate is no longer representative.

(c) The following definitions in Section 1.01 of the Agreement are, effective as of the Second Amendment Effective Date, hereby amended and restated in their respective entirety to read as follows:

"Applicable Rate" means, for any day, (a) with respect to any CBFR Loan, 2.00% annum, (b) with respect to any Eurodollar Loan, 3.00% per annum, and (c) with respect to the commitment fees payable under Section 2.10(a), (i) if the Revolving Commitment minus the Revolving Exposure (the "Undrawn Amount") is greater than $12,500,000, 0.50% per annum and (ii) if the Undrawn Amount is less than or equal to $12,500,000, 0.30% per annum.

"Collateral Documents" means, collectively, the Security Agreement, the Swiss Collateral Documents, any confirmation agreements and any other agreements, instruments and documents executed in connection with this Agreement that are intended to create, perfect or evidence Liens to secure the Secured Obligations, including, without limitation, all other security agreements, pledge agreements, mortgages, deeds of trust, loan agreements, notes, guarantees, subordination agreements, pledges, powers of attorney, consents, collateral assignments, contracts, fee letters, notices, leases, financing statements and all other written matter whether theretofore, now or hereafter executed by any Loan Party and delivered to the Lender.

"Disclosure Letter" means the (a) disclosure letter, dated as of the Effective Date, delivered by the Borrowers to Lender and (b) any supplemental disclosure letter delivered by the Borrowers to Lender, which supplement shall be acceptable to Lender in its sole discretion.

"Revolving Credit Maturity Date" means October 30, 2022 (if the same is a Business Day, or if not then the immediately next succeeding Business Day), or any earlier date on which the Revolving Commitment is reduced to zero or otherwise terminated pursuant to the terms hereof.

Section 2.2. Section 1.05. Section 1.05 of the Agreement is amended and restated in its entirety to read as follows:

SECTION 1.05 Interest Rates; LIBOR Notification. The interest rate on Eurodollar Loans is determined by reference to the LIBO Rate, which is derived from the London interbank offered rate ("LIBOR"). LIBOR is intended to represent the rate at which contributing banks may obtain short-term borrowings from each other in the London interbank market. In July 2017, the U.K. Financial Conduct Authority announced that, after the end of 2021, it would no longer persuade or compel contributing banks to make rate submissions to the ICE Benchmark Administration (together with any successor to the ICE Benchmark Administrator, the "IBA") for purposes of the IBA setting LIBOR. As a result, it is possible that commencing in 2022, LIBOR may no longer be available or may no longer be deemed an appropriate reference rate upon which to determine the interest rate on Eurodollar Loans. In light of this eventuality, public and private sector industry initiatives are currently underway to identify new or alternative reference rates to be used in place of LIBOR. In the event a Benchmark Transition Event occurs, Section 2.12(c) of this Agreement provides a mechanism for determining an alternative rate of interest. The Lender will notify the Borrower Representative, pursuant to Section 2.12(c), in advance of any change to the reference rate upon which the interest rate of Eurodollar Loans is based. However, the Lender does not warrant or accept any responsibility for, and shall not have any liability with respect to, the administration, submission or any other matter related to LIBOR or other rates in the definition of "LIBO Rate" or with respect to any alternative, successor rate thereto, or replacement rate thereof, including without limitation, whether the composition or characteristics of any such alternative, successor or replacement reference rate will be similar to, or produce the same value or economic equivalence of the LIBO Rate or have the same volume or liquidity as did LIBOR prior to its discontinuance or unavailability.

Section 2.3. Section 2.10. Section 2.10(c) of the Agreement is hereby amended and restated in its entirety to read as follows:

(c) The Borrowers agree to pay to the Lender an annual facility fee in an amount equal to $62,500, payable on the Second Amendment Effective Date and on the Interest Payment Date closest to the first anniversary thereof.

Section 2.4. Section 2.12. Section 2.12 of the Agreement is hereby amended and restated in its entirety to read as follows:

SECTION 2.12 Alternate Rate of Interest; Illegality

(a) If prior to the commencement of any Interest Period for a Eurodollar Borrowing:

(i) the Lender determines (which determination shall be conclusive and binding absent manifest error) that adequate and reasonable means do not exist for ascertaining the Adjusted LIBO Rate or the LIBO Rate, as applicable (including, without limitation, by means of an Interpolated Rate or because the LIBO Screen Rate is not available or published on a current basis) for such Interest Period; provided that no Benchmark Transition Event shall have occurred at such time; or

(ii) the Lender determines the Adjusted LIBO Rate or the LIBO Rate, as applicable, for such Interest Period will not adequately and fairly reflect the cost to the Lender of making or maintaining its Loans (or Loan) included in such Borrowing for such Interest Period; provided that no Benchmark Transition Event shall have occurred at such time;

then the Lender shall give notice thereof to the Borrower Representative by telephone, fax or through an Electronic System as provided in Section 8.01 as promptly as practicable thereafter and, until the Lender notifies the Borrower Representative that the circumstances giving rise to such notice no longer exist, (A) any Interest Election Request that requests the conversion of any Borrowing to, or continuation of any Borrowing as, a Eurodollar Borrowing shall be ineffective and any such Eurodollar Borrowing shall be repaid or converted into a CBFR Borrowing on the last day of the then current Interest Period applicable thereto, and (B) if any Borrowing Request requests a Eurodollar Borrowing, such Borrowing shall be made as a CBFR Borrowing.

(b) If the Lender determines that any Requirement of Law has made it unlawful, or if any Governmental Authority has asserted that it is unlawful, for the Lender or its applicable lending office to make, maintain, fund or continue any Eurodollar Borrowing, or any Governmental Authority has imposed material restrictions on the authority of the Lender to purchase or sell, or to take deposits of, dollars in the London interbank market, then, on notice thereof by the Lender to the Borrower Representative, any obligations of the Lender to make, maintain, fund or continue Eurodollar Loans or to convert CBFR Borrowings to Eurodollar Borrowings will be suspended until the Lender notifies the Borrower Representative that the circumstances giving rise to such determination no longer exist. Upon receipt of such notice, the Borrowers will upon demand from the Lender, either prepay or convert all Eurodollar Borrowings of the Lender to CBFR Borrowings, either on the last day of the Interest Period therefor, if the Lender may lawfully continue to maintain such Eurodollar Borrowings to such day, or immediately, if the Lender may not lawfully continue to maintain such Loans. Upon any such prepayment or conversion, the Borrowers will also pay accrued interest on the amount so prepaid or converted.

(c) If a Benchmark Transition Event occurs, then the Lender may, by notice to Borrower Representative, select an alternate rate of interest for the LIBO Rate that gives due consideration to the then-evolving or prevailing market convention for determining a rate of interest for loans in US Dollars at such time (the "Alternate Rate"); each Borrower acknowledges that the Alternate Rate may include a mathematical adjustment using any then-evolving or prevailing market convention or method for determining a spread adjustment for the replacement of the LIBO Rate. For avoidance of doubt, all references to the LIBO Rate shall be deemed to be references to the Alternate Rate when the Alternate Rate becomes effective in accordance with this section. In addition, the Lender will have the right, from time to time by notice to Borrower Representative to make technical, administrative or operational changes (including, without limitation, changes to the definition of "CB Floating Rate", the definition of "Interest Period", timing and frequency of determining rates and making payments of interest and other administrative matters) that the Lender decides in its reasonable discretion may be appropriate to reflect the adoption and implementation of the Alternate Rate. The Alternate Rate, together with all such technical, administrative and operational changes as specified in any notice, shall become effective at the later of (i) the fifth Business Day after the Lender has provided notice to the Borrower Representative (the "Notice Date") and (ii) a date specified by the Lender in the notice, without any further action or consent of the Borrowers, so long as Lender has not received, by 5:00pm Eastern time on the Notice Date, written notice of objection to the Alternate Rate from the Borrower Representative. Any determination, decision, or election that may be made by the Lender pursuant to this section, including any determination with respect to a rate or adjustment or the occurrence or non-occurrence of an event, circumstance or date, and any decision to take or refrain from taking any action, will be conclusive and binding absent manifest error and may be made in its sole discretion and without consent from the Borrowers. Until an Alternate Rate shall be determined in accordance with this section, the interest rate shall be equal to the sum of (a) the greater of (x) Prime Rate and (y) 2.50%, plus (b) the Applicable Rate for CBFR Loans specified within such Applicable Rate definition. In no event shall the Alternate Rate be less than zero.

Section 2.5. Section 3.05. The first sentence of Section 3.05(a) and the last sentence of Section 3.05(b) of the Agreement are hereby amended to delete the phrase "the date of this Agreement" and add a "the Second Amendment Effective Date" *in lieu* thereof.

Section 2.6. Section 3.16. The first sentence of Section 3.16 of the Agreement is hereby amended to delete the phrase "as of the Effective Date" and add a "as of the Second Amendment Effective Date" *in lieu* thereof.

ARTICLE 3.

Conditions Precedent

Section 3.1. Conditions. The effectiveness of Article 2 of this Amendment is subject to the satisfaction of the following conditions precedent:

(a) The Lender (or its counsel, Winstead PC) shall have received (i) from each party hereto either (A) a counterpart of this Amendment signed on behalf of such party or (B) written evidence satisfactory to the Lender (which may include fax or other electronic transmission of a signed signature page of this Amendment) that such party has signed a counterpart of this Amendment and (ii) duly executed copies of the Loan Documents to be entered into as of the Second Amendment Effective Date, including, but not limited to, a confirmation of the Collateral Documents, and such other certificates, documents, instruments and agreements as the Lender shall reasonably request in connection with the transactions contemplated by this Amendment, the Agreement and the other Loan Documents, including a written opinion of the Loan Parties' counsel addressed to the Lender, all in form and substance satisfactory to the Lender;

(b) The Lender shall have received, for each Loan Party that is or is to be a party to any Loan Document as of the Second Amendment Effective Date, (i) a certificate of such Loan Party, dated the Second Amendment Effective Date and executed by its secretary or assistant secretary or director, as applicable, or, in the case of the Swiss Borrower, by a managing officer with individual signature authority, which shall (A) certify the resolutions of its board of directors, managing officers, quotaholders, members or other body authorizing the execution, delivery and performance of the Loan Documents to which it is a party, (B) identify by name and title and bear the signatures of the officers or directors of such Loan Party authorized to sign the Loan Documents to which it is a party and, in the case of a Borrower, its Financial Officers, and (C) contain appropriate attachments, including the charter, articles or certificate of organization or incorporation of such Loan Party certified by the relevant authority of the jurisdiction of organization of such Loan Party and a true and correct copy of its bylaws or operating, management or partnership agreement, or other organizational or governing documents, and (ii) a good standing certificate for such Loan Party from its jurisdiction of organization (to the extent available);

(c) The Lender shall have received a certificate, signed by a Financial Officer of each Borrower, dated as of the Second Amendment Effective Date (i) stating that no Default has occurred and is continuing, (ii) stating that the representations and warranties contained in the Loan Documents are true and correct in all material respects as of such date (it being understood and agreed that any representation or warranty which by its terms is made as of a specified date shall be required to be true and correct in all material respects only as of such specified date, and that any representation or warranty which is subject to any materiality qualifier shall be required to be true and correct in all respects), and (iii) certifying as to any other factual matters as may be reasonably requested by the Lender;

(d) The Lender shall have received, with respect to each Loan Party, the results of a recent lien search in the jurisdiction of organization of such Loan Party (it being understood that no such searches will have to be run in Switzerland), and such search shall reveal no Liens on any of the assets of such Loan Party except for liens permitted by Section 6.02;

(e) The Lender shall have received a solvency certificate signed by a Financial Officer of the Company dated the Second Amendment Effective Date in form and substance reasonably satisfactory to the Lender;

(f) The Lender shall have received, (i) all documentation and other information regarding the Borrowers requested in connection with applicable “know your customer” and anti-money laundering rules and regulations, including the USA PATRIOT Act, (ii) a properly completed and signed IRS Form W-8 or W-9, as applicable, for each Loan Party, and (iii) to the extent the Borrowers qualify as a “legal entity customer” under the Beneficial Ownership Regulation, a Beneficial Ownership Certification in relation to the Borrowers;

(g) The Lender shall have received all fees required to be paid, and all expenses required to be reimbursed for which invoices have been presented at least two Business Days in advance of the Second Amendment Effective Date (including the reasonable fees and expenses of legal counsel), on or before the Second Amendment Effective Date;

(h) The representations and warranties of the Loan Parties set forth in the Loan Documents shall be true and correct in all material respects with the same effect as though made on and as of the date of such Borrowing or the date of issuance, amendment, renewal or extension of such Letter of Credit, as applicable (it being understood and agreed that any representation or warranty which by its terms is made as of a specified date shall be required to be true and correct in all material respects only as of such specified date, and that any representation or warranty which is subject to any materiality qualifier shall be required to be true and correct in all respects); and

(i) No Default shall have occurred and be continuing; and

(j) No event shall have occurred and no condition shall exist which has or could be reasonably expected to have a Material Adverse Effect.

ARTICLE 4.

Ratifications, Representations and Warranties

Section 4.1. Ratifications. The terms and provisions set forth in this Amendment shall modify and supersede all inconsistent terms and provisions set forth in the Agreement and except as expressly modified and superseded by this Amendment, the terms and provisions of the Agreement and the other Loan Documents are ratified and confirmed and shall continue in full force and effect. Each Borrower and Lender agree that the Agreement as amended hereby and the other Loan Documents shall continue to be a legal, valid and binding obligation of such Loan Party, enforceable in accordance with its terms, subject to applicable bankruptcy, insolvency, reorganization, moratorium or other laws affecting creditors’ rights generally and subject to general principles of equity, regardless of whether considered in a proceeding in equity or at law. For all matters arising prior to the effective date of this Amendment (including, without limitation, the accrual and payment of interest and fees and compliance with financial covenants), the terms of the Agreement (as unmodified by this Amendment) shall control and are hereby ratified and confirmed.

Section 4.2. Representations and Warranties. Each Loan Party represents and warrants to the Lender that (and where applicable, agrees) as follows: (a) both before and after giving effect to this Amendment, no Default shall have occurred and be continuing; (b) both before and after giving effect to this Amendment, the representations and warranties of the Loan Parties set forth in the Loan Documents are true and correct in all material respects with the same effect as though made on and as of the date hereof (it being understood and agreed that any representation or warranty which by its terms is made as of a specified date shall be required to be true and correct in all material respects only as of such specified date, and that any representation or warranty which is subject to any materiality qualifier shall be required to be true and correct in all respects); (c) the execution, delivery and performance of this Amendment has been duly authorized by all necessary action on the part of such Loan Party and does not and will not: (1) require any consent or approval of, registration or filing with, or any other action by, any Governmental Authority, except such as have been obtained or made and are in full force and effect and except for filings necessary to perfect Liens created pursuant to the Loan Documents, (2) violate any material Requirement of Law applicable to any Loan Party or any Subsidiary, (3) violate or result in a default under any material indenture, agreement or other instrument binding upon any Loan Party or any Subsidiary or the assets of any Loan Party or any Subsidiary, or give rise to a right thereunder to require any payment to be made by any Loan Party or any Subsidiary, and (4) result in the creation or imposition of, or other requirement to create, any Lien on any asset of any Loan Party or any Subsidiary, except Liens created pursuant to the Loan Documents; and (d) this Amendment constitutes a legal, valid and binding obligation of such Loan Party, enforceable in accordance with its terms, subject to applicable bankruptcy, insolvency, reorganization, moratorium or other laws affecting creditors' rights generally and subject to general principles of equity, regardless of whether considered in a proceeding in equity or at law.

ARTICLE 5.

Miscellaneous

Section 5.1. Survival of Representations and Warranties. All covenants, agreements, representations and warranties made by the Loan Parties in the Loan Documents and in the certificates or other instruments delivered in connection with or pursuant to this Amendment, the Agreement or any other Loan Document shall be considered to have been relied upon by the other parties hereto and shall survive the execution and delivery of the Loan Documents and the making of any Loans and issuance of any Letters of Credit, regardless of any investigation made by any such other party or on its behalf and notwithstanding that the Lender may have had notice or knowledge of any Default or incorrect representation or warranty at the time any credit is extended hereunder, and shall continue in full force and effect as long as the principal of or any accrued interest on any Loan or any fee or any other amount payable under the Agreement is outstanding and unpaid or any Letter of Credit is outstanding and so long as the Revolving Commitment has not expired or terminated. The provisions of Sections 2.13, 2.14, 2.15 and Section 8.03 of the Agreement shall survive and remain in full force and effect regardless of the consummation of the transactions contemplated hereby or thereby, the repayment of the Loans, the expiration or termination of the Letters of Credit and the Revolving Commitment or the termination of the Agreement or any other Loan Document or any provision hereof or thereof.

Section 5.2. Reference to Agreement. Each of the Loan Documents, including the Agreement and any and all other agreements, documents, or instruments now or hereafter executed and delivered pursuant to the terms hereof or pursuant to the terms of the Agreement as amended hereby, are hereby amended so that any reference in such Loan Documents to the Agreement shall mean a reference to the Agreement as amended hereby.

Section 5.3. Loan Document. This Amendment is a Loan Document and is subject to the terms of the Agreement.

Section 5.4. Expenses of Lender. As provided in the Agreement, jointly and severally, shall pay all reasonable out-of-pocket expenses incurred by the Lender and its Affiliates, including the reasonable fees, charges and disbursements of outside counsel for the Lender, in connection with the preparation and administration of this Amendment.

Section 5.5. Severability. Any provision of this Amendment held to be invalid, illegal or unenforceable in any jurisdiction shall, as to such jurisdiction, be ineffective to the extent of such invalidity, illegality or unenforceability without affecting the validity, legality and enforceability of the remaining provisions thereof; and the invalidity of a particular provision in a particular jurisdiction shall not invalidate such provision in any other jurisdiction.

Section 5.6. Applicable Law. THIS AMENDMENT AND ALL OTHER LOAN DOCUMENTS (OTHER THAN THOSE CONTAINING A CONTRARY EXPRESS CHOICE OF LAW PROVISION) SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE INTERNAL LAWS OF THE STATE OF NEW YORK, BUT GIVING EFFECT TO FEDERAL LAWS APPLICABLE TO NATIONAL BANKS.

Section 5.7. Successors and Assigns. This Amendment is binding upon and inure to the benefit of the parties hereto and their respective successors and assigns permitted hereby (including any Affiliate of the Lender that issues any Letter of Credit), except that (i) no Borrower may assign or otherwise transfer any of its rights or obligations hereunder without the prior written consent of the Lender (and any attempted assignment or transfer by a Borrower without such consent shall be null and void) and (ii) Lender may not assign or otherwise transfer its rights or obligations hereunder except in accordance with Section 8.04 of the Agreement. Any assignment or other transfer made in violation of this Section shall be void.

Section 5.8. Counterparts. This Amendment may be executed in counterparts (and by different parties hereto on different counterparts), each of which shall constitute an original, but all of which when taken together shall constitute a single contract. Delivery of an executed counterpart of a signature page of this Amendment by fax, emailed pdf. or any other electronic means that reproduces an image of the actual executed signature page shall be effective as delivery of a manually executed counterpart of this Amendment. The words “execution,” “signed,” “signature,” “delivery,” and words of like import in or relating to any document to be signed in connection with this Amendment, the Agreement and the transactions contemplated hereby or thereby shall be deemed to include Electronic Signatures, deliveries or the keeping of records in electronic form, each of which shall be of the same legal effect, validity or enforceability as a manually executed signature, physical delivery thereof or the use of a paper-based recordkeeping system, as the case may be, to the extent and as provided for in any applicable law, including the Federal Electronic Signatures in Global and National Commerce Act, the New York State Electronic Signatures and Records Act, or any other similar state laws based on the Uniform Electronic Transactions Act.

Section 5.9. Effect of Waiver. No consent or waiver, express or implied, by Lender to or for any breach of or deviation from any covenant, condition or duty by any Borrower or any Loan Party shall be deemed a consent or waiver to or of any other breach of the same or any other covenant, condition or duty.

Section 5.10. Headings. The headings, captions, and arrangements used in this Amendment are for convenience only and shall not affect the interpretation of this Amendment.

Section 5.11. ENTIRE AGREEMENT. THIS AMENDMENT AND ALL OTHER INSTRUMENTS, DOCUMENTS AND AGREEMENTS EXECUTED AND DELIVERED IN CONNECTION WITH THIS AMENDMENT REPRESENT THE FINAL AGREEMENT BETWEEN THE PARTIES AND MAY NOT BE CONTRADICTED BY EVIDENCE OF PRIOR, CONTEMPORANEOUS, OR SUBSEQUENT ORAL AGREEMENTS OF THE PARTIES. THERE ARE NO UNWRITTEN ORAL AGREEMENTS BETWEEN THE PARTIES.

[*Signatures on following pages*]

Executed as of the date first written above.

HARMONIC INC.

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

HARMONIC INTERNATIONAL GmbH

By: /s/ Sanjay Kalra
Name: Sanjay Kalra
Title: Managing Officer

JPMORGAN CHASE BANK, N.A.

By: /s/ Eleftherios Karsos
Name: Eleftherios Karsos
Title: Authorized Signatory

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: November 2, 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: November 2, 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 September 25, 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: November 2, 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 September 25, 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: November 2, 2020

/s/ Sanjay Kalra

Sanjay Kalra
Chief Financial Officer