UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

Form 10-K

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

For the fiscal year ended December 31, 2022

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the transition period from to

Commission file number 1-33579

INTERDIGITAL, INC.

(Exact name of registrant as specified in its charter)

Pennsylvania	**82-4936666**
(State or other jurisdiction of incorporation or organization)	*(IRS Employer Identification No.)*

200 Bellevue Parkway, Suite 300, Wilmington, DE 19809-3727
(Address of Principal Executive Offices and Zip Code)
Registrant's telephone number, including area code (302) 281-3600

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 (par value $0.01 per share)	IDCC	Nasdaq Stock Market LLC

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

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☑ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☑

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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. Yes ☑ No ☐

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements. ☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b). ☐

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

The aggregate market value of the voting and non-voting common equity held by non-affiliates computed by reference to the price at which the common equity was last sold, or the average bid and asked price of such common equity, as of the last business day of the registrant's most recently completed second fiscal quarter: $1,790,044,781 as of June 30, 2022.

The number of shares outstanding of the registrant's common stock was 29,668,044 as of February 13, 2023.

AMAZON-1070
Amazon.com Services LLC v. InterDigital, IPR2026-00195

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement to be filed pursuant to Regulation 14A in connection with the registrant's 2023 annual meeting of shareholders are incorporated by reference into Items 10, 11, 12, 13 and 14 of Part III of this Form 10-K.

TABLE OF CONTENTS

	Page
PART I	
ITEM 1. BUSINESS	4
ITEM 1A. RISK FACTORS	12
ITEM 1B. UNRESOLVED STAFF COMMENTS	26
ITEM 2. PROPERTIES	26
ITEM 3. LEGAL PROCEEDINGS	26
ITEM 4. MINE SAFETY DISCLOSURES	27
PART II	
ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES	28
ITEM 6. RESERVED	30
ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS	30
ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK	50
ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA	52
ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE	95
ITEM 9A. CONTROLS AND PROCEDURES	96
ITEM 9B. OTHER INFORMATION	96
ITEM 9C. DISCLOSURES REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS	96
PART III	
ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE	97
ITEM 11. EXECUTIVE COMPENSATION	97
ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS	97
ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE	97
ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES	97
PART IV	
ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES	98
ITEM 16. FORM 10-K SUMMARY	102
SIGNATURES	102

In this Form 10-K, the words "we," "our," "us," "the Company" and "InterDigital" refer to InterDigital, Inc. and/or its subsidiaries, individually and/or collectively, unless otherwise indicated or the context otherwise requires. InterDigital® is a registered trademark of InterDigital, Inc. All other trademarks, service marks and/or trade names appearing in this Form 10-K are the property of their respective holders.

PART I

Item 1. *BUSINESS.*

Overview

InterDigital, Inc. ("InterDigital") is a global research and development company focused primarily on wireless, visual and related technologies. We design and develop advanced technologies that enable connected, immersive experiences in a broad range of communications and entertainment products and services. We license or intend to license our innovations worldwide to companies providing such products and services, including wireless communications, consumer electronics, personal computer, and automotive, as well as cloud-based services such as video streaming. Since our founding in 1972, our engineers have designed and developed a wide range of innovations that are used in wireless products and networks, from the earliest digital cellular systems to 5G. With the acquisitions of the patent licensing business (the "Technicolor Patent Acquisition") and research and innovation unit of visual technology industry leader Technicolor SA ("Technicolor") (together, the "Technicolor Acquisitions"), we are a leader in video processing, encoding/decoding, and display technology, with a significant Artificial Intelligence ("AI") research effort that intersects with both wireless and visual technologies.

InterDigital is one of the largest pure research and development and licensing companies in the world, with one of the most significant patent portfolios of fundamental wireless and video technologies. As of December 31, 2022, InterDigital's wholly owned subsidiaries held a portfolio of approximately 28,800 patents and patent applications related to wireless communications, video coding, display technology, and other areas relevant to communications and entertainment products and services. Our portfolio includes numerous patents and patent applications that we believe are or may be essential or may become essential to standards established by many Standards Development Organizations ("SDOs"), including cellular and other wireless communications and video technology standards. Those wireless standards include 3G, 4G and the IEEE 802 suite of standards, as well as patents and patent applications that we believe are or may become essential to 5G standards that currently exist or are under development. Our video technology portfolio includes patents and applications relating to standards established by ISO/IEC Moving Picture Expert Group (MPEG), the ITU-T Video Coding Expert Group (VCEG), the Joint Collaborative Team on Video Coding (JCT-VC) and the Joint Video Expert Team (JVET), among others.

Our wireless portfolio has largely been built through internal development, supplemented by joint development projects with other companies, and select acquisitions of patents and companies. Our video technology portfolio combines patents and applications that InterDigital obtained through the Technicolor Acquisitions and patents and applications created by internal development. Our patented inventions have been implemented in a wide variety of products and services, including smartphones, other wireless communication devices and infrastructure equipment, such as tablets, and base stations, consumer electronics and Internet of Things ("IoT") products, such as televisions, laptops, gaming consoles, set-top boxes, streaming devices and connected automobiles.

InterDigital derives revenues primarily from licensing our patented innovations. In 2022 and 2021, our total revenues were $457.8 million and $425.4 million, respectively. Additional information about our revenues, profits and assets, as well as additional financial data, is provided in the Consolidated Financial Statements and accompanying Notes in Part II, Item 8, of this Form 10-K.

Our Strategy

Our strategy is to continue to be a leading innovator, designer and developer of fundamental, horizontal technologies and to monetize our patented innovations primarily through licensing the products and services that implement them across vertical markets.

To execute our strategy, we intend to:

- ***Grow and enhance our patent portfolio through continued investment in advanced research and development.*** We intend to grow and enhance our worldwide patent portfolio in advanced wireless technology, video coding, AI, and other related technology areas by growing our investment in our industry-leading research and development organization, actively participating in SDOs and other industry consortia, and partnering with leading inventors and industry players to source and develop new technologies. We intend to protect our investment in this innovation by seeking patent coverage in countries around the world for the technologies we develop.
- ***Maintain a collaborative relationship with key industry players and worldwide standards bodies.*** We intend to continue contributing to the ongoing process of defining wireless, video and other standards and other industry-wide efforts and incorporating our inventions into those technology areas. Those efforts, and the knowledge gained through them, provide direction for internal development efforts and help guide technology and intellectual property sourcing through partners and other external sources.

- ***Grow our patent-based revenue.*** We intend to grow our licensing revenue base by adding licensees in the wireless communications, consumer electronics, personal computer and automotive industries, and by expanding our licensing activities into additional product and services markets that utilize our innovations. These licensing efforts may be direct or executed in conjunction with licensing partnerships and other efforts, and may require the enforcement and defense of our intellectual property through litigation and other means.
- ***Pursue strategic partnerships with other technology companies.*** We have in the past and we expect to continue to pursue partnerships to jointly develop technology with other companies in our industries. In addition, as part of our ongoing research and development efforts, InterDigital may develop proprietary solutions that may be most valuable when incorporated into commercial products or services offered by others. As an example, we believe that our advanced capabilities in visual technologies will continue to result in developing solutions that can be implemented in adjacent industries, such as content production, gaming, and other areas. We will seek to bring such technologies, as well as other technologies we may develop or acquire, to market through various methods including technology licensing, joint ventures and partnerships.

Technology Research and Development

InterDigital R&I

InterDigital operates a diversified research and development operation, InterDigital Research & Innovation ("InterDigital R&I").

As an early and ongoing participant in the digital wireless market, InterDigital developed pioneering solutions for the cellular and Wi-Fi technologies in use today. That early involvement, and our continued development of advanced digital wireless technologies, have enabled us to create our significant worldwide portfolio of patents. In addition, InterDigital was among the first companies to participate in standardization and platform development efforts related to Machine-to-Machine ("M2M") communications and IoT technology. InterDigital R&I is also a leader in key video technologies, including emerging technologies such as immersive video and AI-based video coding. Our current research efforts are focused on a variety of areas related to future technology and devices, including cellular wireless technology, advanced video coding and transmission, and AI.

Our capabilities in the development of advanced technologies are based on the efforts of a highly specialized engineering team, leveraging leading-edge equipment and software platforms. Over the last three years, investment in research and portfolio development expense has ranged from $185.2 million to $204.4 million, and the largest portion of this expense has been personnel costs and amortization. Additional information about our research and portfolio development expenses is provided under the heading "*Operating Expenses*," in Part II, Item 7, of this Form 10-K.

Wireless Technology

We have a long history of developing cellular technologies, including those related to CDMA and TDMA and OFDM/OFDMA and MIMO. Many of our inventions are being used in all 2G, 3G, 4G and 5G wireless networks and mobile terminal devices. We continue to be engaged in development efforts to build and enhance our 3GPP (as defined herein) technology portfolio in the current and future generations including 5G, 5G Advanced and 6G. The horizontal technologies we develop are essential to support a variety of uses cases across several vertical market segments that use connected devices such as automobiles, wearables, smart homes, drones and other connected consumer electronic products. We are developing evolutionary and revolutionary solutions that enable connectivity in both licensed and unlicensed spectrum, terrestrial and non-terrestrial networks to provide ubiquitous coverage, and across a large range of frequencies up to the terahertz (THz) wave bands.

Segments outside of 3GPP primarily fall within the scope of the IEEE 802, IETF and ETSI standards. We continue to grow a portfolio of technology related to Wi-Fi, Internet Standards, and Edge Computing, that includes, for example, improvements to the IEEE 802.11 PHY and MAC to increase peak data rates (802.11be - Extremely High Throughput), cloud gaming, and terminal mobility for edge services.

Advanced Video Coding and Transmission Technology

An important and growing segment of wireless traffic is devoted to video streaming. We have a rich history in developing advanced technologies that address the challenges of video as it relates to mobile, and we further enhanced our capabilities in this area with the completion of the acquisition of the Technicolor R&I team. Specifically, in the area of video research and standards, we have been actively engaged in video standards development work in the ISO/IEC Moving Picture Expert Group (MPEG), the ITU-T Video Coding Expert Group (VCEG), the Joint Collaborative Team on Video Coding (JCT-VC) and the Joint Video Expert Team (JVET). Those efforts have focused on H.265/HEVC versions 1 to 4 and MPEG DASH, as well as development of the VCC/H.266 and the MPEG Immersive (MPEG-I) standards suite for the future. Beyond video standards, InterDigital R&I is conducting research in groundbreaking visual technologies such as immersive video and AI based video coding.

Artificial Intelligence

The AI talent at InterDigital R&I is researching a variety of aspects of AI that can be applied to complex problems in video and wireless technologies. Those areas of research include: energy-efficient deep learning, aimed at reducing the energy-intensive rollout of AI into specific service areas; deep video compression, seeking to design novel video codecs based on deep learning techniques and optimized for different use cases (e.g., machine vision); AI for dynamic wireless environments, focused on learning and optimizing wireless systems, particularly when channel characteristics are highly dynamic.

Patent Portfolio

As of December 31, 2022, our patent portfolio consisted of approximately 28,800 patents and patent applications worldwide. The patents and applications comprising our portfolio relate predominantly to cellular wireless standards, including 3G, 4G and 5G technologies, other wireless standards, including 802.11 (Wi-Fi) technology, and a variety of video technologies and standards, such as HEVC and VVC. Our issued patents expire at differing times ranging from 2023 through 2043.

Our Revenue Sources

Device-based Licensing Revenue

Companies making, importing, using or selling products compliant with the standards covered by our patent portfolio, including all manufacturers of mobile handsets, tablets and other devices, and many consumer electronics products, such as televisions, personal computers and other devices, require a license under our patents and will require licenses under patents that may issue from our pending patent applications. We have successfully entered into patent license agreements with many of the leading mobile communications and consumer electronics companies globally, including Amazon Technologies, Inc. ("Amazon"), Apple Inc. ("Apple"), Huawei Investment & Holding Co., Ltd. (“Huawei”), Google LLC ("Google"), LG Electronics, Inc. ("LG"), Samsung Electronics Co., Ltd. ("Samsung"), Sony Corporation of America ("Sony"), and Xiaomi Corporation ("Xiaomi"), among others.

Other Revenue Opportunities

We also believe that companies providing certain video and other cloud-based services require a license under our patents and will require licenses under patents that may issue from our pending patent applications, and we intend to seek license agreements with such companies.

Overview of Patent Licenses

The majority of our revenue is generated from fixed-fee patent license agreements, with a smaller portion coming from variable royalty agreements. Upon entering into a new patent license agreement, the licensee typically agrees to pay consideration for sales made prior to the effective date of the license agreement, to the extent the licensee was previously unlicensed (i.e., past patent royalties), and also agrees to pay royalties or license fees on licensed products sold during the term of the agreement. We expect that, for the most part, new license agreements will follow this model. Almost all of our patent license agreements provide for the payment of royalties based on sales of licensed products designed to operate in accordance with particular standards (convenience-based licenses), as opposed to the payment of royalties if the manufacture, sale or use of the licensed product infringes one of our patents (infringement-based licenses).

Our variable royalty license agreements typically contain provisions that give us the right to audit our licensees' books and records to ensure compliance with the licensees' reporting and payment obligations under those agreements. From time to time, these audits reveal underreporting or underpayments under the applicable agreements. In such cases, we seek payment for the amount owed and enter into negotiations with the licensee to resolve the discrepancy.

For a discussion of our revenue recognition policies with respect to patent license agreements, see "Item 7. *Management's Discussion and Analysis of Financial Condition and Results of Operations - Overview - Critical Accounting Policies and Estimates - Revenue Recognition - Patent License Agreements*."

Licensing Through Platforms

As part of the Technicolor Patent Acquisition, we assumed Technicolor's rights and obligations under a joint licensing program with Sony relating to digital televisions ("DTVs") and standalone computer display monitors ("CDMs") (such program, the "Madison Arrangement"), including Technicolor's role as exclusive licensing agent. Under the Madison Arrangement, Technicolor and Sony combined portions of their respective DTV and CDM patent portfolios and created a combined licensing opportunity for DTV and CDM manufacturers. As licensing agent for the Madison Arrangement, we are responsible for making decisions regarding the prosecution and maintenance of the combined patent portfolio and the licensing and enforcement of the combined patent portfolio in the field of use of DTVs and CDMs. Refer to Note 9, "*Obligations*," within the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this Form 10-K for further information about the Madison Arrangement.

In 2016, InterDigital joined Avanci, the industry's first marketplace for the licensing of cellular standards-essential technology for the IoT. The licensing platform brings together many of InterDigital's peers in standards-essential technology leadership, and makes 2G, 3G, and 4G standards-essential patents available to IoT players in specific product segments with one flat-rate license. The Avanci licensing programs in specific product segments for the IoT industry will provide access to the entire applicable standards-essential wireless patent portfolios held by all of the platform participants, as well as any additions to their portfolios during the term of the license. Since December 2017, Avanci has focused on the automotive market, and has signed patent license agreements with BMW Group, Audi, Porsche, Volkswagen, and Volvo Cars, among others, collectively representing over 80% of annual connected car shipments.

In 2020, Sisvel International N.A. announced that it had launched a licensing program covering VP9 and AV1 video coding formats, which we have joined as a licensor.

In 2012, we formed a joint venture with Sony called Convida Wireless. The joint venture combined InterDigital's advanced M2M research capabilities with Sony's consumer electronics expertise for the purpose of driving new research in IoT communications and other connectivity areas. This joint venture was renewed in 2015 with its focus expanded to include advanced research and development into 5G and future wireless technologies, and further renewed in 2018 and again in December 2021. As of December 31, 2022, Convida Wireless owned approximately 1,400 patents and patent applications worldwide, which expire at different times ranging from 2023 through 2043. Convida Wireless intends to license its patented innovations to companies providing IoT products and services.

Overview of Smartphone, Consumer Electronics, and IoT Industries

The primary markets for our wireless and video technologies are the smartphone and consumer electronics and IoT/Automotive markets. The smartphone market, with approximately 1.2 billion units projected to have shipped worldwide in 2022, is driven by several large, global brands. The market saw a decline in 2022 mostly due to the ongoing supply chain issues arising from the COVID pandemic, as well as a broad economic slowdown in China and economic challenges globally. The market is expected to recover beginning in the second half of 2023 due to the continued global uptake of 5G smartphones as well as the migration from feature phones to smartphones in emerging regions.

In addition to smartphones there is a large universe of other consumer electronic devices and ecosystems, with a mix of mature and emerging as well as consolidated and fragmented device segments. After smartphones, televisions represent one of the largest markets with more than 200 million units shipped globally. Other key consumer electronics device categories include tablets and personal computers, set-top-boxes and streaming media players, gaming consoles, wearables and smart home products.

IoT/Automotive is an important and relatively new market that is expected to result in a significant increase in the number of connected devices worldwide and unlock new business capabilities. Total global cellular IoT device shipments are expected to grow from approximately 500 million in 2022 to almost 700 million by 2027. Automobiles represent a significant opportunity within the IoT market, with approximately 40 million connected vehicles shipped in 2022, which is expected to grow significantly in the future.

Overview of Standardization

To achieve economies of scale and support interoperability among different participants, many wireless and consumer electronics products have been designed to operate in accordance with certain industry standards. Wireless industry standards are formal guidelines for engineers, designers, manufacturers and service providers that regulate and define the use of the radio frequency spectrum in conjunction with providing detailed specifications for wireless communications products. New wireless standards are typically adopted with each new generation of products, are often compatible with previous generations and are defined to ensure equipment interoperability and regulatory compliance. The consumer electronics industry also implements many of the same standards, including standards related to Wi-Fi and increasingly, cellular technologies, as well as a broad range of video coding standards that enable the efficient transmission and rendering of video content.

SDOs, which facilitate and govern the development of standards, typically ask participating companies to declare formally whether they believe they hold patents or patent applications essential or potentially essential to a particular standard and whether they are willing to license those patents on either a royalty-bearing basis on fair, reasonable and nondiscriminatory terms or on a royalty-free basis. To manufacture, have made, sell, offer to sell or use such products on a non-infringing basis, a manufacturer or other entity doing so must first obtain a license from the holder of essential patent rights. The SDOs neither have enforcement authority against entities that fail to obtain required licenses, nor do they have the ability to protect the intellectual property rights of holders of essential patents.

InterDigital often publicly characterizes aspects of its business, including license agreements and development projects, as pertaining to industry standardized technologies such as, for example, 3G, 4G, 5G, Wi-Fi, HEVC, and VVC. In doing this, we generally rely on the positions of the applicable SDOs in defining the relevant standards. However, the definitions may evolve or change over time, including after we have characterized certain transactions.

Business Activities

2022 Patent Licensing Activity

During 2022, we entered an agreement with Samsung for binding arbitration to take a new license and eight direct patent license agreements, including agreements with Apple, Amazon, Panasonic, Zebra, and LG as discussed below. We agreed to renew our patent license agreement with Samsung and enter into binding arbitration to determine the final terms of the license, including the amount payable by Samsung under the new agreement.

Direct Licenses

During second quarter 2022, we entered into a multi-year, worldwide, non-exclusive, fee bearing patent license agreement with Amazon Technologies, Inc., covering a range of Amazon's consumer electronic devices. We also entered into a multi-year, worldwide, non-exclusive, royalty bearing license with Zebra Technologies Corporation, under the Company’s standard essential patents related to 4G, 5G and Wi-Fi.

During third quarter 2022, we renewed a patent license agreement with Apple. The Company expects to recognize approximately $133.7 million in revenue each year over the seven-year term of the license, which commenced on October 1, 2022.

During fourth quarter 2022, the Company entered into four licenses covering digital television and/or video patents, including with Panasonic Entertainment & Communication Co., Ltd. and LG Electronics.

Customers Generating Revenues Exceeding 10% of Total 2022 Revenues

A small number of customers historically have accounted for a significant portion of our consolidated revenues. In fiscal 2022, revenues (in descending order) from Apple, Samsung, and Xiaomi each comprised 10% or more of our consolidated revenues. Additional information regarding revenue concentrations is provided in this Annual Report in Note 4, "*Geographic/Customer Concentration*" in the Notes to Consolidated Financial Statements included in Part II, Item 8, of this Form 10-K.

During third quarter 2022, we renewed a multi-year, royalty-bearing, worldwide and non-exclusive patent license agreement with Apple (the “Apple PLA”). The agreement sets forth terms covering the sale by Apple of its products and services, including, but not limited to, its 3G, 4G and future generation cellular and wireless-enabled products. The term of the Apple PLA extends through September 30, 2029.

In 2014, we entered into a patent license agreement with Samsung (the “Samsung PLA”). The royalty-bearing license agreement set forth terms covering the sale by Samsung of 3G, 4G and certain future generation wireless products. The Samsung PLA expired on December 31, 2022. On December 30, 2022, we agreed to have a panel of arbitrators establish the royalties to be paid by Samsung Electronics for a worldwide license to certain of the Company’s patents, as well as any other terms to a patent license agreement on which the parties are not able to agree. The determination by the panel will be in the form of a patent license agreement that will be final, binding, and non-appealable, subject to certain limited exceptions. The Company expects the arbitration to conclude within approximately 18 months.

In 2021, we entered into a multi-year, worldwide, non-exclusive, royalty bearing license with Xiaomi. The license covers Xiaomi’s cellular-enabled mobile devices under our standard essential patents related to 3G, 4G, 5G, WiFi and HEVC video technology and extends through December 31, 2025.

Patent Infringement and Declaratory Judgment Proceedings

From time to time, if we believe a party is required to license our patents in order to manufacture, use and/or sell certain products and such party refuses to do so, we may agree with such party to have royalty rates, or other terms, set by third party adjudicators (such as arbitrators) or, in certain circumstances, we may institute legal action against them. Enforcing our intellectual property through legal action is an important alternative to bilateral negotiations with respect to licensees who engage in the pernicious practice of "holdout". In recent years, courts in various jurisdictions have addressed “holdout” behavior, recognizing that FRAND obligations are bilateral and failure of implementers to act in a FRAND manner can result in certain penalties. We welcome this development as it incentivizes potential licensees to negotiate in a timely and reasonable fashion as well as providing a necessary balance to FRAND negotiations.

Enforcement of our patent portfolio has typically taken the form of a patent infringement lawsuit or an administrative proceeding, such as a Section 337 proceeding before the U.S. International Trade Commission ("USITC" or the "Commission"). In a patent infringement lawsuit, we would typically seek damages for past infringement and/or an injunction against future infringement. In a USITC proceeding, we would seek an exclusion order to bar infringing goods from entry into the United States, as well as a cease and desist order to bar further sales of infringing goods that have already been imported into the United States. Parties may bring administrative and/or judicial challenges to the validity, enforceability, essentiality and/or applicability of our patents to their products or seek to petition a court to establish a rate and/or terms for a license to our patents. Parties may also allege that our efforts to enter into a license with that party do not comply with any obligations we may have in connection with our participation in standards-setting organizations, and therefore that we are not entitled to the relief that we seek. For example, a party may allege that we have not complied with an obligation to offer (or be prepared to offer) a license to that party for patents that are or may become standards-essential patents ("SEPs") on FRAND terms and conditions, and may also file antitrust claims or regulatory complaints on that or other bases, and may seek damages or other relief based on such claims. In addition, a party might file a declaratory judgment action to seek a court's declaration that our patents are invalid, unenforceable, not infringed by the other party's products or are not SEPs. Our response to such a declaratory judgment action may include claims of infringement. When we include claims of infringement in a patent infringement lawsuit, a favorable ruling for the Company can result in the payment of damages for past patent royalties, the setting of a royalty for future sales or issuance by the court of an injunction enjoining the infringer from manufacturing, using and/or selling the infringing product.

Contractual Arbitration Proceedings

We and our licensees, in the normal course of business, may have disagreements as to the rights and obligations of the parties under applicable agreements. For example, we could have a disagreement with a licensee as to the amount of reported sales and royalties. Our patent license agreements typically provide for private confidential arbitration as the mechanism for resolving disputes with our licensees. In arbitration, licensees may seek to assert various claims, defenses, or counterclaims, such as claims based on waiver, promissory estoppel, breach of contract, fraudulent inducement to contract, antitrust, and unfair competition. Arbitration proceedings can be resolved through an award rendered by the arbitrators or by settlement between the parties. Parties to arbitration might have the right to have the award reviewed in a court of competent jurisdiction. However, based on public policy favoring the use of arbitration, it is generally difficult to have arbitration awards vacated or modified. The party securing an arbitration award may seek to have that award confirmed as a judgment through an enforcement proceeding. The purpose of such a proceeding is to secure a judgment that can be used for, if need be, seizing assets of the other party.

In addition, arbitration may be a particularly effective means for resolving disputes with prospective licensees concerning the appropriate FRAND terms and conditions for license agreements that include SEPs, particularly where negotiations have otherwise reached an impasse. Binding arbitration to resolve the terms and conditions of a worldwide FRAND license to our relevant portfolio of SEPs is an efficient and cost-effective mechanism, as it allows the parties to avoid piecemeal litigation in multiple jurisdictions and ensures that an enforceable patent license agreement that is consistent with FRAND commitments will be in place at the end of the arbitration process.

Competition

With respect to our technology development activities and resulting commercialization efforts, we face competition from companies, including in-house development teams at other wireless and consumer electronics device companies, semiconductor companies, wireless operators, and other technology providers, developing other and similar technologies that are competitive with our technologies that we may market or set forth into the standards-setting arena.

Due to the exclusionary nature of patent rights, we do not compete, in a traditional sense, with other patent holders for patent licensing relationships or sale transactions. Other patent holders do not have the same rights to the inventions and technologies encompassed by our patent portfolio. In any device, piece of equipment, or service that contains intellectual property, the manufacturer or implementer may need to obtain licenses from multiple holders of intellectual property. In licensing our patent portfolio, we compete with other patent holders for a share of the royalties that certain licensees may argue to be the total royalty that is supported by certain products or services, which they may argue face practical limitations. We believe that licenses under a number of our patents are required to manufacture and sell 3G, 4G, 5G and other wireless products, as well as other consumer electronics devices, and to implement certain technology services. However, numerous companies also claim that they hold patents that are or may be essential or may become essential to standards-based technology deployed on wireless products, other consumer electronics devices or services. To the extent that multiple parties all seek royalties on the same product or service, the manufacturers could claim to have difficulty in meeting the financial requirements of each patent holder. In the past, certain manufacturers have sought antitrust exemptions to act collectively on a voluntary basis. In addition, certain manufacturers have sought to limit aggregate licensing fees or rates for SEPs.

Environmental, Social and Governance ("ESG")

In 2020, we began our ongoing company-wide ESG materiality assessments, which represent an effort to strategically review and analyze our most significant opportunities and accomplishments under four pillars: human capital, environmental impact, governance, and social impact. In 2021, we began publishing an annual Corporate Sustainability Report on our corporate website which provides a summary of our related performance and goals for the future. We plan to publish our next report the during second quarter of 2023. The information contained in our Corporate Sustainability Report is not incorporated by reference into this Form 10-K.

Our Board of Directors has oversight over environmental, social and other sustainability matters, including diversity initiatives, in conjunction with the committees of the Board. In addition, our Chief Financial Officer oversees a committee of senior executives that steers the process of setting purpose, strategies, policies and goals related to economic, environmental and social topics. We are committed to sustainable business principles, to thinking long-term, and to making strategic decisions that adhere to our mission and values. Among other things, this means supporting the United Nations Global Compact and its underlying principles around the environment, the workforce, anti-corruption, and human rights.

We are committed to driving positive progress towards reducing the environmental footprint that the deployment of 5G, wireless networks, and other video technologies will bring. While our business activities do not entail the same concerns related to manufacturing or raw materials sourcing and disposal, we implemented a corporate sustainability strategy to address the following:

- investing in best practices to track and reduce our carbon footprint, including environmental considerations, tracking, and reporting related to data center needs of energy and emissions efficiencies;
- establishing a goal of achieving carbon neutrality within the next four years; and
- building environmental stewardship into our operations by encouraging vendors to match or exceed our commitment to the environment.

InterDigital ranks among the industry leaders for ETSI-disclosed patents and applications as potentially essential to 5G standards. 5G technology is designed to efficiently use energy throughout its ecosystem and will play a significant role in promoting and attaining sustainability goals. Last year we published white papers exploring how 5G and the emerging IoT ecosystem might shape sustainability efforts for the ICT industry. While the proliferation of connected devices can drive increases in energy consumption, innovative solutions can mitigate these outcomes to help lower our carbon footprint and engage more sustainably. In fact, one of our reports found that by 2030, IoT deployment and its subsequent disruption of various industries is projected to save more than eight times the energy it consumes – which could help to save up to 230 billion cubic meters of water and eliminate up to one gigaton of CO_2 emissions. Additionally, 5G technology has significant potential societal benefits, including promoting productivity-led economic growth, increasing medical diagnostic capabilities, creating more sustainable cities and communities, improving remote education and reducing inequalities in education and income. We believe that the benefits to be derived from 5G are substantial and will be felt throughout society.

Human Capital

Overview

We strive to make InterDigital a great place to work for all employees. We are committed to creating a workplace where employees feel valued, respected and challenged, while fostering an environment that attracts and engages a talented workforce who contribute to the company's growth and sustained success. Our Compensation Committee is responsible for overseeing our policies and strategies related to culture and human capital, including diversity, equity and inclusion.

As of December 31, 2022, we had approximately 425 employees worldwide, of whom approximately 220 were based outside of the U.S, and nearly all of whom were full-time. Our employees based in France are represented by works councils and subject to collective bargaining agreements. None of our employees based in the United States or Canada are unionized or subject to collective bargaining agreements. Management believes that its relations with our employees and works councils are good.

Health, Safety & Well-Being

In order to protect the health and safety of our employees and their families during the COVID-19 pandemic, we enacted safety measures including remote work, social distancing protocols, and suspending non-essential travel. As COVID-19 conditions improved, we implemented a phased reopening approach with a priority on health and safety. By creating robust health and safety protocols to provide a safe working environment for those employees who voluntarily chose to work from an office. As the year progressed, we shifted our support to helping our employees thrive in the new hybrid work environment.

Compensation & Benefits

We provide a total compensation package that is targeted to be competitive with the markets in which we compete for talent, while allowing individual pay to vary equitably based on performance, skills and experience. Our total rewards plans include base salary, short- and long-term incentives, healthcare benefits, retirement savings plans, physical and mental well-being programs, flexible work schedules, monetary and social recognition in each of our locations around the globe. In addition to comprehensive health benefits, depending on location, employees may also enjoy subsidized fitness programs, commuter benefits, wellness incentives, tuition reimbursement opportunities and professional development opportunities among other benefits. We routinely review our total rewards programs to ensure they are competitive, allowing us to recruit and retain the diverse talent we need to be successful.

Talent and Culture

Research, learning and growth are fundamental to executing our promise to the world to invent the technologies that make life boundless. In addition, consistently evaluating our talent promotes opportunities to provide actionable learning experiences for our employees to further their career development.

Our Leadership Essentials competency development model is available to all employees and provides a library of tools and resources for growth in the areas of thought leadership, results leadership, people leadership and self-leadership. Through ongoing dialogue with leaders, employees are encouraged to plan for their development and leverage the tools available to create meaningful and actionable development plans that drive personal and company growth.

All employees are encouraged to continually seek out and attend external development opportunities that can provide the employee with new knowledge and skills while also bringing fresh perspectives to the Company.

We endeavor to ensure that our leaders of tomorrow are members of the Company today. Leadership capability is critical in supporting our culture of innovation, inclusion and collaboration. As such, leaders have access to various structured development and learning experiences. These include our Learning for Leaders series which provides an interactive learning experience on topics germane to the realities of being a leader in today's environment. Recent sessions included Leading Distributed Teams and R&I specific Delegate and Empower with Respect and Trust manager training.

We continue to invest in processes to help the organization assess and develop talent, including a formalized annual performance evaluation program, an annual critical skills and potential analysis, and succession planning for the organization's most critical and senior roles. All employees receive an annual performance review. We conducted a culture survey in 2022 that provided relevant insight and guidance into how we can continually align the preferences of our employees with the programs and investments we offer.

We believe that our workplace culture, values, and competitive employee compensation are critical to maintaining low levels of attrition, thereby enabling us to attract and retain talent. For the year ended December 31, 2022, our voluntary attrition percentage was approximately 10%.

Diversity, Equity and Inclusion (DEI)

Maintaining a diverse, equitable and inclusive workforce is critical to our ability to succeed in the global marketplace. In 2022, we launched our DE&I Taskforce, an employee-led team focused on supporting the execution of InterDigital's DE&I strategy.

We plan to continue the journey in 2023 by hosting inclusion training events for all employees, providing forums for feedback and increasing engagement on inclusion while continuing to build on our talent processes that enable change by further expanding investment in our talent acquisition, talent development, and succession planning efforts as a means to diversify our workforce. We have continually provided minority and female leaders the opportunity to attend targeted world-class external development programs that speak to the unique experiences these employees can face in the workplace while investing in their continued growth both personally and professionally. In 2022, we hosted a Fireside Chat: Women in the Workplace, where female executives and a renowned expert on gender equality led a discussion on women in the workplace. In addition, core principles of our culture of inclusion are reflected in the mandatory all-employee training programs we offer on our policies against harassment and discrimination of any kind. With a workforce that is approximately 70% male employees and 30% female employees, and approximately 37% self-identified as diverse within the United States, we recognize that we are on a journey and there is more yet to be done.

Geographic Concentrations

See Note 4, "*Geographic/Customer Concentration*," in the Notes to Consolidated Financial Statements included in Part II, Item 8, of this Form 10-K for financial information about geographic areas for the last three years.

Corporate Information

The ultimate predecessor company of InterDigital, Inc. was incorporated in 1972 under the laws of the Commonwealth of Pennsylvania and conducted its initial public offering in November 1981. Our headquarters are located in Wilmington, Delaware, USA. Our research and development activities are conducted primarily in facilities located in Conshohocken, Pennsylvania, USA; London, United Kingdom; Montreal, Canada; New York, New York, USA; Los Altos, California, USA; and Rennes, France. We are also a party to leases for several smaller research and/or office spaces, including in Brussels, Belgium; Espoo, Finland; Princeton, New Jersey, USA; Indianapolis, Indiana, USA; and Paris, France. In addition, we own an administrative office space in Washington, District of Columbia, USA.

Our Internet address is *www.interdigital.com*, where, in the "Investors" section, we make available, free of charge, our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, certain other reports and filings required to be filed under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and all amendments to those reports or filings as soon as reasonably practicable after such material is electronically filed with or furnished to the United States Securities and Exchange Commission at www.sec.gov. The information contained on or connected to our website or any other website referenced herein is not incorporated by reference into this Form 10-K.

Item 1A. *RISK FACTORS.*

We face a variety of risks that may affect our business, financial condition, operating results, the trading price of our common stock, or any combination thereof. You should carefully consider the following information and the other information in this Form 10-K in evaluating our business and prospects and before making an investment decision with respect to our common stock. If any of these risks were to occur, our business, financial condition, results of operations or prospects could be materially and adversely affected. In such an event, the market price of our common stock could decline and you could lose all or part of your investment. The risks and uncertainties we describe below are not the only ones facing us. Additional risks not presently known to us or that we currently deem immaterial may also affect our business.

Risks Related to Our Business

Challenges relating to our ability to enter into new license agreements and renew existing license agreements could cause our revenue and cash flow to decline.

We face challenges in entering into new patent license agreements. One of the most significant challenges we face is that most potential licensees do not voluntarily seek to enter into license agreements with us before they commence manufacturing and/or selling devices that use our patented inventions. As a result, we must approach companies that are reluctant to take licenses and attempt to establish license agreements with them. The process of identifying potential users of our inventions and negotiating license agreements with reluctant prospective licensees requires significant time, effort and expense. Once discussions with unlicensed companies have commenced, we face the additional challenges imposed by the significant negotiation issues that arise from time to time. Some infringers may act in bad faith, by behaving opportunistically to try to impact license negotiations. Given these challenges relating to our ability to enter into new license agreements, we cannot ensure that all prospective licensees will be identified or, if they are identified, will be persuaded during negotiations to enter into a patent license agreement with us, either at all or on terms acceptable to us, and, as a result, our revenue and cash flow could materially decline. The length of time required to negotiate a license agreement also leads to delays in the receipt of the associated revenue stream, which could also cause our revenue and cash flow to decline.

We may also face challenges in renewing our existing license agreements. Many of our license agreements have fixed terms. Although we endeavor to renew such license agreements prior to their expiration, due to various factors, including the technology and business needs and competitive positions of our licensees and, at times, reluctance on the part of our licensees to participate in renewal discussions, we may not be able to renegotiate the license agreements on acceptable terms before or after the expiration of the license agreement, or at all. If there is a delay in renegotiating and renewing a license agreement prior to its expiration, there could be a gap in time during which we may be unable to recognize revenue from that licensee or we may be forced to renegotiate and renew the license agreement on terms that are more favorable to such licensee, and, as a result, our revenue and cash flow could be materially adversely affected. In addition, if we fail to renegotiate and renew our license agreements at all or on terms that are favorable to us, our revenue and cash flow could be materially adversely affected.

In addition, as discussed elsewhere in these Risk Factors, we are currently operating in a challenging regulatory and judicial environment, which may, under certain circumstances, lead to delays in the negotiation of and entry into patent license agreements. Also, as discussed above in these Risk Factors and in Item 3, Legal Proceedings, in this Form 10-K, we are also currently, and may in the future be, involved in legal proceedings with potential licensees with whom we do not yet have a patent license agreement, or with whom an existing agreement has expired. Any such delays in the negotiation or entry into patent license agreements and receipt of the associated revenue stream could cause our revenue and cash flow to decline.

Royalty rates, or other terms, under our patent license agreements could be subject to determination through arbitration or other third-party adjudications or regulatory or court proceedings, and arbitrators, judges or other third-party adjudicators or regulators could determine that our patent royalty rates should be at levels lower than our agreed or historical rates or otherwise make determinations resulting in less favorable terms and conditions under our patent license agreements.

Historically, we strive for the terms of our patent license agreements, including our royalty rates, to be reached through arms-length bilateral negotiations with our licensees. We could agree, as we recently did with Samsung pursuant to a binding arbitration agreement, to have royalty rates, and any other disputed terms, set by third party adjudicators (such as arbitrators). We have no guarantee that the royalty rates or other terms set by arbitrators, courts or other third parties will be favorable to us. It is possible that courts or regulators could decide to set or otherwise determine the FRAND consistency of such terms or the manner in which such terms are determined, including by determining a worldwide royalty rate for our SEPs. Changes to or clarifications of our obligations to be prepared to offer licenses to SEPs on FRAND terms and conditions could require such terms, including our royalty rates, to be determined through third party adjudications. Finally, we and certain of our current and prospective licensees have initiated, and we and others could in the future initiate, legal proceedings or regulatory proceedings requesting third party adjudicators or regulators to set FRAND terms and conditions for a worldwide license to our SEPs, or to determine the FRAND-consistency of current terms and conditions in our patent license agreements. In particular, in 2021, the IP Tribunal of the Supreme People's Court of the People's Republic of China (SPC) affirmed its position that in certain SEP licensing disputes, Chinese courts can set worldwide royalty rates. In 2021, Lenovo initiated a proceeding before the Wuhan Intermediate People's Court to determine a worldwide rate for our 3G, 4G, and 5G SEPs, and in 2022, Oppo initiated a proceeding before the Guangzhou Intellectual Property Court to determine a worldwide rate for our 3G, 4G, 5G, 802.11 and HEVC SEPs. In addition, our FRAND trial before the UK High Court to establish FRAND terms for a worldwide license with Lenovo for our 3G, 4G, and 5G SEPs is pending a decision. To the extent that our patent royalty rates for our patent license agreements are determined through arbitration or other third party adjudications or regulatory or court proceedings rather than through bilateral negotiations, because such proceedings are inherently unpredictable and uncertain and there are currently few precedents for such determinations, it is possible that royalty rates may be lower than our comparable rates. This could also have a negative impact on royalties we are able to obtain from future licensees, which may have an adverse effect on our revenue and cash flow. In addition, to the extent that other terms and conditions for our patent license agreements are determined through such means, such terms and conditions could be less favorable than our historical terms and conditions, which may have an adverse effect on our licensing business.

Due to the nature of our business, we could continue to be involved in a number of costly litigation, arbitration and administrative proceedings to enforce or defend our intellectual property rights and to defend our licensing practices.

While some companies seek licenses before they commence manufacturing and/or selling devices that use our patented inventions, most do not. Consequently, we approach companies and seek to establish license agreements for using our inventions. We expend significant time and effort identifying users and potential users of our inventions and negotiating license agreements with companies that may be reluctant to take licenses. However, if we believe that a third party is required to take a license to our patents in order to manufacture, sell, offer for sale, import or use products, we have in the past commenced, and may in the future commence, legal or administrative action against the third party if they refuse to enter into a license agreement with us. In turn, we have faced, and could continue to face, counterclaims and other legal proceedings that challenge the essential nature of our patents, or that claim that our patents are invalid, unenforceable or not infringed. Litigation adversaries have and may continue to allege that we have not complied with certain commitments to standards-setting organizations and therefore that we are not entitled to the relief that we seek. For example, Lenovo and other parties have alleged that we have not complied with an obligation to offer a license to a party on FRAND terms and conditions. Parties have also filed, and may in the future file, antitrust claims, unfair competition claims or regulatory complaints on that or other bases, and may seek damages and other relief based on such claims. Litigation adversaries have also filed against us, and other third parties may in the future file, validity challenges such as inter partes proceedings in the USPTO or the China National Intellectual Property Administration, which can lead to delays of our patent infringement actions as well as potential findings of invalidity. Such parties may also seek to obtain a determination that our patents are not infringed, are not essential or are unenforceable.

Litigation may be also required to enforce our intellectual property rights, protect our trade secrets, enforce patent license and confidentiality agreements or determine the validity, enforceability and scope of proprietary rights of others. The cost of enforcing and defending our intellectual property and of defending our licensing practices has been and may continue to be significant. As a result, we could be subject to significant legal fees and costs, including in certain jurisdictions the costs and fees of opposing counsel if we are unsuccessful. In addition, litigation, arbitration and administrative proceedings require significant key employee involvement for significant periods of time, which could divert these employees from other business activities.

Potential patent and litigation reform legislation, potential USPTO and international patent rule changes, potential legislation affecting mechanisms for patent enforcement and available remedies, and potential changes to the intellectual property rights ("IPR") policies of worldwide standards bodies, as well as rulings in legal proceedings, may affect our investments in research and development and our strategies for patent prosecution, licensing and enforcement and could have a material adverse effect on our licensing business as well as our business as a whole.

Potential changes to certain U.S. and international patent laws, rules and regulations may occur in the future, some or all of which may affect our research and development investments, patent prosecution costs, the scope of future patent coverage we secure, the number of forums in which we can seek to enforce our patents, the remedies that we may be entitled to in patent litigation, and attorneys' fees or other remedies that could be sought against us, and may require us to reevaluate and modify our research and development activities and patent prosecution, licensing and enforcement strategies. For example, the State Administration for Market Regulation in China requested comments on June 27, 2022 on its draft Provisions on the Prohibition of the Abuse of Intellectual Property Rights to Exclude or Restrict Competition. If adopted as drafted, among other things, the provisions might create an ambiguous standard for a violation of Chinese antitrust laws where a patent holder seeks to enforce its patents "improperly". The European Commission (EC) has also initiated several processes to review the EU's IP policies, in particular as they relate to SEPs and FRAND. Most recently there is an ongoing discussion in the European Telecommunications Standards Institute ("ETSI") to change its rules in order to give a more prominent role to National Administrations in the standards making process and to align voting weights of companies to those of National Administrations. Absence of change could result in ETSI no longer being recognized as an official Standards Developing Organization by the EC. Any change as it relates to these matters could impact our ability to negotiate license agreements on favorable terms or at all, limit our potential legal remedies and materially impact our business. Further, legislation designed to reduce the value of SEPs and alter the U.S. patent system, including legislation designed to reduce the jurisdiction and remedial authority of the USITC, has periodically been introduced in Congress.

Any potential changes in the law, the IPR policies of standards bodies or other developments that reduce the number of forums available or the type of relief available in such forums (such as injunctive relief), restrict permissible licensing practices (such as our ability to license on a worldwide portfolio basis) or that otherwise cause us to seek alternative forums (such as arbitration or state court), would make it more difficult for us to enforce our patents, whether in adversarial proceedings or in negotiations. Because we have historically depended on the availability of certain forms of legal process to enforce our patents and obtain fair and adequate compensation for our investments in research and development and the unauthorized use of our intellectual property, developments that undermine our ability to do so could have a negative impact on future licensing efforts.

Rulings in our legal proceedings, as well as those of third parties, may affect our strategies for patent prosecution, licensing and royalty rate setting and enforcement. For example, in recent years, the USITC and U.S. courts, including the U.S. Supreme Court and the U.S. Court of Appeals for the Federal Circuit, have taken some actions that have been viewed as unfavorable to patentees, including us. Decisions that occur in the U.S. or in international forums may change the law applicable to various patent law issues, such as, for example, patentability, validity, claim construction, patent exhaustion, patent misuse, permissible licensing practices, available forums, and remedies such as damages and injunctive relief, in ways that are detrimental to the ability of patentees to enforce patents and obtain suitable relief. Currently, there is an ongoing discussion within the EC regarding potential regulations and policy changes that could determine how and whether a patent is essential to a standard. The risk of having our patents determined essential based on a single methodology or specific criteria and conditions associated with patent enforcement and licensing as imposed by the EC would affect our strategies as well. Ongoing uncertainty related to the feasibility and criteria used for this evaluation as well as the cost associated with such essentiality determination could impact the assessment of our SEP portfolio.

We continue to monitor and evaluate our strategies for prosecution, licensing and enforcement with regard to these developments; however, any resulting change in such strategies may have an adverse impact on our business and financial condition.

Our plans to renew license agreements with current licensees as well as additional handset manufacturers in China may be adversely affected by a deterioration in United States-China trade and geopolitical relations, our customers facing economic uncertainty there or our failure to establish a positive reputation in China, which could materially adversely affect our long-term business, financial condition and operating results.

Companies headquartered in China currently comprise a substantial portion of the handset manufacturers that remain unlicensed to our patent portfolio. Our ability to renew license agreements with current licensees in China as well as license new manufacturers is, among other things, affected by the macroeconomic and geopolitical climate, as well as our business relationships and perceived reputation in China. The U.S. and Chinese governments are regularly engaged in various trade discussions, and the U.S. State Department originally issued a travel advisory in January 2019 and reissued this travel advisory on January 11, 2023 along with updates to COVID-19 information which, among other things, advised U.S. citizens to exercise increased caution in China due to arbitrary enforcement of local laws. This travel advisory and other security concerns, along with public health concerns related to the COVID-19 pandemic, have continued to restrict our ability to conduct in-person negotiations with prospective Chinese licensees, and could continue to do so in the future. In January 2020, the U.S. and China entered into Phase One of the Economic and Trade Agreement Between the United States of America and the People's Republic of China (the "Phase One Trade Agreement"). The Phase One Trade Agreement takes steps to ease certain trade tensions between the U.S. and China, including tensions involving intellectual property theft and forced intellectual property transfers by China. Although the Phase One Trade Agreement was an encouraging sign of progress in the trade negotiations between the U.S. and China, questions still remain as to the enforcement of its terms, the resolution of a number of other points of dispute between the parties, and the prevention of further tensions. If the U.S.-China trade dispute re-escalates or relations between the United States and China deteriorate, these conditions could adversely affect our ability to renew license agreements with current licensees as well as license our patent portfolio to currently unlicensed Chinese handset manufacturers. Our ability to renew or conclude new license agreements with such manufacturers could also be affected by economic uncertainty, particularly in the handset market, in China or by our failure to establish a positive reputation and relationships in China. The occurrence of any of these events could have an adverse effect on our ability to enter into any renewal or new license agreements with Chinese handset manufacturers, which, in turn, could cause our long-term business, financial condition and operating results to be materially adversely affected.

Setbacks in defending our patent licensing practices could cause our cash flow and revenue to decline and could have an adverse effect on our licensing business.

Adverse decisions in litigation or regulatory actions relating to our licensing practices, including, but not limited to, findings that we have not complied with our FRAND commitments and/or engaged in anticompetitive or unfair licensing activities or that any of our license agreements are void or unenforceable, could have an adverse impact on our cash flow and revenue. Regulatory bodies may assess fines in the event of adverse findings, and as part of court or arbitration proceedings, a judgment could require us to pay damages (including the possibility of treble damages for antitrust claims). In addition, to the extent that legal decisions find patent license agreements to be void or unenforceable in whole or in part, that could lead to a decrease in the revenue associated with and cash flow generated by such agreements, and, depending on the damages requested, could lead to the refund of certain payments already made. Finally, adverse legal decisions related to our licensing practices could have an adverse effect on our ability to enter into license agreements, which, in turn, could cause our cash flow and revenue to decline.

We are subject to risks resulting from the concentration of our revenues from a limited number of licensees or customers, and in the wireless industry generally.

We earn a significant amount of our revenues from a limited number of licensees or customers, and we expect that a significant portion of our revenues will continue to come from a limited number of licensees or customers for the foreseeable future. For example, in 2022, Apple, Samsung, and Xiaomi each comprised 10% or more of our consolidated revenues. Further, because of the limited number of licensees and potential licensees, any opportunistic behavior during license negotiations by a company or companies using our technology could create large exposure for us. In the event that we are unable to renew one or more of such license agreements at all or on terms that are favorable to us, our future revenue and cash flow could be materially adversely affected. In the event that one or more of our significant licensees or customers fail to meet their payment or reporting obligations (for example, due to a credit issue or in connection with a legal dispute or similar proceeding) under their respective license agreements, our future revenue and cash flow could be materially adversely affected. In addition, in the event that there is a material decrease in shipments of licensed products by one of our per-unit licensees, our revenues from such licensee could significantly decline and our future revenue and cash flow could be adversely affected. Additionally, there is significant concentration among participants in the wireless communications industry, and these trends may continue. For example, in 2021, Samsung, Apple and Xiaomi collectively accounted for approximately 50% of worldwide smartphone shipments. Although the rollout of 5G handsets is still in its early stages, we anticipate a similar level of concentration in worldwide shipments of those units as well. Any further concentration or sale within the wireless industry among handset providers and/or original design manufacturers ("ODMs") may reduce the number of licensing opportunities or, in some instances, result in the reduction, loss or elimination of existing royalty obligations. Further, if wireless carriers consolidate with companies that utilize technologies that are competitive with our technologies or that are not covered by our patents, we could lose market opportunities, which could negatively impact our revenues and financial condition.

Setbacks in defending and enforcing our patent rights could cause our revenue and cash flow to decline.

Some third parties have challenged, and we expect will continue to challenge, the infringement, validity and enforceability of certain of our patents. In some instances, certain of our patent claims could be substantially narrowed or declared invalid, unenforceable, not essential or not infringed. We cannot ensure that the validity and enforceability of our patents will be maintained or that our patents will be determined to be applicable to any particular product or standard. Moreover, third parties could attempt to circumvent certain of our patents through design changes. Any significant adverse findings as to the validity, infringement, enforceability or scope of our patents and/or any successful design-around of our patents could result in the loss of patent licensing revenue from existing licensees, through termination or modification of agreements or otherwise, and could substantially impair our ability to secure new patent licensing arrangements, either at all or on beneficial terms.

Royalty rates could decrease for future license agreements due to downward product pricing pressures and competition over patent royalties.

Royalty payments to us under future license agreements could be lower than anticipated. Certain licensees and others in the wireless and consumer electronics industries, individually and collectively, are demanding that royalty rates for patents be lower than historic royalty rates and/or that such rates should be applied to royalty bases smaller than the selling price of an end product (such as the “smallest salable patent practicing unit”). There is also increasing downward pricing pressure on certain wireless products, including handsets, and other consumer electronics devices that we believe implement our patented inventions, and some of our royalty rates are tied to the pricing of these devices. In addition, a number of other companies also claim to hold patents that are essential with respect to products we aim to license. Demands by certain licensees to reduce royalties due to pricing pressure or the number of patent holders seeking royalties on these technologies could result in a decrease in the royalty rates we receive for use of our patented inventions, thereby decreasing future revenue and cash flow.

Our technologies may not become patented, adopted by wireless or video standards or widely deployed.

We invest significant resources in the development of advanced technology and related solutions. However, certain of our inventions that we believe will be employed in current and future products, including 4G, 5G, HEVC, VVC and others, are the subject of patent applications where no patent has been issued to us yet by the relevant patent issuing authorities. There is no assurance that these applications will issue as patents, either at all or with claims that would be required by products in the market currently or in the future. Our investments may not be recoverable or may not result in meaningful revenue if a sufficient number of our technologies are not patented and/or adopted by the relevant standards or if products based on the technologies in which we invest are not widely deployed. Competing technologies could reduce the opportunities for the adoption or deployment of technologies we develop. In addition, it is possible that in certain technology areas, such as in the IoT space, the adoption of proprietary systems could compete with or replace standards-based technology. It is also possible in certain technology areas, such as video coding and the IoT, that open source and/or purportedly royalty-free solutions such as AV1, VP-9 and OCF could compete with or replace proprietary standards-based technology. If the technologies in which we invest do not become patented or are not adopted by the relevant standards, or are not adopted by and deployed in the mainstream markets, at all or at the rate or within time periods that we expect, or in the case of open source solutions, do not infringe our technology, our business, financial condition and operating results could be adversely affected.

Macroeconomic conditions including rising inflation may result in increased costs of operations.

A decline in economic conditions, such as a recession, economic downturn or inflationary conditions in the U.S. or elsewhere could adversely affect our business. In particular, inflation has accelerated in the U.S. and globally. A majority of our revenue is derived from patent license agreements that provide for fixed payments that were negotiated before the recent rise in inflation. An inflationary environment can increase our cost of labor, as well as our other operating costs, without a corresponding increase in our revenue, which may have a material adverse impact on our operating results and financial condition.

We face competition from companies developing other or similar technologies.

We face competition from companies developing other and similar technologies that are competitive with our technologies, including in the standards-setting arena. Due to competition, our technologies may not find a viable commercial marketplace or, where applicable, be adopted by the relevant standards. In particular, increasing participation within standards-setting organizations has contributed to greater competition for influence within such organizations and for ultimately setting standards. In addition, in licensing our patent portfolio, we may compete with other companies, many of whom also claim to hold SEPs, for a share of the royalties that certain licensees may argue to be the total royalty that is supported by a certain product or products. In any device or piece of equipment that contains intellectual property, the manufacturer may need to obtain a license from multiple holders of intellectual property. To the extent that multiple parties all seek royalties on the same product, the manufacturers could claim to have difficulty in meeting the financial requirements of each patent holder.

Scrutiny by antitrust authorities may affect our strategies for patent prosecution, licensing and enforcement and may increase our costs of doing business and/or lead to monetary fines, penalties or other remedies or sanctions.

Domestic and foreign antitrust authorities regularly review their policies with respect to the use of SEPs, including the enforcement of such patents against competitors and others. Such scrutiny has in the past resulted in enforcement actions against Qualcomm and other licensing companies, and could lead to additional investigations of, or enforcement actions against, us. Such inquiries and/or enforcement actions could impact the availability of injunctive and monetary relief, which may adversely affect our strategies for patent prosecution, licensing and enforcement and increase our costs of operation. Such inquiries and/or enforcement actions could also result in monetary fines, penalties or other remedies or sanctions that could adversely affect our business and financial condition.

Our commercialization, licensing and/or M&A activities could lead to patent exhaustion or implied license issues that could materially adversely affect our business.

The legal doctrines of patent exhaustion and implied license may be subject to different judicial interpretations. Our commercialization or licensing of certain technologies and/or our M&A activities could potentially lead to patent exhaustion or implied license issues that could adversely affect our patent licensing program(s) and limit our ability to derive licensing revenue from certain patents under such program(s), whether through the assumption of license agreements that would result in our patents being captured by such agreements, the acquisition of a business that sells or licenses products that practice our patents, or otherwise. In the event of successful challenges by current or prospective licensees based on these doctrines that result in a material decrease to our patent licensing revenue, our financial condition and operating results may be materially adversely affected.

We have in the past and may in the future make acquisitions or engage in other strategic transactions that could result in significant changes, costs and/or management disruption and that may fail to enhance shareholder value or produce the anticipated benefits.

We have in the past and may in the future acquire companies, businesses, technology and/or intellectual property, and enter into joint ventures or other strategic transactions. Acquisitions or other strategic transactions may increase our costs, including but not limited to accounting and legal fees, and may not generate financial returns or result in increased adoption or continued use of our technologies or of any technologies we may acquire.

The integration of acquired companies or businesses may result in significant challenges, including, among others: successfully integrating new employees, technology and/or products; consolidating research and development operations; minimizing the diversion of management's attention from ongoing business matters; and consolidating corporate and administrative infrastructures. As a result, we may be unable to accomplish the integration smoothly or successfully. In addition, we cannot be certain that the integration of acquired companies, businesses, technology and/or intellectual property with our business will result in the realization of the full benefits that we anticipate will be realized from such acquisitions. Our plans to integrate and/or expand upon research and development programs and technologies obtained through acquisitions may result in products or technologies that are not adopted by the market, or the market may adopt solutions competitive to our technologies.

A portion of our revenue and cash flow is dependent upon our licensees' sales and market conditions and other factors that are beyond our control or are difficult to forecast.

A portion of our licensing revenues is dependent on sales by our licensees that are outside our control and that could be negatively affected by a variety of factors, including global, regional and/or country-specific economic conditions and/or public health concerns, country-specific natural disasters impacting licensee manufacturing and sales, demand and buying patterns of end users, which are often driven by replacement and innovation cycles, the service life of products incorporating our technologies, competition for our licensees' products, supply chain disruptions, and any decline in the sale prices our licensees receive for their covered products. In addition, our operating results also could be affected by general economic and other conditions that cause a downturn in the market for the licensees of our technologies. Our revenue and cash flow also could be affected by (i) the unwillingness of any licensee to satisfy all of their royalty obligations on the terms or within the timeframe we expect, (ii) a decline in the financial condition or market position of any licensee or (iii) the failure of sales to meet market forecasts due to global or regional economic conditions, political instability, natural disasters, competitive technologies, lower demand or otherwise. It is also difficult to predict the timing, nature and amount of licensing revenue associated with past infringement (including as a result of the unwillingness of our licensees to compensate us for such past infringement) and new licenses, strategic relationships and the resolution of legal proceedings. The foregoing factors are difficult to forecast and could adversely affect both our quarterly and annual operating results and financial condition.

In addition, some of our patent license agreements provide for upfront fixed payments or prepayments that cover our licensees' future sales for a specified period and reduce future cash receipts from those licensees. As a result, our cash flow has historically fluctuated from period to period. Depending upon the payment structure of any new patent license agreements into which we may enter, such cash flow fluctuations may continue in the future.

Our revenue may be affected by the deployment of future-generation wireless standards in place of 3G, 4G and 5G technologies or future-generation video standards, by the timing of such deployment, or by the need to extend or modify certain existing license agreements to cover subsequently issued patents.

We own an evolving portfolio of issued and pending patents related to 3G, 4G and 5G cellular technologies and non-cellular technologies including video coding technologies, and our patent portfolio licensing program for future-generation wireless standards or video coding standards may not be as successful in generating licensing income as our current licensing programs. Although we continue to participate in worldwide standards bodies and contribute our intellectual property to future-generation wireless and video coding standards, including standards that will define 5G, our technologies might not be adopted by the relevant standards. In addition, we may not be as successful in the licensing of future-generation products as we have been in licensing products deploying existing wireless and video coding standards, or we may not achieve a level of royalty revenues on such products that is comparable to that which we have historically received on products deploying existing wireless and video coding standards. Furthermore, if there is a delay in the standardization and/or deployment of 5G or future video coding standards, our business and revenue could be negatively impacted.

The licenses that we grant under our patent license agreements typically only cover products designed to operate in accordance with specified technologies and that were manufactured or deployed or anticipated to be manufactured or deployed at the time of entry into the agreement. Also, we have patent license agreements with licensees that now offer for sale types of products that were not sold by such licensees at the time the patent license agreements were entered into and, thus, are not licensed by us. We do not derive patent licensing revenue from the sale of products by our licensees that are not covered by a patent license agreement. In order to grant a patent license for any such products, we will need to extend or modify our patent license agreements or enter into new license agreements with such licensees, and we may not be able to do so on terms acceptable to us or at all. Further, such extensions, modifications or new license agreements may adversely affect our revenue on the sale of products covered by the license prior to any extension, modification or new license.

Our plans to expand our revenue opportunities may not be successful.

As part of our business strategy, we are seeking to expand our revenue opportunities through targeted acquisitions, research partnerships, joint ventures and licensing platforms, and the continued development of new technologies, particularly in the video coding and IoT spaces. We also seek to expand our revenue opportunities beyond device-based licensing revenue to certain video and cloud-based service providers, which may not be successful. Commercial success depends on many factors, including the demand for the technology, the highly competitive markets for products that utilize our technology, regulatory issues associated with such products, and effective marketing and licensing or product sales. Our technology development and acquisition activities may experience delays, or the markets for our technology solutions may fail to materialize to the extent or at the rate we expect, if at all, each of which could reduce our opportunities for technology sales and licensing. In addition, there could be fewer applications for our technology than we expect, and/or our offerings may require robust ecosystems of customers and service providers that may fail to materialize. Technology markets also could be affected by general economic conditions, customer buying patterns, timeliness of equipment development, and the availability of capital for, and the high cost of, infrastructure improvements. Additionally, investing in technology development is costly and may require structural changes to the organization that could require additional costs, including without limitation legal and accounting fees. Furthermore, delays or failures to enter into additional partnering relationships to facilitate technology development efforts and secure support for our technologies or delays or failures to enter into technology licensing agreements to secure integration of additional functionality could impair our ability to introduce into the market portions of our technology and resulting products, cause us to miss critical market windows, or decrease our ability to remain competitive. In the event that any of these risks materialize, our long-term business, financial condition and operating results may be materially adversely affected.

We may not be able to attract and retain qualified employees.

Competition for top talent is substantial. In order to be successful, we must attract, develop, and retain employees. Implementing our business strategy requires specialized engineering and other technical talent, and these skills are in high demand among our competitors. The market for employees in our industry is extremely competitive, and competitors for talent, particularly engineering talent, increasingly attempt to hire, and to varying degrees have been successful in hiring, our employees or employment candidates. Further, the increased availability of remote working arrangements, largely driven by the COVID-19 pandemic, has expanded the pool of companies that can compete for our employees and employment candidates. A number of such competitors for talent are significantly larger than us and may be able to offer compensation, benefits or work arrangements perceived as more desirable than what we are able to offer. If we are unable to recruit, retain, and motivate our employees, then we may not be able to innovate, execute on our strategy and grow our business as planned.

The extent to which the COVID-19 pandemic or any other potential future public health crises, pandemics or similar events will adversely impact our business, financial condition and results of operations is highly uncertain and cannot be predicted.

The COVID-19 pandemic has created significant worldwide uncertainty, volatility and economic disruption. The extent to which COVID-19 and any other potential future public health crises, pandemics or similar events could adversely impact our business, financial condition and results of operations is dependent upon numerous factors, many of which are highly uncertain, rapidly changing and uncontrollable. These factors include, but are not limited to: (i) the duration and scope of the pandemic; (ii) governmental, business and individual actions that have been and continue to be taken in response to the pandemic or other event, including travel restrictions, quarantines, social distancing, work-from-home and shelter-in-place orders and shut-downs; (iii) the impact on our customers, including those that are presently unlicensed, and other business partners; (iv) the impact on U.S. and global economies and the timing and rate of economic recovery; (v) potential adverse effects on the financial markets and access to capital; (vi) potential goodwill or other impairment charges; (vii) increased cybersecurity risks as a result of pervasive remote working conditions; (viii) our ability to effectively carry out our operations due to any adverse impacts on the health and safety of our employees and their families; (ix) the ability of our customers to timely satisfy their payment obligations to us; and (x) fluctuations in global shipments of handsets and consumer electronics devices.

Many of our employees have the flexibility to work remotely on at least a part-time basis, which could impair our ability to maintain our collaborative and innovative culture, and may cause disruptions among our employees, including decreases in productivity, challenges in communications between on-site and off-site employees and, potentially, employee dissatisfaction and attrition. When our employees do work in our offices, they may be exposed to COVID-19 or other illnesses. Any of these factors could adversely impact our business.

We face risks from doing business and maintaining offices in international markets.

A significant portion of our licensees, potential licensees and customers are international, and our licensees, potential licensees and customers sell their products to markets throughout the world. In addition, in recent years, we have expanded, and we may continue to expand, our international operations, opening offices in France, Belgium and Finland. Accordingly, we are subject to the risks and uncertainties of operating internationally and could be affected by a variety of uncontrollable and changing factors, including, but not limited to: difficulty in protecting our intellectual property in foreign jurisdictions; enforcing contractual commitments in foreign jurisdictions or against foreign corporations; government regulations, tariffs and other applicable trade barriers; biased enforcement of foreign laws and regulations to promote industrial or economic policies at our expense; retaliatory practices by foreign actors; currency control regulations; export license requirements and restrictions on the use of technology; social, economic and political instability; costly, time consuming and changing regulatory regimes; natural disasters, acts of terrorism, widespread illness and war; potentially adverse tax consequences; general delays in remittance of and difficulties collecting non-U.S. payments; foreign labor regulations; anti-corruption laws; public health issues; and difficulty in staffing and managing operations remotely. We also are subject to risks specific to the individual countries in which we and our licensees, potential licensees and customers do business.

In addition, adverse movements in currency exchange rates may negatively affect our business due to a number of situations, including the following:

- If the effective price of products sold by our licensees were to increase as a result of fluctuations in the exchange rate of the relevant currencies, demand for the products could fall, which in turn would reduce our royalty revenues.
- Assets or liabilities of our consolidated subsidiaries may be subject to the effects of currency fluctuations, which may affect our reported earnings.
- Certain of our operating and investing costs, such as foreign patent prosecution, are based in foreign currencies. If these costs are not subject to foreign exchange hedging transactions, strengthening currency values in selected regions could adversely affect our near-term operating expenses, investment costs and cash flows. In addition, continued strengthening of currency values in selected regions over an extended period of time could adversely affect our future operating expenses, investment costs and cash flows.

Environmental. social and governance (ESG) matters may expose us to reputational risks and legal liability.

There is an increasing focus from investors, customers and employees as well as other stakeholders concerning ESG matters. Current and prospective investors are increasingly utilizing ESG data to inform their decisions including investment and voting using a multitude of evolving score and rating frameworks. Additionally public interest and legislative pressure related to public companies' ESG practices continue to grow. If our ESG practices fail to meet the expectations of any of our stakeholders' evolving standards, our reputation, brand and employee retention may be negatively impacted. If we do not adapt our strategy or execution quickly enough to meet the evolving expectations, our business, financial condition, results of operations and reputation could be adversely affected.

Our industry is subject to rapid technological change, uncertainty and shifting market opportunities.

Our success depends, in part, on our ability to define and keep pace with changes in industry standards, technological developments and varying customer requirements. Changes in industry standards and needs could adversely affect the development of, and demand for, our technology, rendering our technology currently under development obsolete and unmarketable. The patents and applications comprising our portfolio have fixed terms, and, if we fail to anticipate or respond adequately to these changes through the development or acquisition of new patentable inventions, patents or other technology, we could miss a critical market opportunity, reducing or eliminating our ability to capitalize on our patents, technology solutions or both.

Our use of open source software could materially adversely affect our business, financial condition, operating results and cash flow.

Certain of our technology and our suppliers' technology may contain or may be derived from "open source" software, which, under certain open source licenses, may offer accessibility to a portion of a product's source code and may expose related intellectual property to adverse licensing conditions. Licensing of such technology may impose certain obligations on us if we were to distribute derivative works of the open source software. For example, these obligations may require us to make source code for derivative works available or license such derivative works under a particular type of license that is different from what we customarily use to license our technology. While we believe we have taken appropriate steps and employ adequate controls to protect our intellectual property rights, our use of open source software presents risks that, if we inappropriately use open source software, we may be required to re-engineer our technology, discontinue the sale of our technology, release the source code of our proprietary technology to the public at no cost or take other remedial actions, which could adversely affect our business, operating results and financial condition. There is a risk that open source licenses could be construed in a way that could impose unanticipated conditions or restrictions on our ability to commercialize our solutions, which could adversely affect our business, operating results and financial condition. In addition, developing open source products, while adequately protecting the intellectual property rights upon which our licensing business depends, may prove burdensome and time-consuming under certain circumstances, thereby placing us at a competitive disadvantage.

We may have exposure to additional tax liabilities.

The United States government enacted tax reform in 2017 and continues to provide regulatory guidance related to tax reform provisions, and state authorities continue to provide guidance around the application of tax reform provisions, that in each case could impact future effective tax rates favorably or unfavorably. The United States government could enact further tax reform legislation, which could adversely impact our tax rate. The international tax environment also continues to change as a result of both coordinated efforts by governments and unilateral measures designed by individual countries, which could ultimately have an adverse effect on the taxation of international businesses such as ours. Accordingly, our tax rate could be adversely affected by several factors, many of which are outside of our control, including: changing tax laws, regulations and interpretations thereof; changes in tax rates; and assessments and any related tax, interest or penalties. If we are deemed to owe additional taxes, our business, financial condition, and results of operations could be adversely affected.

Changes to our tax assets or liabilities could have an adverse effect on our consolidated financial condition or results of operations.

The calculation of tax assets and liabilities involves significant judgment in estimating the impact of uncertainties in the application of complex tax laws. We are subject to examinations by the Internal Revenue Service ("IRS") and other taxing jurisdictions on various tax matters, including challenges to various positions we assert in our filings and foreign tax liability and withholding. Pursuant to the guidance for accounting for uncertainty in income taxes, certain tax contingencies are recognized when they are determined to be more likely than not to occur. Although we believe we have adequately recorded tax assets and accrued for tax contingencies that meet this criterion, we may not fully recover our tax assets or may be required to pay taxes in excess of the amounts we have accrued. In the event that the IRS or another taxing jurisdiction levies an assessment in the future, it is possible the assessment could have an adverse effect on our consolidated financial condition or results of operations.

The high amount of capital required to obtain radio frequency licenses, deploy and expand wireless networks and obtain new subscribers, as well as the cost of new handsets could slow the growth of the wireless communications industry and adversely affect our business.

Our growth is partially dependent upon the increased use of wireless communications services and cellular handsets that utilize our technology. In order to provide wireless communications services, wireless operators must obtain rights to use specific radio frequencies. The allocation of frequencies is regulated in the United States and other countries throughout the world, and limited spectrum space is allocated to wireless communications services. Industry growth may be affected by the amount of capital required to obtain licenses to use new frequencies, deploy wireless networks to offer voice and data services, expand wireless networks to grow voice and data services and obtain new subscribers. The significant cost of licenses, wireless networks and subscriber additions may slow the growth of the industry if wireless operators are unable to obtain or service the additional capital necessary to implement or expand advanced wireless networks. Growth in the number of cellular handsets may slow as the number of people worldwide without a cellular handset declines. In addition, if the cost of cellular handsets increases, customers may be less likely to replace their existing devices with new devices. The growth of our business could be adversely affected if either of these events occur.

Market projections and data are forward-looking in nature.

Our strategy is based on our own projections and on analyst, industry observer and expert projections, which are forward-looking in nature and are inherently subject to risks and uncertainties. The validity of their and our assumptions, the timing and scope of wireless markets, economic conditions, customer buying patterns, timeliness of equipment development, pricing of products, growth in wireless telecommunications services that would be delivered on wireless devices and availability of capital for infrastructure improvements could affect these predictions. In addition, market data upon which we rely is based on third party reports that may be inaccurate. The inaccuracy of any of these projections and/or market data could adversely affect our operating results and financial condition.

It can be difficult for us to verify royalty amounts owed to us under our per-unit licensing agreements, and this may cause us to lose potential revenue.

The standard terms of our per-unit license agreements require our licensees to document the sale of licensed products and report this data to us on a quarterly basis. Although our standard license terms give us the right to audit books and records of our licensees to verify this information, audits can be expensive, time consuming, incomplete and subject to dispute. From time to time, we audit certain of our licensees to verify independently the accuracy of the information contained in their royalty reports in an effort to decrease the likelihood that we will not receive the royalty revenues to which we are entitled under the terms of our license agreements, but we cannot give assurances that these audits will be numerous enough and/or effective to that end.

Our technology development activities may experience delays.

We may experience technical, financial, resource or other difficulties or delays related to the further development of our technologies. Delays may have adverse financial effects and may allow competitors with comparable technology offerings to gain an advantage over us in the marketplace or in the standards setting arena. There can be no assurance that we will continue to have adequate staffing or that our development efforts will ultimately be successful. Moreover, certain of our technologies have not been fully tested in commercial use, and it is possible that they may not perform as expected. In such cases, our business, financial condition and operating results could be adversely affected, and our ability to secure new licensees and other business opportunities could be diminished.

We rely on relationships with third parties to develop and deploy technology solutions.

Successful exploitation of our technology solutions is partially dependent on the establishment and success of relationships with equipment producers and other industry participants. Delays or failure to enter into licensing or other relationships to facilitate technology development efforts or delays or failure to enter into technology licensing agreements to secure integration of additional functionality could impair our ability to introduce into the market portions of our technology and resulting products, cause us to miss critical market windows or impair our ability to remain competitive.

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

Attempts by others to gain unauthorized access to information technology systems are becoming more sophisticated. These attempts, which in some cases could be related to industrial or other espionage, include covertly introducing malware to computers and networks and impersonating authorized users, among others. We seek to detect and investigate all security incidents and to prevent their recurrence, but, in some cases, we might be unaware of an incident or its magnitude and effects. While we have not identified any material incidents of unauthorized access to date, the theft, unauthorized use or publication of our intellectual property and/or confidential business or personal information (whether through a breach of our own systems or the breach of a system of a third party that provides services to us) could harm our competitive or negotiating positions, reduce the value of our investment in research and development and other strategic initiatives, compromise our patent enforcement strategies or outlook, damage our reputation or otherwise adversely affect our business. In addition, to the extent that any future security breach results in inappropriate disclosure of our employees', licensees', or customers' confidential and /or personal information, we may incur liability or additional costs to remedy any damages caused by such breach.

Our business is subject to a variety of domestic and international laws, rules and policies and other obligations regarding data protection.

We may be affected by existing and proposed laws and regulations, as well as government policies and practices related to cybersecurity, privacy and data protection. For example, the European General Data Protection Regulation ("GDPR"), the United Kingdom's GDPR, the California Consumer Privacy Act of 2018 and the California Privacy Rights Act of 2020 impose obligations on companies such as ours regarding the handling of personal data. Additionally, in 2021, China adopted the Personal Information Protection Law ("PIPL"), which, together China's existing cyber and data securities regulations, have required and will continue to require significant investment and resources to ensure compliance. Complying with the these and other privacy and cybersecurity regulations could cause us to incur substantial costs or require us to change our business practices. If we cannot implement an effective compliance mechanism for cross-border privacy and security matters, we may face increased exposure to regulatory actions, substantial fines and other penalties. Further, these areas are quickly changing, becoming increasingly stringent, and creating regulatory uncertainty.

We regularly make strategic decisions about our patent portfolio. Although we seek to focus our operations in areas where we see the potential for growth and to divest assets where we see more limited opportunities, dispositions we decide to undertake may involve risks, and the anticipated benefits of such actions may not be realized.

From time to time, we intend to make strategic decisions about our patent portfolio, whether through a formal portfolio review or opportunistic dispositions. Cost savings expectations of any portfolio review are inherently uncertain and, therefore, we cannot provide assurance that we will achieve any expected, or any actual cost savings from any such action. Our portfolio review activities may place substantial demands on our management, which could lead to the diversion of management's attention from other business priorities. We have divested a number of assets, including as part of a recent strategic portfolio rationalization review. Any assets that we divest could turn out to be more valuable than we had anticipated and we may not realize the anticipated benefits of any strategic decision about our patent portfolio.

Risks Relating to Our Common Stock and our Convertible Notes

Our operating results may fluctuate significantly, which could make our future results difficult to predict and could cause our operating results to fall below expectations.

Our operating results may fluctuate from quarter to quarter as a result of a number of factors, many of which are outside of our control and may be difficult to predict. In particular, the timing of revenue recognition may cause our revenues and earnings to fluctuate, and there is significant judgment in the application of our revenue recognition principles. For example, accounting principles may require us to recognize revenue before the actual amount is certain, which could add to uncertainty in our revenue guidance. The variability and unpredictability of our results of operations or other operating metrics could result in our failure to meet our expectations or those of industry or financial analysts. If we fail to meet or exceed such expectations for these or any other reasons, the market price of our common stock could fall substantially.

Our stock repurchase program may not result in a positive return of capital to shareholders.

Our stock repurchase program, including the tender offer that we initiated during first quarter 2023, may not return value to shareholders as it was designed to do because the market price of the stock may decline below the levels at which we repurchased shares of stock. Stock repurchase programs are intended to deliver shareholder value over the long term, but stock price fluctuations can reduce the effectiveness of such programs. In addition, our Board of Directors could choose to suspend or terminate the stock repurchase program at any time or not to renew the program.

Our shareholders may not receive the level of dividends provided for in our dividend policy or any dividend at all, and any decrease in or suspension of the dividend could cause our stock price to decline.

Our current dividend policy contemplates the payment of a regular quarterly cash dividend of $0.35 per share on our outstanding common stock. We expect to continue to pay quarterly cash dividends on our common stock at the rate set forth in our current dividend policy. However, the dividend policy and the payment and timing of future cash dividends under the policy are subject to the final determination each quarter by our Board of Directors that (i) the dividend will be made in compliance with laws applicable to the declaration and payment of cash dividends, including Section 1551(b) of the Pennsylvania Business Corporation Law, and (ii) the policy remains in our best interests, which determination will be based on a number of factors, including our earnings, financial condition, capital resources and capital requirements, alternative uses of capital, restrictions imposed by any existing debt, economic conditions and other factors considered relevant by the Board of Directors. Given these considerations, our Board of Directors may increase or decrease the amount of the dividend at any time and may also decide to vary the timing of or suspend or discontinue the payment of dividends in the future. Any decrease in the amount of the dividend, or suspension or discontinuance of payment of a dividend, could cause our stock price to decline.

Securities analyst coverage or lack of coverage may have a negative impact on our common stock's market price.

The trading market for our common stock will depend, in part, on the research and reports that securities or industry analysts publish about us or our business. We do not have any control over these analysts. If securities or industry analysts stop their coverage of us or additional securities and industry analysts fail to cover us in the future, the trading price for our common stock would be negatively impacted. If any analyst or analysts who cover us downgrade our common stock, changes their opinion of our shares or publishes inaccurate or unfavorable research about our business, our stock price could decline. If any analyst or analysts cease coverage of us or fail to publish reports on us regularly, demand for our common stock could decrease and we could lose visibility in the financial markets, which could cause our stock price and trading volume to decline.

Our indebtedness could adversely affect our business, financial condition and results of operations and our ability to meet our payment obligations under such indebtedness.

Our total indebtedness as of December 31, 2022 was approximately $616.8 million. This level of debt could have significant consequences on our future operations, including:

- reducing the availability of our cash flow to fund working capital, capital expenditures, acquisitions and other general corporate purposes, and limiting our ability to obtain additional financing for these purposes;
- limiting our flexibility in planning for, or reacting to, and increasing our vulnerability to, changes in our business, the industry in which we operate and the general economy; and
- placing us at a competitive disadvantage compared to our competitors that have less debt or are less leveraged.

Any of the above-listed factors could have an adverse effect on our business, financial condition and results of operations and our ability to meet our payment obligations under the 2024 Notes and the 2027 Notes.

In addition, as more fully described in Note 9 "*Obligations*" within the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this Form 10-K, we made an irrevocable election to "Net Share Settle" our obligations under the 2024 Notes, which requires us to pay the outstanding principal amount due under the 2024 Notes in cash. Our ability to meet our payment and other obligations under the 2024 Notes depends on our ability to generate significant cash flow in the future. This, to some extent, is subject to general economic, financial, competitive, legislative and regulatory factors as well as other factors that are beyond our control. We cannot be certain that our business will generate cash flow from operations, or that future borrowings will be available to us, in an amount sufficient to enable us to meet our payment obligations under the 2024 Notes and the 2027 Notes and to fund other liquidity needs. If we are not able to generate sufficient cash flow to service our debt obligations, we may need to refinance or restructure our debt, sell assets, reduce or delay capital investments, or seek to raise additional capital. If we are unable to implement one or more of these alternatives, we may not be able to meet our payment obligations under the 2024 Notes or 2027 Notes, and this default could cause us to be in default on any other currently existing or future outstanding indebtedness.

The convertible note hedge transactions and warrant transactions that we entered into in connection with the offering of the 2024 Notes and the 2027 Notes may affect the value of the such notes, and the market price of our common stock.

In connection with the offerings of the 2024 Notes and the 2027 Notes, we entered into convertible note hedge transactions with certain financial institutions (the "option counterparties") and sold warrants to the respective option counterparties. These transactions will be accounted for as an adjustment to our shareholders' equity. The convertible note hedge transactions are expected to reduce the potential equity dilution upon any conversion of the notes. The warrants will have a dilutive effect on our earnings per share to the extent that the market price of our common stock exceeds the applicable strike price of the warrants on any expiration date of the warrants.

In addition, the respective option counterparties (and/or their affiliates) may modify their respective hedge positions from time to time (including during any observation period related to a conversion of the notes) by entering into or unwinding various derivative transactions with respect to our common stock and/or by purchasing or selling our common stock in open market transactions and/or privately negotiated transactions.

The potential effect, if any, of any of these transactions and activities on the market price of our common stock will depend in part on market conditions and cannot be ascertained at this time, but any of these activities could adversely affect the market price of our common stock.

We are subject to counterparty risk with respect to the convertible note hedge transactions.

The respective option counterparties are financial institutions or affiliates of financial institutions, and we will be subject to the risk that such option counterparties may default under the respective convertible note hedge transactions. Our exposure to the credit risk of the option counterparties is not secured by any collateral. If an option counterparty becomes subject to insolvency proceedings, we will become an unsecured creditor in those proceedings with a claim equal to our exposure at that time under the applicable convertible note hedge transactions. Our exposure will depend on many factors but, generally, the increase in our exposure will be correlated to the increase in our common stock market price and in volatility of our common stock. In addition, upon a default by an option counterparty, we may suffer adverse tax consequences and dilution with respect to our common stock. We can provide no assurance as to the financial stability or viability of the option counterparties.

Provisions of the 2024 Notes and 2027 Notes could discourage an acquisition of us by a third party.

Certain provisions of the 2024 Notes and the 2027 Notes could make it more difficult or more expensive for a third party to acquire us. Upon the occurrence of certain transactions constituting a fundamental change under the indentures, holders of the notes will have the right, at their option, to require us to repurchase all of their applicable notes or any portion of the principal amount of such notes at a price of 100% of the principal amount of the notes being repurchased, plus accrued and unpaid interest. We may also be required to issue additional shares upon conversion in the event of certain fundamental change transactions. These provisions could limit the price that some investors might be willing to pay in the future for shares of our common stock.

Item 1B. *UNRESOLVED STAFF COMMENTS.*

None.

Item 2. *PROPERTIES.*

Our headquarters are located in Wilmington, Delaware, USA. Our research and development activities are conducted primarily in facilities located in Conshohocken, Pennsylvania, USA; London, United Kingdom; Montreal, Canada; New York, New York, USA; Los Altos, California, USA; and Rennes, France.

The following table sets forth information with respect to our principal leased properties:

Location	Approximate Square Feet	Principal Use	Lease Expiration Date
Wilmington, Delaware	5,768	Corporate headquarters	November 2025
Rennes, France	50,000	Office and research space	May 2023
Conshohocken, Pennsylvania	30,300	Office and research space	September 2029
New York, New York	19,400	Office and research space	July 2030
Montreal, Quebec	11,918	Office and research space	June 2026
Rennes, France	10,083	Office and research space	August 2031
Los Altos, California	4,900	Office and research space	November 2027

We are also a party to leases for several smaller research and/or office spaces, including in Brussels, Belgium; Espoo, Finland; Indianapolis, Indiana, USA; London, United Kingdom; Paris, France; and Princeton, New Jersey, USA. In addition, we own an administrative office space in Washington, District of Columbia, USA.

We believe that the facilities described above are suitable and adequate for our present purposes and our needs in the near future.

Item 3. *LEGAL PROCEEDINGS.*

See Note 11, "*Litigation and Legal Proceedings*," to the Notes to Consolidated Financial Statements included below in Part II, Item 8 of this Form 10-K for a description of our material legal proceedings, which is incorporated herein by reference.

Item 4. ***MINE SAFETY DISCLOSURES.***

Not applicable.

PART II

Item 5. ***MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES.***

Market Information

The Nasdaq Global Select Market ("Nasdaq") is the principal market for our common stock, which is traded under the symbol "IDCC."

Holders

As of February 13, 2023, there were 452 holders of record of our common stock.

Dividends

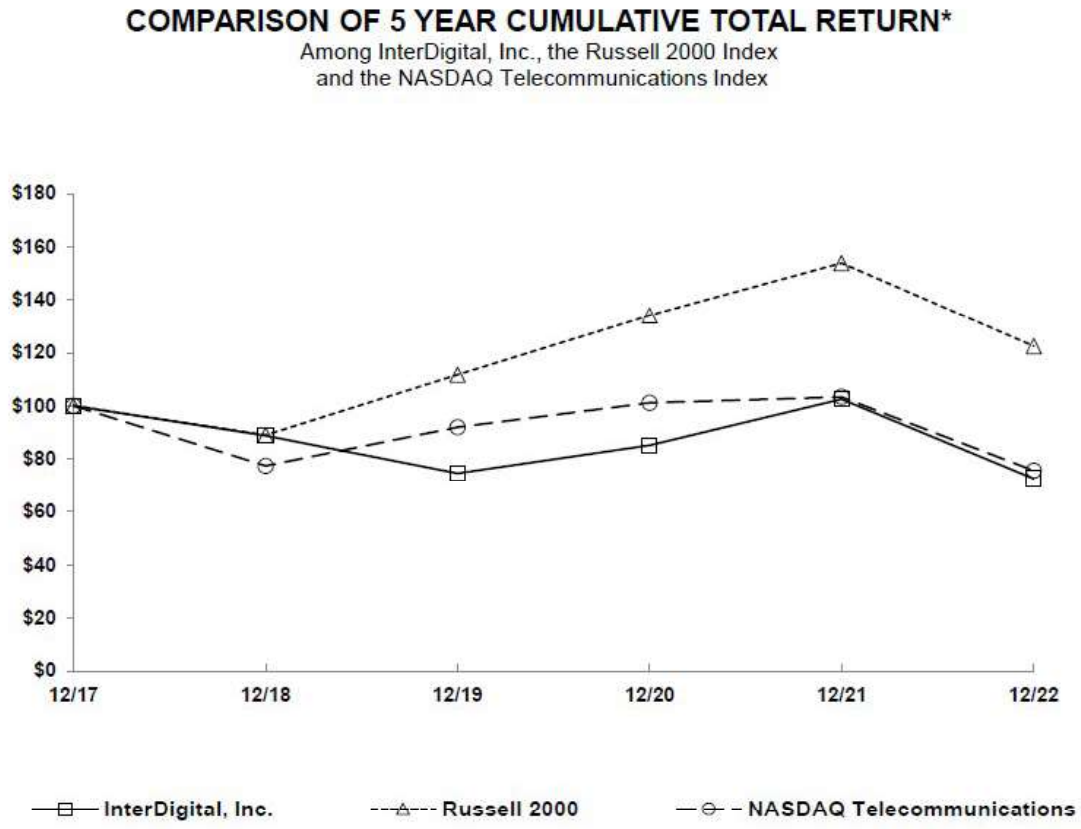
Cash dividends on outstanding common stock declared in 2022 and 2021 were as follows (in thousands, except per share data):

2022	Per Share	Total	Cumulative by Fiscal Year
First quarter	$ 0.35	$ 10,803	$ 10,803
Second quarter	0.35	10,380	21,183
Third quarter	0.35	10,382	31,565
Fourth quarter	0.35	10,384	41,949
	$ 1.40	$ 41,949	
2021			
First quarter	$ 0.35	$ 10,766	$ 10,766
Second quarter	0.35	10,794	21,560
Third quarter	0.35	10,740	32,300
Fourth quarter	0.35	10,741	43,041
	$ 1.40	$ 43,041	

Since 2018, the Company has paid a quarterly cash dividend of $0.35 per share. We currently expect to continue to pay dividends comparable to our quarterly $0.35 per share cash dividend in the future; however, continued payment of cash dividends and changes in the Company's dividend policy will depend on the Company's earnings, financial condition, capital resources and capital requirements, alternative uses of capital, restrictions imposed by any existing debt, economic conditions and other factors considered relevant by our Board of Directors.

Performance Graph

The following graph compares five-year total shareholder return on common stock with the cumulative total returns of the Nasdaq Telecommunications index and the Russell 2000 index. The graph tracks the performance of a $100 investment in our common stock and in each index (with the reinvestment of all dividends) from 12/31/2017 to 12/31/2022.



*$100 invested on 12/31/17 in stock or index, including reinvestment of dividends.
Fiscal year ending December 31.

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	12/17	12/18	12/19	12/20	12/21	12/22
InterDigital, Inc.	**100.00**	**88.78**	**74.48**	**85.13**	**102.57**	**72.56**
Russell 2000	**100.00**	**88.99**	**111.70**	**134.00**	**153.85**	**122.41**
Nasdaq Telecommunications	**100.00**	**77.39**	**91.90**	**101.16**	**103.32**	**75.55**

The above performance graph shall not be deemed "filed" for purposes of Section 18 of the Exchange Act, or incorporated by reference into any filing of InterDigital under the Securities Act of 1933, as amended, or the Exchange Act, except as shall be expressly set forth by specific reference in such filing.

Issuer Purchases of Equity Securities

Repurchase of Common Stock

The following table provides information regarding Company purchases of its common stock during fourth quarter 2022.

Period	Total Number of Shares (or Units) Purchased (1)	Average Price Paid Per Share (or Unit)	Total Number of Shares (or Units) Purchases as Part of Publicly Announced Plans or Programs (2)	Maximum Number (or Approximate Dollar Value) of Shares (or Units) That May Yet Be Purchased Under the Plans or Programs (3)
October 1, 2022 - October 31, 2022	—	$ —	—	$ 67,019,447
November 1, 2022 - November 30, 2022	—	$ —	—	$ 67,019,447
December 1, 2022 - December 31, 2022	—	$ —	—	$ 400,000,000
Total	—	$ —	—	

(1) Total number of shares purchased during each period reflects share purchase transactions that were completed (i.e., settled) during the period indicated.

(2) Shares were purchased pursuant to the Company's share repurchase program (the "Share Repurchase Program"), $300 million of which was authorized by the Company's Board of Directors in June 2014, with an additional $100 million authorized by the Company's Board of Directors in each of June 2015, September 2017, December 2018, May 2019, and May 2022, respectively, and an additional $333 million in December 2022. The Share Repurchase Program has no expiration date.

(3) Amounts shown in this column reflect the amounts remaining under the Share Repurchase Program. As of December 31, 2022, there was $400.0 million remaining under the share repurchase authorization, of which up to $200 million is subject to the modified Dutch auction tender offer commenced by the Company in January 2023.

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Item 6. [RESERVED]

Item 7. *MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS.*

OVERVIEW

The following discussion should be read in conjunction with the Consolidated Financial Statements and the Notes thereto contained in this Form 10-K. The following section generally discusses our financial condition and results of operations for our fiscal year ended December 31, 2022 compared to our fiscal year ended December 31, 2021. A discussion regarding our financial condition and results of operations for December 31, 2021 compared to our fiscal year ended December 31, 2020 can be found in Part II, Item 7 of our Annual Report on Form 10-K for fiscal year 2021, filed with the Securities and Exchange Commission (the "SEC") on February 17, 2022.

Throughout the following discussion and elsewhere in this Form 10-K, we refer to "recurring revenues" and "non-recurring revenues." For variable and dynamic fixed-fee license agreements, "non-recurring revenue" primarily represents revenue associated with reporting periods prior to the execution of the license agreement, while "recurring revenue" represents revenue associated with reporting periods beginning with the execution of the license agreement. For static fixed-fee license agreements, we typically classify the associated revenue as non-recurring revenue.

Business

InterDigital, Inc. ("InterDigital") is a global research and development company focused primarily on wireless, visual and related technologies. We design and develop advanced technologies that enable connected, immersive experiences in a broad range of communications and entertainment products and services. We license or intend to license our innovations worldwide to companies providing such products and services, including wireless communications, consumer electronics, personal computer, and automotive, as well as cloud-based services such as video streaming. Since our founding in 1972, our engineers have designed and developed a wide range of innovations that are used in wireless products and networks, from the earliest digital cellular systems to 5G. With the acquisitions of the patent licensing business (the "Technicolor Patent Acquisition") and research and innovation unit of visual technology industry leader Technicolor SA ("Technicolor") (together, the "Technicolor Acquisitions"), we are a leader in video processing, encoding/decoding, and display technology, with a significant Artificial Intelligence ("AI") research effort that intersects with both wireless and visual technologies.

InterDigital is one of the largest pure research and development and licensing companies in the world, with one of the most significant patent portfolios of fundamental wireless and video technologies. As of December 31, 2022, InterDigital's wholly owned subsidiaries held a portfolio of approximately 28,800 patents and patent applications related to wireless communications, video coding, display technology, and other areas relevant to communications and entertainment products and services. Our portfolio includes numerous patents and patent applications that we believe are or may be essential or may become essential to standards established by many Standards Development Organizations ("SDOs"), including cellular and other wireless communications and video technology standards. Those wireless standards include 3G, 4G and the IEEE 802 suite of standards, as well as patents and patent applications that we believe are or may become essential to 5G standards that currently exist or are under development. Our video technology portfolio includes patents and applications relating to standards established by ISO/IEC Moving Picture Expert Group (MPEG), the ITU-T Video Coding Expert Group (VCEG), the Joint Collaborative Team on Video Coding (JCT-VC) and the Joint Video Expert Team (JVET), among others.

Our wireless portfolio has largely been built through internal development, supplemented by joint development projects with other companies, and select acquisitions of patents and companies. Our video technology portfolio combines patents and applications that InterDigital obtained through the Technicolor Acquisitions and patents and applications created by internal development. Our patented inventions have been implemented in a wide variety of products and services, including smartphones, other wireless communication devices and infrastructure equipment, such as tablets, and base stations, consumer electronics and Internet of Things ("IoT") products, such as televisions, laptops, gaming consoles, set-top boxes, streaming devices and connected automobiles.

Revenue

In 2022, 2021, and 2020, our total revenues were $457.8 million, $425.4 million, and $359.0 million, respectively. Our recurring revenues in 2022, 2021 and 2020 were $403.9 million, $351.7 million, and $336.8 million, respectively. In 2022, 2021, and 2020, we recognized $53.9 million, $73.7 million and $22.2 million, respectively, of non-current patent royalties and patent sales as more fully discussed below. In 2022, fixed-fee royalties accounted for 90% of our recurring revenues. These fixed-fee revenues are not affected by the related licensees' success in the market or the general economic climate. The majority of the remaining portion of our recurring revenue was variable in nature due to the per-unit structure of the related license agreements.

Beginning in 2022, we updated our disaggregated revenue disclosures to provide information to enable investors to better understand the composition of revenue from contracts with customers. As a result, variable patent royalty revenue and fixed-fee royalty revenue was combined and disaggregated into the Smartphone and CE, IoT/Auto groupings. Additionally, the Other category includes current technology solutions revenues and non-recurring revenue is comprised of past patent royalties and revenues from static agreements. We believe this better reflects both our current revenue sources and our growth opportunities across these vertical markets.

The Company considers Smartphone and CE, Auto/IoT as the groupings that best reflect the Company's core licensing product verticals. The Smartphone revenue grouping consists primarily of smartphones and also includes other wireless communication devices and infrastructure equipment, such as tablets, and base stations. The CE, IoT/Auto revenue grouping consists of consumer electronics and IoT products, such as televisions, laptops, gaming consoles, set-top boxes, streaming devices and connected automobiles.

New Agreements

During 2022, we entered an agreement with Samsung for binding arbitration to take a new license and eight direct patent license agreements, including agreements with Apple, Amazon, Panasonic, Zebra, and LG as discussed below. We agreed to renew our patent license agreement with Samsung and enter into binding arbitration to determine the final terms of the license, including the amount payable by Samsung under the new agreement.

Direct Licenses

During second quarter 2022, we entered into a multi-year, worldwide, non-exclusive, fee bearing patent license agreement with Amazon Technologies, Inc., covering a range of Amazon's consumer electronic devices. We also entered into a multi-year, worldwide, non-exclusive, royalty bearing license with Zebra Technologies Corporation, under the Company's standard essential patents related to 4G, 5G and Wi-Fi.

During third quarter 2022, we renewed a patent license agreement with Apple. The Company expects to recognize approximately $133.7 million in revenue each year over the seven-year term of the license, which commenced on October 1, 2022.

During fourth quarter 2022, the Company entered into four licenses covering digital television and/or video patents, including with Panasonic Entertainment & Communication Co., Ltd. and LG Electronics.

Expiration of License Agreements

We had seven revenue generating patent license agreements that were scheduled to expire between January 1, 2022 and December 31, 2022, including with Apple and Samsung. As discussed above, Apple was renewed to a seven-year agreement, which commenced on October 1, 2022. We also agreed to renew our patent license agreement with Samsung and enter into binding arbitration to determine the final terms of the license, including the amount payable by Samsung under the new agreement. We expect to recognize revenue for Samsung effective January 1, 2023, at a conservative level consistent with the revenue we have recognized from our patent license agreement that just expired on December 31, 2022. We believe that it is likely the arbitration award will exceed the conservative estimate and require a true-up at that time. The remaining patent license agreements that have not yet been renewed contributed $15.4 million of recurring revenue in 2022.

Ten of our revenue generating patent license agreements are scheduled to expire during 2023. Collectively, these agreements accounted for $55.2 million, or approximately 14%, of recurring revenue in 2022. We are actively working to renew these agreements on terms consistent with the licensees' respective market positions and utilization of our technology.

Intellectual Property Rights Enforcement

If we believe a party is required to license our patents in order to manufacture, use and/or sell certain products and such party refuses to do so, we typically offer such party to have royalty rates, or other terms, set by third party adjudicators (such as arbitrators). If the party refuses that offer and we believe they are unwilling to agree to a patent license on a fair, reasonable and non-discriminatory basis, we may have no other viable recourse but to institute legal action against them to enforce our patent rights. This legal action has typically taken the form of a patent infringement lawsuit or an administrative proceeding. In addition, we and our licensees, in the normal course of business, might seek to resolve disagreements as to the rights and obligations of the parties under the applicable license agreement through arbitration or litigation. Such legal actions ultimately may be decided by the presiding court, third party adjudicator, or a negotiated resolution between the parties.

In 2019 we were engaged in litigation with ZTE, Huawei, and Lenovo. During 2020, we filed patent infringement actions against Xiaomi. We negotiated resolutions to the matters involving ZTE, Huawei and Xiaomi in December 2019, April 2020 and July 2021, respectively, while our matters with Lenovo continue to proceed. During 2021, we filed patent infringement actions against Oppo, OnePlus and realme. During 2022, we agreed to have a panel of arbitrators establish the royalties to be paid by Samsung Electronics for a worldwide license to certain of the Company's patents, as well as any other terms to a patent license agreement on which the parties are not able to agree.

The matters are more fully discussed in Note 11, "*Litigation and Legal Proceedings*," to the Notes to Consolidated Financial Statements included below in Part II, Item 8 of this Form 10-K. We filed these actions after lengthy periods of negotiation and after the refusal of our counterparties to accept our various proposals to them, including our proposal to have a third party adjudicator set a royalty rate and resolve certain other terms upon which we could not mutually agree.

In 2022, our intellectual property enforcement costs increased to $44.4 million, from $34.3 million and $28.6 million in 2021 and 2020, respectively. These costs represented 62% of our total licensing costs of $71.4 million in 2022. Intellectual property enforcement costs will vary depending upon activity levels, and it is likely they will continue to be a significant expense for us in the future.

Cash and Short-Term Investments

As of December 31, 2022, we had $1,211.5 million of cash, restricted cash and short-term investments and an additional $727.3 million of cash payments due under contracted fixed price agreements, including $22.6 million recorded in our $53.2 million accounts receivable balance. The remaining accounts receivable is primarily related to variable patent royalty revenue.

90% of our recurring revenue comes from fixed-fee royalties. Such agreements often have prescribed payment schedules that are uneven and sometimes front-loaded, resulting in timing differences between when we collect the cash payments and recognize the related revenue.

The following table reconciles the timing differences between cash receipts and recognized revenue on a quarterly basis for each of the last three years, including the resulting operating cash flow (in thousands):

	2022				
Cash vs. Non-cash revenue:	**Q1**	**Q2**	**Q3**	**Q4**	**YTD**
Fixed fee cash receipts [(a)]	$ 43,803	$ 3,339	$ 26,662	$ 384,252	$ 458,056
Other cash receipts [(b)]	8,592	16,620	6,403	20,154	51,769
Change in deferred revenue	50,741	76,959	(274,034)	60,931	(85,403)
Change in receivables	(7,475)	25,163	354,242	(349,861)	22,069
Other	5,657	2,576	1,491	1,579	11,303
Total Revenue	$ 101,318	$ 124,657	$ 114,764	$ 117,055	$ 457,794
Net cash (used in) provided by operating activities	$ (17,972)	$ (33,768)	$ (18,729)	$ 356,508	$ 286,039

	2021				
Cash vs. Non-cash revenue:	**Q1**	**Q2**	**Q3**	**Q4**	**YTD**
Fixed fee cash receipts [(a)]	$ 47,312	$ 3,050	$ 143,050	$ 123,050	$ 316,462
Other cash receipts [(b)]	10,676	17,808	7,739	15,556	51,779
Change in deferred revenue	23,429	63,230	(150,703)	80,912	16,868
Change in receivables	(3,507)	(499)	129,655	(110,546)	15,103
Other	4,453	4,146	13,755	2,843	25,197
Total Revenue	$ 82,363	$ 87,735	$ 143,496	$ 111,815	$ 425,409
Net cash (used in) provided by operating activities	$ (9,842)	$ (27,259)	$ 96,264	$ 71,229	$ 130,392

	2020				
Cash vs. Non-cash revenue:	**Q1**	**Q2**	**Q3**	**Q4**	**YTD**
Fixed fee cash receipts [(a)]	$ 20,019	$ 114,413	$ 142,019	$ 53,410	$ 329,861
Other cash receipts [(b)]	14,481	9,880	7,845	15,751	47,957
Change in deferred revenue	39,512	(16,829)	(75,749)	28,669	(24,397)
Change in receivables	(2,664)	(6,228)	8,902	(11,364)	(11,354)
Other	4,862	3,262	4,476	4,324	16,924
Total Revenue	$ 76,210	$ 104,498	$ 87,493	$ 90,790	$ 358,991
Net cash (used in) provided by operating activities	$ (26,885)	$ 69,755	$ 101,342	$ 19,255	$ 163,467

(a) Fixed fee cash receipts are comprised of cash receipts from Dynamic Fixed-Fee Agreement royalties, including the associated past patent royalties

(b) Other cash receipts are comprised of cash receipts related to our variable patent royalty revenue, including the associated past patent royalties, current technology solutions revenue and royalties from static agreements.

When we collect payments on a front-loaded basis, we recognize a deferred revenue liability equal to the cash received and accounts receivable recorded which relate to revenue expected to be recognized in future periods. That liability is then reduced as we recognize revenue over the balance of the agreement. The following table shows the projected amortization of our current and long term deferred revenue as of December 31, 2022 (in thousands):

	Deferred Revenue
2023	$ 189,059
2024	125,652
2025	106,224
2026	1,011
2027	1,076
Thereafter	3,617
Total	$ 426,639

Return of Capital

In June 2014, our Board of Directors authorized a $300 million share repurchase program (the "Share Repurchase Program"). Subsequently our Board of Directors authorized five $100 million increases to the program, respectively, and an additional $333 million in December 2022, bringing the total amount of the Share Repurchase Program to $1.1 billion. Since 2014, we have repurchased $733.0 million of shares at an average price of $52.22, adjusted for dividends. As of December 31, 2022, there was $400.0 million remaining under the share repurchase authorization, of which the Company expects to use up to $200 million pursuant to the modified Dutch auction tender offer commenced by the Company in January 2023.

Since January 2014, we have paid $355.1 million in dividends, bringing our total return of capital over the last nine years to $1.1 billion.

The table below sets forth the total number of shares repurchased and the dollar value of shares repurchased under the Share Repurchase Program, cash dividends on outstanding common stock declared, and the total capital returned to our shareholders (in thousands):

	Share Repurchase Program		Cash Dividends Declared		Total Capital Returned to Shareholders
	# of Shares	Value	Per Share	Value	
2022	1,224	$ 74,445	$ 1.40	$ 41,949	$ 116,394
2021	458	30,000	1.40	43,041	73,041
2020	6	349	1.40	43,111	43,460
2019	2,962	196,269	1.40	43,718	239,987
2018	1,478	110,505	1.40	47,922	158,427
2017	107	7,693	1.30	45,122	52,815
2016	1,304	64,685	1.00	34,359	99,044
2015	1,836	96,410	0.80	28,726	125,136
2014	3,554	152,625	0.70	27,153	179,778
Total	12,929	$ 732,981	$ 10.80	$ 355,101	$ 1,088,082

2027 Senior Convertible Notes

On May 27, 2022, we issued the $460.0 million aggregate principal of 2027 Notes. The net proceeds from the offering were approximately $450.0 million after deducting the initial purchasers' fees and estimated offering expenses. Additionally, on May 24 and May 25, 2022, in connection with the offering of the 2027 Notes, we entered into the 2027 Call Spread Transactions.

The net proceeds from the issuance of the 2027 Notes, after deducting fees and offering expenses, were used for the following: (i) $282.5 million was used to repurchase $273.8 million in aggregate principal amount of the 2024 Notes in privately negotiated transactions concurrently with the offering of the 2027 Notes (ii) $74.4 million was used to repurchase shares of common stock at $60.78 per share, the closing price of the stock on May 24, 2022; and (iii) $36.8 million, in addition to the proceeds from the 2027 Warrant Transactions, was used to fund the cost of the 2027 Call Spread Transactions.

The 2027 Notes will be convertible into cash up to the aggregate principal amount of the notes to be converted and in respect of the remainder, if any, of the Company's obligation in excess of the aggregate principal amount of the notes being converted, pay or deliver, as the case may be, cash, shares of the Company's common stock ("Common Stock") or a combination thereof, at the Company's election, at an initial conversion rate of 12.9041 shares of Common Stock per $1,000 principal amount of Notes (which is equivalent to an initial conversion price of approximately $77.49 per share).

For more information on this transaction, refer to Note 9, "*Obligations*" within the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this Form 10-K.

Restructuring Activities

On June 10, 2021, we announced that, as a result of a strategic review of our research and innovation priorities, we commenced the process of a collective economic layoff in which we proposed a reduction in force of our research and innovation unit. Additionally, in October 2021, we expanded our restructuring efforts to include general and administrative functions largely centered in the U.S. All impacted employees have been provided notification of termination.

During 2022, we recognized $3.3 million restructuring expenses, including a $2.4 million asset impairment, $0.3 million severance and other benefits, and $0.5 million outside services and other associated costs, which are included within "*Restructuring Activities*" in the consolidated statement of income. The $2.4 million impairment, comprised of $2.0 million of right-of-use assets and $0.4 million of property and equipment, was due to the abandonment of portions of three of our leased properties resulting from the Company's evaluation of its current office space footprint and its expected needs going forward.

The Company does not anticipate further significant restructuring charges, however these charges are estimated based on information available at the time such charges are recorded. Due to the inherent uncertainty involved in estimating restructuring expenses, actual amounts incurred for such activities may differ from amounts initially estimated.

Impact of Inflation and Market Factors

We have been actively monitoring the impact of the current macroeconomic environment in the U.S. and globally characterized by increasing inflation, supply chain issues, rising interest rates, labor shortages, and the potential for a recession. These market factors, as well as the impacts of the Russia and Ukraine conflict, have not had a material impact on our business to date. However, if these conditions continue or worsen, they could have an adverse effect on our operating results and our financial condition.

Impact of COVID-19 Pandemic

In March 2020, the World Health Organization categorized the novel coronavirus ("COVID-19") as a pandemic, and it continues to significantly impact the United States and the rest of the world. We continue to believe that our strategic strengths, including talent, our strong balance sheet, stable revenue base, and the strength of our patent portfolio, allows us to weather a rapidly changing marketplace. Fixed-fee royalties accounted for 90% of our recurring revenues in 2022. These fixed-fee revenues are not directly affected by our related licensees' success in the market or the general economic climate. To that end, in fiscal year 2022, we did not experience a significant impact on our contracted revenue due to COVID-19.

Comparability of Financial Results

When comparing our 2022 financial results against the financial results of other periods, the following items should be taken into consideration:

- Our 2022 revenue includes $53.9 million of non-recurring revenue primarily related to seven new patent license agreements signed in 2022 and new connected automobile license agreements.
- In 2022, we repurchased approximately $273.8 million in aggregate principal amount of our 2024 Notes, which resulted in the recognition of a $11.2 million loss on the extinguishment of debt, which was included within "*Other (expense) income, net*" in the condensed consolidated statement of income. For more information on this transaction, refer to Note 9, "*Obligations*" within the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this Form 10-K.
- In 2022, we incurred $1.5 million of one-time supplemental compensation costs driven by licensing successes achieved during 2022.
- In 2022, we recognized $3.3 million of restructuring expenses including a $2.4 million asset impairment, $0.3 million of severance and other benefits, and $0.5 million of associated outside services and other costs. These costs resulted from our restructuring activities as described in Note 20, "*Restructuring Activities*" within the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this Form 10-K.
- In 2022, "*Other (expense) income, net*" includes a $1.3 million net loss resulting from observable price changes in orderly transactions of our long-term strategic investments.

Critical Accounting Policies and Estimates

Our consolidated financial statements are based on the selection and application of GAAP, which require us to make estimates and assumptions that affect the amounts reported in both our consolidated financial statements and the accompanying notes. Future events and their effects cannot be determined with absolute certainty. Therefore, the determination of estimates requires the exercise of judgment. Actual results could differ from these estimates and any such differences may be material to the financial statements. Our significant accounting policies are described in Note 2, "*Summary of Significant Accounting Policies and New Accounting Guidance*" within the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this Form 10-K. We believe the accounting policies that are of particular importance to the portrayal of our financial condition and results and that may involve a higher degree of complexity and judgment in their application compared to others are those relating to revenue recognition, compensation, and income taxes. If different assumptions were made or different conditions existed, our financial results could have been materially different.

Revenue Recognition

We derive the vast majority of our revenue from patent licensing. The timing and amount of revenue recognized from each licensee depend upon a variety of factors, including the specific terms of each agreement and the nature of the deliverables and obligations. Such agreements are often complex and include multiple performance obligations. These agreements can include, without limitation, performance obligations related to the settlement of past patent infringement liabilities, patent and/or know-how licensing royalties on covered products sold by licensees, access to a portfolio of technology as it exists at a point in time, and access to a portfolio of technology at a point in time along with promises to provide any technology updates to the portfolio during the term.

In accordance with US GAAP, we use a five-step model to achieve the core underlying principle that an entity should recognize revenue to depict the transfer of goods or services to customers at an amount that the entity expects to be entitled to in exchange for those goods or services. These steps include (1) identifying the contract with the customer, (2) identifying the performance obligations, (3) determining the transaction price, (4) allocating the transaction price to the performance obligations, and (5) recognizing revenue as the entity satisfies the performance obligation(s). Additionally, we have elected to utilize certain practical expedients in the application of ASC 606. In evaluating the presence of a significant financing component in our agreements, we utilize the practical expedient to exclude any contracts wherein the gap between payment by our customers and the delivery of our performance obligation is less than one year. We have also elected to utilize the practical expedient related to costs of obtaining a contract where an entity may recognize the incremental costs of obtaining a contract as an expense when incurred if the amortization period of the asset that the entity otherwise would have recognized is one year or less. Timing of revenue recognition may differ significantly from the timing of invoicing to customers. Contract assets are included in accounts receivable and represent unbilled amounts expected to be received from customers in future periods, where the revenue recognized to date exceeds the amount billed, and right to payment is subject to the underlying contractual terms. Contract assets are classified as long-term assets if the payments are expected to be received more than one year from the reporting date. Contract assets due within less than twelve months of the balance sheet date are included within accounts receivable in our consolidated balance sheets. Contract assets due more than twelve months after the balance sheet date are included within other non-current assets.

For certain patent license agreements or other contractual arrangements, the amount of consideration that we will receive is uncertain. In such cases, we estimate and recognize licensing revenues only when we have a contract, as defined in the revenue recognition guidance. Such estimates are only recognized to the extent it is probable that a significant reversal of cumulative revenues recognized will not occur. We analyze the risk of a significant revenue reversal considering both the likelihood and magnitude of the reversal and, if necessary, constrain the amount of estimated revenues recognized in order to mitigate this risk, which may result in recognizing revenues less than amounts we expect we are most likely to receive. These aforementioned estimates may require significant judgment.

Patent License Agreements

Upon signing a patent license agreement, we provide the licensee permission to use our patented inventions in specific applications. We account for patent license agreements in accordance with the guidance indicated above.

Certain patent license agreements contain revenue from non-financial sources in the form of patents received from the customer. Under our patent license agreements, we typically receive one or a combination of the following forms of payment as consideration for permitting our licensees to use our patented inventions in their applications and products

Consideration for Past Patent Royalties

Consideration related to a licensee's product sales from prior periods may result from a negotiated agreement with a licensee that utilized our patented inventions prior to signing a patent license agreement with us or from the resolution of a disagreement or arbitration with a licensee over the specific terms of an existing license agreement. We may also receive consideration for past patent royalties in connection with the settlement of patent litigation where there was no prior patent license agreement. In each of these cases, we record the consideration as revenue as prescribed by the five-step model.

Fixed-Fee Agreements

Fixed-fee license agreements include fixed, non-refundable royalty payments that fulfill the licensee's obligations to us under a patent license agreement for a specified time period or for the term of the agreement for specified products, under certain patents or patent claims, for sales in certain countries, or a combination thereof - in each case for a specified time period (including for the life of the patents licensed under the agreement).

Dynamic fixed-fee license agreements contain a single performance obligation that represents ongoing access to a portfolio of technology over the license term, since our promise to transfer to the licensee access to the portfolio as it exists at inception of the license, along with promises to provide any technology updates to the portfolio during the term, are not separately identifiable. Upon entering a new agreement, we allocate the transaction price to the performance obligations delivered at signing (e.g. our existing patent portfolio) and future performance obligations (e.g. the technology updates). We use a time-based input method of progress to determine the timing of revenue recognition, and as such we recognize the future deliverables on a straight-line basis over the term of the agreement. We utilize the straight-line method as we believe that it best depicts efforts expended to develop and transfer updates to the customer evenly throughout the term of the agreement.

Static fixed-fee license agreements are fixed-price contracts that generally do not include updates to technology we create after the inception of the license agreement or in which the customer does not stand to substantively benefit from those updates during the term. Although we have few static fixed-fee license agreements, we generally satisfy our performance obligations under such agreements at contract signing, and, as such, revenue is recognized at that time.

Variable Agreements

Upon entering a new variable patent license agreement, the licensee typically agrees to pay royalties or license fees on licensed products sold during the term of the agreement. We utilize the sales- or usage- based royalty exception for these agreements and recognize revenues during the contract term when the underlying sale or usage occurs. Our licensees under variable agreements provide us with quarterly royalty reports that summarize their sales of covered products and their related royalty obligations to us. We typically receive these royalty reports subsequent to the period in which our licensees' underlying sales occurred. As a result, we are required to estimate revenues and recognize sales-based royalties on such licensed products in the period in which the associated sales occur, considering all relevant information (historical, current and forecasted) that is reasonably available to us. Estimating licensees' quarterly royalties prior to receiving the royalty reports requires us to make assumptions and judgments related to forecasted trends and growth rates used to estimate our licensees' sales, which could have an impact on the amount of revenue we report on a quarterly basis. As a result of recognizing revenues in the period in which the licensees' sales occur using estimates, adjustments to revenues are required in subsequent periods to reflect changes in estimates as new information becomes available, primarily resulting from actual amounts reported by our licensees.

Technology Solutions

Technology solutions revenue consists primarily of revenue from royalty payments, software licenses, and engineering services. The nature of these contracts and timing of payments vary. We recognize revenue from royalty payments and license agreements using the same methods described above under our policy for recognizing revenue from patent license agreements. We recognize revenue from engineering services using the percentage of completion method.

Patent Sales

During 2022, we determined patent sales are no longer a part of the company's on-going central operations and therefore will no longer be accounted for as revenue. We had no patent sales during 2022 or 2021 and $0.6 million of patent revenues during 2020.

Agreements with Multiple Performance Obligations

During 2022, we signed four new fixed-fee agreements that had multiple performance obligations. Consistent with the revenue recognition policies disclosed above, we (1) identified the contract with the customer, (2) identified the performance obligations, (3) determined the transaction price, (4) allocated the transaction price to the performance obligations, and (5) recognized revenue as we satisfy the performance obligations. We allocated the transaction price to each performance obligation for accounting purposes using our best estimate of the term and value. The process for determining the value of the standalone selling prices of identified performance obligations in dynamic fixed-fee license agreements requires the exercise of significant judgment when evaluating the valuation methods and assumptions, including the assumed royalty rates, projected sales volumes, discount rate, identification of comparable market transactions which are not directly observable and other relevant factors. Changes in any of a number of these assumptions could have had a substantial impact on the relative fair value assigned to each performance obligation for accounting purposes. These inputs and assumptions represent management's best estimates at the time of the transaction.

The impact that a five percent change in the aggregate amount allocated to past patent royalties under these agreements would have had on 2022 revenue is summarized in the following table (in thousands):

	Change in amount allocated	
Allocation to past patent royalties	**+5%**	**-%5**
Change in Revenue	$ 2,669	$ (2,669)

Revenue from Non-financial Sources

During 2022, 2021 and 2020, approximately 4%, 5% and 7%, respectively, of our total revenue was based on the estimated fair value of patents. The process for determining the value of revenue from non-financial sources requires estimating the fair value of patents received. We estimated the fair value of the patents in the above transactions using one of, or a combination of, an analysis of comparable market transactions (the market approach), a discounted cash flow analysis (the income approach) and/or by quantifying the amount of money required to replace the future service capability of the assets (the cost approach). For the market approach, judgment was applied as to which market transactions were most comparable to the transaction. For the income approach, the inputs and assumptions used to develop these estimates were based on a market participant perspective and included estimates of projected royalties, discount rates, economic lives and income tax rates, among others. For the cost approach, we utilized the historical cost of assets of similar technologies to determine the estimated replacement cost, including research, development, testing and patent application fees. The development of a number of these inputs and assumptions requires a significant amount of management judgment and is based upon a number of factors, including identification of comparable market transactions, assumed royalty rates, projected sales volumes, economic lives of the patents and other relevant factors. Changes in any of a number of these assumptions could have had a substantial impact on the fair value assigned to the patents for accounting purposes. These inputs and assumptions represent management's best estimates at the time of the transaction.

The impact that a five-percent change in the estimated aggregate value of the patents acquired would have had on 2022 revenue, patent amortization and pre-tax income is summarized in the following table (in thousands).

	Change in estimate	
Estimated value of patents acquired in connection with PLAs	**+5%**	**-%5**
Revenue	$ 925	$ (925)
Less: Patent amortization	1,054	(1,054)
Pre-tax income	$ (129)	$ 129

Compensation Programs

We use a variety of compensation programs to attract, retain and motivate our employees, and to align employee compensation more closely with company performance. These programs include, but are not limited to, short-term incentives tied to performance goals, cash awards to inventors for filed patent applications and patent issuances, and long-term incentives in the form of stock option awards, time-based restricted stock unit (“RSU”) awards, performance-based RSU awards and cash awards, noting equity awards are granted pursuant to the terms and conditions of our Equity Plans (as defined within the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this Form 10-K). Our long-term incentives, including equity awards, typically include annual equity or cash award grants with three to five year vesting periods; as a result, in any one year, we are typically accounting for at least three active cycles.

The aggregate amount of performance compensation expense we record in a period, under both short-term and long-term incentive compensation programs, requires the input of subjective assumptions and is a function of our estimated progress toward performance goals at both the beginning and the end of the period. Our estimated progress toward goals under performance equity grants is based on meeting a minimum confidence level of achievement in accordance with accounting rules for share-based compensation. Due to the binary nature of patent license agreements, performance awards with milestone goals are typically not expensed until the goal has been achieved. Achievement rates can vary by performance cycle and from period to period, resulting in variability in our compensation expense.

We account for compensation costs associated with share-based compensation based on the fair value of the instruments issued. The estimated value of stock options includes assumptions around expected life, stock volatility and dividends. For stock options considered to be “plain vanilla” options, the Company estimates the expected term based on the simplified method as prescribed by Staff Accounting Bulletin Topic 14. The simplified method was used because the Company does not believe it has sufficient historical exercise data to provide a reasonable basis for the expected term of its grants. In all periods, our policy has been to set the value of RSUs awards equal to the value of our underlying common stock on the date of measurement. For grants with graded vesting, we amortize the associated unrecognized compensation cost using an accelerated method. For grants that cliff vest, we amortize the associated unrecognized compensation cost on a straight-line basis over their vesting term.

In the event of canceled awards, we adjust compensation expense recognized to date as they occur. Tax windfalls and shortfalls related to the tax effects of employee share-based compensation are included in our tax provision. On the consolidated statements of cash flows, tax windfalls and shortfalls related to employee share-based compensation awards are included within operating activities and cash paid to tax authorities for shares withheld are included within financing activities. The inclusion of windfalls and shortfalls in the tax provision could increase our earnings volatility between periods. Tax windfalls and shortfalls related to share-based compensation was shortfalls of $0.4 million for the year ended 2022, and windfalls for the years ended 2021 and 2020 of $0.8 million and $0.2 million, respectively.

The below table summarizes our supplemental compensation expense for 2022, 2021 and 2020, in thousands:

	2022	2021	2020
Short-term incentive compensation	$ 24,341	$ 18,820	$ 16,166
Time-based awards [(a)]	10,521	8,528	6,668
Performance-based awards [(a)]	8,155	17,933	2,347
Other share-based compensation	4,901	3,962	2,580
Total supplemental compensation expense	$ 47,918	$ 49,243	$ 27,761

(a) For 2022, 2021 and 2020, approximately 8%, 7%, and 12%, respectively, of the aggregate expense associated with time-based and performance-based awards related to cash awards.

Income Taxes

Income taxes are accounted for under the asset and liability method. Under this method, deferred tax assets and liabilities are recognized for the estimated future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases, and operating loss and tax credit carry forwards. Deferred tax assets and liabilities are measured using enacted tax rates in effect for the year in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in the consolidated statement of income in the period in which the change was enacted. A valuation allowance is recorded to reduce the carrying amounts of deferred tax assets if management has determined that it is more likely than not that such assets will not be realized.

In addition, the calculation of tax liabilities involves significant judgment in estimating the impact of uncertainties in the application of complex tax laws. We are subject to examinations by the U.S. IRS and other taxing jurisdictions on various tax matters, including challenges to various positions we assert in our filings. In the event that the IRS or another taxing jurisdiction levies an assessment in the future, it is possible the assessment could have a material adverse effect on our consolidated financial condition or results of operations.

The financial statement recognition of the benefit for an uncertain tax position is dependent upon the benefit being more likely than not to be sustainable upon audit by the applicable tax authority. If this threshold is met, the tax benefit is then measured and recognized at the largest amount that is greater than 50 percent likely of being realized upon ultimate settlement. In the event that the IRS or another taxing jurisdiction levies an assessment in the future, it is possible the assessment could have a material adverse effect on our consolidated financial condition or results of operations.

Between 2014 and 2022, we paid approximately $134.6 million in foreign taxes to foreign governments that have tax treaties with the U.S., for which we have claimed foreign tax credits against our U.S. tax obligations, and for which the tax treaty procedures are still open. It is possible that as a result of tax treaty procedures, the U.S. government may reach an agreement with the related foreign governments that will result in a partial refund of foreign taxes paid with a related reduction in our foreign tax credits. Due to foreign currency fluctuations, any such agreement could result in foreign currency gain or loss.

On November 8, 2019, the Company received notification that its request for competent authority pertaining to Article 25 (Mutual Agreement Procedure) of the United States-Republic of Finland Income Tax Convention had been reviewed by the IRS and an agreement has been reached (the “Finland Competent Authority Proceeding”). As a result of this agreement, the Company does not anticipate any tax consequences.

New Accounting Guidance

Refer to Note 2, "*Summary of Significant Accounting Policies and New Accounting Guidance*" within the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this Form 10-K for a discussion of recently issued accounting guidance.

Legal Proceedings

We are routinely involved in disputes associated with enforcement and licensing activities regarding our intellectual property, including litigations, arbitrations and other proceedings. These litigations, arbitrations and other proceedings are important means to enforce our intellectual property rights. We are a party to other disputes and legal actions not related to our intellectual property, but also arising in the ordinary course of our business. Refer to Note 11, "*Litigation and Legal Proceedings*," to the Notes to Consolidated Financial Statements included below in Part II, Item 8 of this Form 10-K for a description of our material legal proceedings.

FINANCIAL POSITION, LIQUIDITY AND CAPITAL RESOURCES

Our primary sources of liquidity are cash, cash equivalents and short-term investments, as well as cash generated from operations. We believe we have the ability to obtain additional liquidity through debt and equity financings. From time to time, we may engage in a variety of transactions to augment our liquidity position as our business dictates and to take advantage of favorable interest rate environments or other market conditions, including the incurrence or issuance of debt and the refinancing or restructuring of existing debt. Based on our past performance and current expectations, we believe our available sources of funds, including cash, cash equivalents and short-term investments and cash generated from our operations, will be sufficient to finance our operations, capital requirements, debt obligations, existing stock repurchase program, dividend program, and other contractual obligations discussed below in both the short-term over the next twelve months, and the long-term beyond twelve months.

Cash, cash equivalents, restricted cash and short-term investments

As of December 31, 2022 and December 31, 2021, we had the following amounts of cash, cash equivalents, restricted cash and short-term investments (in thousands):

	December 31, 2022	December 31, 2021	Increase / (Decrease)
Cash and cash equivalents	$ 693,479	$ 706,282	$ (12,803)
Restricted cash included within prepaid and other current assets	9,682	5,861	3,821
Restricted cash included within other non-current assets	—	1,081	(1,081)
Short-term investments	508,298	235,345	272,953
Total cash, cash equivalents, restricted cash and short-term investments	$ 1,211,459	$ 948,569	$ 262,890

The net increase in cash, cash equivalents, restricted cash and short-term investments was attributable to cash provided by operating activities of $286.0 million and cash provided by financing activities of $18.6 million. These increases were partially offset by cash used in investing activities, excluding sales and purchases of short-term investments of $42.8 million. Cash used in investing activities primarily related to net purchases of short-term investments, as well as capital investments for patents and fixed assets. Cash provided by financing activities primarily related net proceeds from the debt refinancing, partially offset by dividend payments and repurchases of common stock. Refer to the sections below for further discussion of these items.

Cash flows from operations

We generated the following cash flows from our operating activities in 2022 and 2021 (in thousands):

	For the Year Ended December 31,		
	2022	2021	Increase / (Decrease)
Cash flows provided by operating activities	$ 286,039	$ 130,392	$ 155,647

Our cash flows provided by operating activities are principally derived from cash receipts from patent license agreements, offset by cash operating expenses and income tax payments. The $155.6 million change in net cash provided by operating activities was primarily driven by higher cash receipts, largely attributable to new or renewed patent license agreements, including the Apple patent license agreement discussed above. Additionally, lower cash operating expenses benefiting from the cost-savings actions taken in 2021 contributed to the increase. The table below sets forth the significant items comprising our cash flows provided by operating activities during the years ended December 31, 2022 and 2021 (in thousands):

	For the Year Ended December 31,		
	2022	2021	Increase / (Decrease)
Cash Receipts:			
Patent royalties	$ 509,517	$ 364,348	$ 145,169
Technology solutions	308	3,893	(3,585)
Total cash receipts	509,825	368,241	141,584
Cash Outflows:			
Cash operating expenses [(a)]	(204,153)	(234,046)	29,893
Income taxes paid, net of refunds [(b)]	(6,805)	(23,091)	16,286
Total cash outflows	(210,958)	(257,137)	46,179
Other working capital adjustments	(12,828)	19,288	(32,116)
Cash flows provided by operating activities	$ 286,039	$ 130,392	$ 155,647

(a) Cash operating expenses include operating expenses less depreciation of fixed assets, amortization of patents, and non-cash compensation.

(b) Income taxes paid include foreign withholding taxes.

Cash provided by or used in investing and financing activities

Net cash used in investing activities in 2022 was $314.7 million, a $494.3 million change from $179.6 million net cash provided by investing activities in 2021.

During 2022, we purchased $272.0 million of short-term marketable securities, net of sales, and capitalized $42.8 million of patent costs and property and equipment purchases. During 2021, we sold $216.6 million of short-term marketable securities, net of purchases, capitalized $35.9 million of patent costs and property and equipment purchases, acquired $2.4 million of patents, and received $1.4 million of net cash receipts from the sale of one of our long-term strategic investments. The increase in net purchases of short-term marketable securities was largely driven by higher cash receipts discussed above, as well as more favorable market conditions.

Net cash provided by financing activities for 2022 was $18.6 million, a $93.1 million change from net cash used in financing activities of $74.5 million in 2021. This change was primarily attributable to net proceeds of $138.9 million from the debt refinancing, partially offset by a $44.4 million increase in share repurchases.

Other

Our combined short-term and long-term deferred revenue balance at December 31, 2022 was $426.6 million, a increase of $115.5 million from December 31, 2021. Based on current license agreements, we expect the amortization of dynamic fixed-fee royalty payments to reduce the December 31, 2022 deferred revenue balance by $189.1 million over the next twelve months.

Convertible Notes

Refer to Note 9, "*Obligations*" within the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this Form 10-K for definitions of capitalized terms used below.

Our 2027 and 2024 Notes, which for purposes of this discussion are also referred to as the "Convertible Notes", are included in the dilutive earnings per share calculation using the if-converted method. Under the if-converted method, we must assume that conversion of convertible securities occurs at the beginning of the reporting period. The Convertible Notes are convertible into cash up to the aggregate principal amount of the Convertible Notes to be converted and any remaining obligation may be settled in cash, shares of the Company's common stock or a combination thereof. As the principal amount must be paid in cash and only the conversion spread is settled in shares, we only include the net number of incremental shares that would be issued upon conversion. We must calculate the number of shares of our common stock issuable under the terms of the Convertible Notes based on the average market price of our common stock during the applicable reporting period and include that number in the total diluted shares figure for the period.

At the time we issued the Convertible Notes, we entered into the 2027 Call Spread Transactions and 2024 Call Spread Transactions that together were designed to have the economic effect of reducing the net number of shares that will be issued in the event of conversion of the Convertible Notes by, in effect, increasing the conversion price of the Convertible Notes from our economic standpoint. However, under GAAP, since the impact of the 2027 Note Hedge Transactions and 2024 Note Hedge Transactions (together, the "Note Hedge Transactions") is anti-dilutive, we exclude from the calculation of fully diluted shares the number of shares of our common stock that we would receive from the counterparties to these agreements upon settlement.

During periods in which the average market price of our common stock is above the applicable conversion price of the Convertible Notes ($77.49 per share for the 2027 Notes and $81.29 per share for the 2024 Notes as of December 31, 2022) or above the strike price of the warrants ($106.37 per share for the 2027 Warrant Transactions and $109.43 per share for the 2024 Warrant Transactions as of December 31, 2022), the impact of conversion or exercise, as applicable, would be dilutive and such dilutive effect is reflected in diluted earnings per share. As a result, in periods where the average market price of our common stock is above the conversion price or strike price, as applicable, under the if-converted method, we calculate the number of shares issuable under the terms of the Convertible Notes and the warrants based on the average market price of the stock during the period, and include that number in the total diluted shares outstanding for the period.

Under the if-converted method, changes in the price per share of our common stock can have a significant impact on the number of shares that we must include in the fully diluted earnings per share calculation. As described in Note 7, "Obligations," the Convertible Notes are convertible into cash up to the aggregate principal amount of the Convertible Notes to be converted and any remaining obligation may be in cash, shares of the Company's common stock or a combination thereof ("net share settlement"). Assuming net share settlement upon conversion, the following tables illustrate how, based on the $460.0 million aggregate principal amount of the 2027 Notes and the $126.2 million aggregate principal amount of the 2024 Notes outstanding as of December 31, 2022, and the approximately 5.9 million warrants related to the 2027 Notes and the 1.6 million warrants remaining related to the 2024 Notes, outstanding as of the same date, changes in our stock price would affect (i) the number of shares issuable upon conversion of the Convertible Notes, (ii) the number of shares issuable upon exercise of the warrants subject to the 2027 Warrant Transactions and 2024 Warrant Transactions (together, the "Warrant Transactions"), (iii) the number of additional shares deemed outstanding with respect to the Convertible Notes, after applying the if-converted method, for purposes of calculating diluted earnings per share ("Total If-Converted Method Incremental Shares"), (iv) the number of shares of our common stock deliverable to us upon settlement of the Note Hedge Transactions and (v) the number of shares issuable upon concurrent conversion of the Convertible Notes, exercise of the warrants subject to the Warrant Transactions, and settlement of the Note Hedge Transactions:

2027 Notes

Market Price Per Share	Shares Issuable Upon Conversion of the 2027 Notes	Shares Issuable Upon Exercise of the 2027 Warrant Transactions	Total Treasury Stock Method Incremental Shares	Shares Deliverable to InterDigital upon Settlement of the 2027 Note Hedge Transactions	Incremental Shares Issuable [(a)]
$80	186	—	186	(186)	—
$85	524	—	524	(524)	—
$90	825	—	825	(825)	—
$95	1,094	—	1,094	(1,094)	—
$100	1,336	—	1,336	(1,336)	—
$105	1,555	—	1,555	(1,555)	—
$110	1,754	196	1,950	(1,754)	196
$115	1,936	445	2,381	(1,936)	445
$120	2,103	674	2,777	(2,103)	674
$125	2,256	885	3,141	(2,256)	885

2024 Notes

Market Price Per Share	Shares Issuable Upon Conversion of the 2024 Notes	Shares Issuable Upon Exercise of the 2024 Warrant Transactions	Total Treasury Stock Method Incremental Shares	Shares Deliverable to InterDigital upon Settlement of the 2024 Note Hedge Transactions	Incremental Shares Issuable [(a)]
$85	68	—	68	(68)	—
$90	150	—	150	(150)	—
$95	224	—	224	(224)	—
$100	290	—	290	(290)	—
$105	351	—	351	(351)	—
$110	405	8	413	(405)	8
$115	455	75	530	(455)	75
$120	501	137	638	(501)	137
$125	543	193	736	(543)	193
$130	582	246	828	(582)	246

(a) Represents incremental shares issuable upon concurrent conversion of convertible notes, exercise of warrants and settlement of the hedge agreements.

Contractual Obligations

The following table summarizes our contractual obligations as of December 31, 2022 (in thousands):

	Payments Due by Period				
	Total	Less Than 1 year	1-3 Years	3-5 Years	Thereafter
2024 and 2027 Notes[(a)]	$ 586,174	$ —	$ 126,174	$ 460,000	$ —
Contractual interest payments on the 2024 and 2027 Notes[(a)]	76,235	18,623	33,462	24,150	—
Operating lease obligations	28,724	4,772	8,086	7,817	8,049
Defined benefit plan obligations [(b)]	3,111	254	146	391	2,320
Purchase obligations [(c)]	11,697	11,697	—	—	—
Total contractual obligations	$ 705,941	$ 35,346	$ 167,868	$ 492,358	$ 10,369

(a) Refer to Note 9, "*Obligations*," within the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this Form 10-K for details of our 2024 Notes and 2027 Notes.

(b) Refer to Note 10, "*Commitments*," within the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this Form 10-K for details of our defined benefit plan obligations. Estimated future benefit payments included above are through 2030.

(c) Purchase obligations consist of agreements to purchase goods and services that are legally binding on us, as well as accounts payable. Our consolidated balance sheet as of December 31, 2022 includes a $16.1 million non-current liability for uncertain tax positions. The future payments related to uncertain tax positions have not been presented in the table above due to the uncertainty of the amounts and timing of cash settlement with the taxing authorities.

As discussed above we believe our available sources of funds, including cash, cash equivalents and short-term investments and cash generated from our operations, will be sufficient to finance these contractual obligations discussed below in both the short-term over the next twelve month, and the long-term beyond twelve months.

As of December 31, 2022, we have recorded long-term debt of $30.7 million related to the Technicolor Patent Acquisition. Additionally, we are subject to a revenue-sharing arrangement with Technicolor resulting from the Technicolor Acquisitions. There is no liability associated with the revenue-share agreement at December 31, 2022, as there are no minimum or maximum payments under the revenue-sharing arrangement, and, except in certain circumstances, the arrangement continues through December 31, 2038. Refer to Note 9, "*Obligations*," within the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this Form 10-K for further information. Due to the uncertainty regarding the timing and amount of future payments related to these items, the amounts are excluded from the contractual obligations table above.

RESULTS OF OPERATIONS

2022 Compared with 2021

Revenues

The following table compares 2022 revenues to 2021 revenues (in thousands):

	For the Year Ended December 31,			
	2022	2021	Total Increase/(Decrease)	
Recurring revenues:				
Smartphone	$ 351,064	$ 315,098	$ 35,966	11 %
CE, IoT/Auto	51,717	31,721	19,996	63 %
Other	1,107	4,881	(3,774)	(77)%
Total recurring revenues	403,888	351,700	52,188	15 %
Non-recurring revenues [a]	53,906	73,709	(19,803)	(27)%
Total revenues	$ 457,794	$ 425,409	$ 32,385	8 %

(a) Non-recurring revenues are comprised of past patent royalties and revenues from static agreements.

Total revenues of $457.8 million, which includes both recurring and non-recurring revenues, increased 8% from $425.4 million in 2021 primarily due to recurring revenue increasing 15% to $403.9 million, compared to $351.7 million in 2021. The company increased recurring revenue in both its Smartphone (up 11%) and CE, IoT/Auto markets (up 63%) as a result of twenty new agreements signed over the last seven quarters.

Non-recurring revenues decreased $19.8 million primarily attributable to revenues recognized on nine previously disclosed agreements signed in 2021. Non-recurring revenues in 2022 were primarily attributable to seven of the above disclosed license agreements signed in 2022 and revenues from new connected automobile license agreements.

In each of 2022 and 2021, 70% of our total revenues were attributable to companies that individually accounted for 10% or more of our total revenues. In 2022 and 2021, the following licensees or customers accounted for 10% or more of our total revenues:

	For the Year Ended December 31,	
	2022	2021
Customer A	30%	28%
Customer B	17%	18%
Customer C	13%	14%
Customer D	<10%	10%

Operating Expenses

The following table summarizes the change in operating expenses by category (in thousands):

	For the Year Ended December 31,			
	2022	2021	Increase/(Decrease)	
Research and portfolio development	$ 185,202	$ 200,484	$ (15,282)	(8)%
Licensing	71,419	64,625	6,794	11 %
General and administrative	47,377	61,217	(13,840)	(23)%
Restructuring activities	3,280	27,877	(24,597)	(88)%
Total operating expenses	$ 307,278	$ 354,203	$ (46,925)	(13)%

Operating expenses decreased 13% to $307.3 million in 2022 from $354.2 million in 2021. The $46.9 million decrease in total operating expenses was primarily due to increase/(decrease) in the following items (in thousands):

	Increase/(Decrease)
Restructuring activities	$ (24,598)
Personnel-related costs	(19,569)
Consulting and outside services	(6,986)
Revenue share	(6,620)
Intellectual property enforcement and non-patent litigation	10,152
Other	696
Total increase in operating expenses	$ (46,925)

The $46.9 million decrease in operating expenses was primarily due to reduction in non-recurring costs, which were driven by a $6.6 million decrease in revenue share costs primarily attributable to a patent license agreement signed in third quarter 2021, and a $24.6 million decrease in restructuring costs associated with cost savings measures taken in 2021. These measures also helped drive both the $19.6 million decrease in personnel-related costs and the $7.0 million decrease in consulting and outside services. These decreases were offset by a $10.2 million increase in intellectual property enforcement costs, primarily driven by the Oppo and Lenovo litigations.

Research and portfolio development expense: Research and portfolio development expense decreased by $15.3 million primarily resulting from the above-noted decreases in personnel-related costs and consulting costs.

Licensing expense: The $6.8 million increase in licensing expense primarily resulted from the above noted increase in intellectual property enforcement costs. This increase was partially offset by the above noted decrease in revenue share costs.

General and administrative expense: The $13.8 million decrease in general and administrative expense was primarily due to the above-noted decreases in personnel-related costs and consulting costs.

Restructuring Activities: Restructuring expenses associated with our overall restructuring plan decreased due to the plan being substantially complete in 2022. For more information on the restructuring activities refer to Note 20, "*Restructuring Activities*" within the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this Form 10-K.

Non-Operating Expense

The following table compares 2022 non-operating expense to 2021 non-operating expense (in thousands):

	For the Year Ended December 31,			
	2022	2021	Change	
Interest expense	$ (29,496)	$ (25,225)	$ (4,271)	(17)%
Interest and investment income	14,452	1,690	12,762	755 %
Loss on extinguishment of long-term debt	(11,190)	—	(11,190)	100 %
Other	(6,719)	9,885	(16,604)	(168)%
Total non-operating expense	$ (32,953)	$ (13,650)	$ (19,303)	(141)%

Interest expense increased $4.3 million due to the interest on the 2027 Notes issued during second quarter 2022. The $12.8 million increase in interest and investment income was primarily due to market conditions driving higher yields on the Company's short-term investments. The $11.2 million loss on extinguishment of long-term debt was related to the partial repurchase of the 2024 Notes, as described further in Note 9, "*Obligations*" within the Notes to the Consolidated Financial Statements included in Part II, Item 8 of this Form 10-K.

The change in Other was primarily due to fair value adjustments of our investments resulting in a $3.7 million net loss in 2022, compared to a $9.1 million net gain in 2021 and due to foreign currency translation losses arising from euro translation of our foreign subsidiaries of $3.9 million in 2022, compared to $3.0 million in 2021. Additionally, we recognized a $1.9 million gain on a contract termination in 2021.

Income Taxes

In 2022, based on the statutory federal tax rate net of discrete federal and state taxes, our effective tax rate is 21.7%. as compared to an effective tax of 27.0% in 2021. In both periods, the effective tax rate was impacted by losses in certain jurisdictions where the Company presently has recorded a valuation allowance against the related tax benefit. Excluding this valuation allowance, our effective tax rate would have been 19.3% and 16.7% in 2022 and 2021, respectively.

FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains forward-looking statements within the meaning of Section 21E of the Exchange Act. Such statements include certain information in “Part I, Item 1. Business” and “Part II, Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations” and other information regarding our current beliefs, plans and expectations, including, without limitation, the matters set forth below. Words such as "believe," “anticipate,” “estimate,” “expect,” “project,” “intend,” “plan,” “forecast,” "goal," "could," "would," "should," "if," "may," "might," "future," "target," "trend," "seek to," "will continue," "predict," "likely," "in the event," variations of any such words or similar expressions contained herein are intended to identify such forward-looking statements. Forward-looking statements are made on the basis of management’s current views and assumptions and are not guarantees of future performance. Although the forward-looking statements in this Form 10-K reflect the good faith judgment of our management, such statements can only be based on facts and factors currently known by us. Consequently, forward-looking statements concerning our business, results of operations and financial condition are inherently subject to risks and uncertainties. We caution readers that actual results and outcomes could differ materially from those expressed in or anticipated by such forward-looking statements due to a variety of factors, including those set forth below:

- unanticipated delays, difficulties or accelerations in the execution of patent license agreements;
- our ability to leverage our strategic relationships and secure new patent license agreements on acceptable terms;
- our ability to enter into sales and/or licensing partnering arrangements for certain of our patent assets;
- our ability to enter into partnerships with leading inventors and research organizations and identify and acquire technology and patent portfolios that align with our roadmap;
- our ability to commercialize our technologies and enter into customer agreements;
- the failure of the markets for our current or new technologies to materialize to the extent or at the rate that we expect;
- unexpected delays or difficulties related to the development of our technologies;
- changes in our interpretations of, and assumptions and calculations with respect to the impact on us of, the 2017 Tax Cuts and Jobs Act, as well as further guidance that may be issued regarding such act;
- risks related to the potential impact of new accounting standards on our financial position, results of operations or cash flows;
- failure to accurately forecast the impact of our restructuring activities on our financial statements and our business;
- the resolution of current legal proceedings, including any awards or judgments relating to such proceedings, additional legal proceedings, changes in the schedules or costs associated with legal proceedings or adverse rulings in such proceedings;
- the timing and impact of potential administrative and legislative matters;
- changes or inaccuracies in market projections;
- our ability to obtain liquidity through debt and equity financings;
- the potential effects that macroeconomic uncertainty could have on our financial position, results of operations and cash flows;
- changes in our business strategy;
- changes or inaccuracies in our expectations with respect to royalty payments by our customers; and
- risks related to our assumptions and application of relevant accounting standards.

You should carefully consider these factors as well as the risks and uncertainties outlined in greater detail in Part I, Item 1A, of this Form 10-K before making any investment decision with respect to our common stock. These factors, individually or in the aggregate, may cause our actual results to differ materially from our expected and historical results. You should understand that it is not possible to predict or identify all such factors. In addition, you should not place undue reliance on the forward-looking statements contained herein, which are made only as of the date of this Form 10-K. We undertake no obligation to revise or update publicly any forward-looking statement for any reason, except as otherwise required by law.