UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, DC 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2021

OR

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

Commission File Number: 001-39304

XPERI HOLDING CORPORATION

(Exact Name of Registrant as Specified in Its Charter)

Delaware	**84-4734590**
(State or Other Jurisdiction of Incorporation or Organization)	**(I.R.S. Employer Identification No.)**
3025 Orchard Parkway, San Jose, California	**95134**
(Address of Principal Executive Offices)	**(Zip Code)**

(408) 321-6000
(Registrant's Telephone Number, Including Area Code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $0.001 per share	XPER	The Nasdaq Global Select Market

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 Securities Exchange 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. ☒

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

The aggregate market value of the registrant's common stock held by non-affiliates of the registrant as of June 30, 2021 was approximately $1,380,451,000 (based on the closing sale price of the registrant's common stock as reported on The Nasdaq Global Select Market).

The number of shares outstanding of the registrant's common stock as of February 7, 2022 was 103,276,142.

DOCUMENTS INCORPORATED BY REFERENCE:

Portions of the registrant's Proxy Statement for the registrant's 2022 Annual Meeting of Stockholders will be filed with the Commission within 120 days after the close of the registrant's 2021 fiscal year and are incorporated by reference in Part III of this Annual Report on Form 10-K to the extent stated herein.

XPERI HOLDING CORPORATION

ANNUAL REPORT ON FORM 10-K

FOR THE YEAR ENDED DECEMBER 31, 2021

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Cautionary Statement Regarding Forward-Looking Statements

This annual report on Form 10-K (this "Annual Report") contains forward-looking statements, which are subject to the safe harbor provisions created by the Private Securities Litigation Reform Act of 1995. Words such as "expects," "anticipates," "plans," "believes," "seeks," "estimates," "could," "would," "may," "intends," "targets" and similar expressions or variations of such words are intended to identify forward-looking statements, but are not the exclusive means of identifying forward-looking statements in this Annual Report. The identification of certain statements as "forward-looking" is not intended to mean that other statements not specifically identified are not forward-looking. All statements other than statements about historical facts are statements that could be deemed forward-looking statements, including, but not limited to, statements that relate to our future revenue, product development, demand, acceptance and market share, growth rate, competitiveness, gross margins, levels of research, development and other related costs, expenditures, the outcome or effects of and expenses related to litigation and administrative proceedings related to our patents, our planned separation of two business segments, our intent to enforce our intellectual property rights, our ability to license our intellectual property, tax expenses, cash flows, our ability to liquidate and recover the carrying value of our investments, our management's plans and objectives for our current and future operations, our plans for quarterly dividends and stock repurchases, the levels of customer spending or research and development activities, the impact of the COVID-19 pandemic and related events, the impact of the Mergers (as defined below) and other acquisitions on our financial condition and results of operations, general economic conditions, and the sufficiency of financial resources to support future operations and capital expenditures.

Although forward-looking statements in this Annual Report 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 are inherently subject to risks, uncertainties, and changes in condition, significance, value and effect, including those discussed below under the heading "Risk Factors" within Part I, Item 1A of this Annual Report and other documents we file from time to time with the Securities and Exchange Commission (the "SEC"), such as our annual reports on Form 10-K, our quarterly reports on Form 10-Q and our current reports on Form 8-K. Such risks, uncertainties and changes in condition, significance, value and effect could cause our actual results to differ materially from those expressed herein and in ways not readily foreseeable. Readers are urged not to place undue reliance on these forward-looking statements, which speak only as of the date of this Annual Report and are based on information currently and reasonably known to us. We undertake no obligation to revise or update any forward-looking statements in order to reflect any event or circumstance that may arise after the date of this Annual Report, other than as required by law. Readers are urged to carefully review and consider the various disclosures made in this Annual Report, which attempt to advise interested parties of the risks and factors that may affect our business, financial condition, results of operations and prospects.

PART I

Item 1. Business

Corporate Information

Our principal executive offices are located at 3025 Orchard Parkway, San Jose, California 95134 USA. Our telephone number is +1 (408) 321-6000. We maintain a corporate website at www.xperi.com. The reference to our website address does not constitute incorporation by reference of the information contained on this website. Xperi, the Xperi logo, TiVo, the TiVo logo, Adeia, Tessera, the Tessera logo, DTS, the DTS logo, Ergo, FotoNation, Invensas, the Invensas logo, ZiBond, DBI, DTS HD, DTS Audio Processing, DTS:X Ultra, DTS Virtual:X, DTS Headphone:X, DTS Play Fi, DTS:X, DTS AutoSense, DTS AutoStage, and HD Radio are trademarks or registered trademarks of Xperi Holding Corporation or its affiliated companies in the U.S. and other countries. All other company, brand and product names may be trademarks or registered trademarks of their respective companies.

Impact of the COVID-19 Pandemic

Please refer to the Executive Summary section of Part II, Item 7 “Management's Discussion and Analysis of Financial Condition and Results of Operations” for information concerning the continuing effect of the COVID-19 pandemic on our business.

Overview

On December 18, 2019, Xperi Corporation (“Xperi”) entered into a definitive agreement with TiVo Corporation (“TiVo”), to combine in an all-stock merger of equals transaction (the “Mergers”). Following consummation of the Mergers on June 1, 2020, Xperi Holding Corporation became the parent company of both Xperi and TiVo. The common stock of both Xperi and TiVo were de-registered after completion of the Mergers. On June 2, 2020, Xperi Holding Corporation’s common stock, par value $0.001 per share, commenced trading on the Nasdaq Global Select Market (“Nasdaq”) under the ticker symbol “XPER.” Xperi was determined to be the accounting acquirer in the Mergers. As a result, the historical financial statements of Xperi for periods prior to the Mergers are considered to be the historical financial statements of Xperi Holding Corporation. As used herein, the “Company,” “we,” “us” and “our” refer to Xperi when referring to periods prior to June 1, 2020 and Xperi Holding Corporation when referring to periods subsequent to June 1, 2020. Our results of operations include the operations of TiVo after June 1, 2020. Unless specified otherwise, the financial results in this Annual Report are those of the Company and its subsidiaries on a consolidated basis.

We are a leading consumer and entertainment product/solutions licensing company and one of the industry’s largest intellectual property licensing platforms, with a diverse portfolio of media and semiconductor intellectual property and more than 11,000 patents and patent applications worldwide. We create extraordinary experiences at home and on the go for millions of consumers around the world, elevating content and how audiences connect with it in a way that is more intelligent, immersive and personal. Powering smart devices, connected cars, entertainment experiences and more, we have created a unified ecosystem that reaches highly engaged consumers, uncovering new business opportunities, now and in the future. Xperi addresses one of the biggest consumer trends in entertainment today – the massive proliferation of entertainment content and the rapidly changing habits for how consumers are finding, watching and enjoying that entertainment. Our technologies are integrated into billions of consumer devices, media platforms, and semiconductors worldwide, driving increased value for partners, customers and consumers. Headquartered in Silicon Valley with operations around the world, we have approximately 1,900 employees and more than 35 years of operating experience.

We conduct our business in two operating segments: (1) Intellectual Property (“IP”) Licensing and (2) Product. In our IP Licensing segment, we primarily license our innovations to leading companies in the broader entertainment industry, and those developing new technologies that will help drive this industry forward. Licensing arrangements include access to one or more of our foundational patent portfolios and may also include access to some of our industry-leading technologies and proven know-how. In our Product segment, we derive the majority of the revenue from licensing our technology to customers primarily through Technology License arrangements and Technology Solutions arrangements. For Technology License arrangements, the customer obtains rights to the technology delivered at the commencement of the agreement. For Technology Solutions arrangements, the customer receives access to a platform, media or data that includes frequent updates, where access to such updates is critical to the functionality of the technology.

In February 2022, Xperi introduced “Adeia” (pronounced *AH-dee-uh*), the new brand for our IP Licensing Segment. Ideas are at the heart of Adeia’s business and are embedded in its new name, which means “to license” in Greek. Licensing is how Adeia goes to market – by making its ideas broadly available to the industry.

We are currently planning, subject to any required regulatory approvals, a separation of our Product business and IP Licensing business through a tax-efficient transaction, resulting in two independent, publicly traded companies. We continue to evaluate the optimal timing of the contemplated business separation and currently anticipate that such separation will be completed in the second half of 2022.

IP Licensing Segment

The IP Licensing Segment, now operating under the Adeia brand, primarily licenses our innovations to leading companies in the broader entertainment industry, and those developing new technologies that will help drive this industry forward. Licensing arrangements include access to one or more of our foundational patent portfolios and may also include access to some of our industry-leading technologies and proven know-how.

Strategy

We have adopted a proactive strategy designed to protect and extend our technology and intellectual property. We continue to grow our patent portfolios in size and relevance through ongoing investment in internal innovation, strategic management of our portfolios, and targeted acquisitions to enhance our portfolio for the broader entertainment industry.

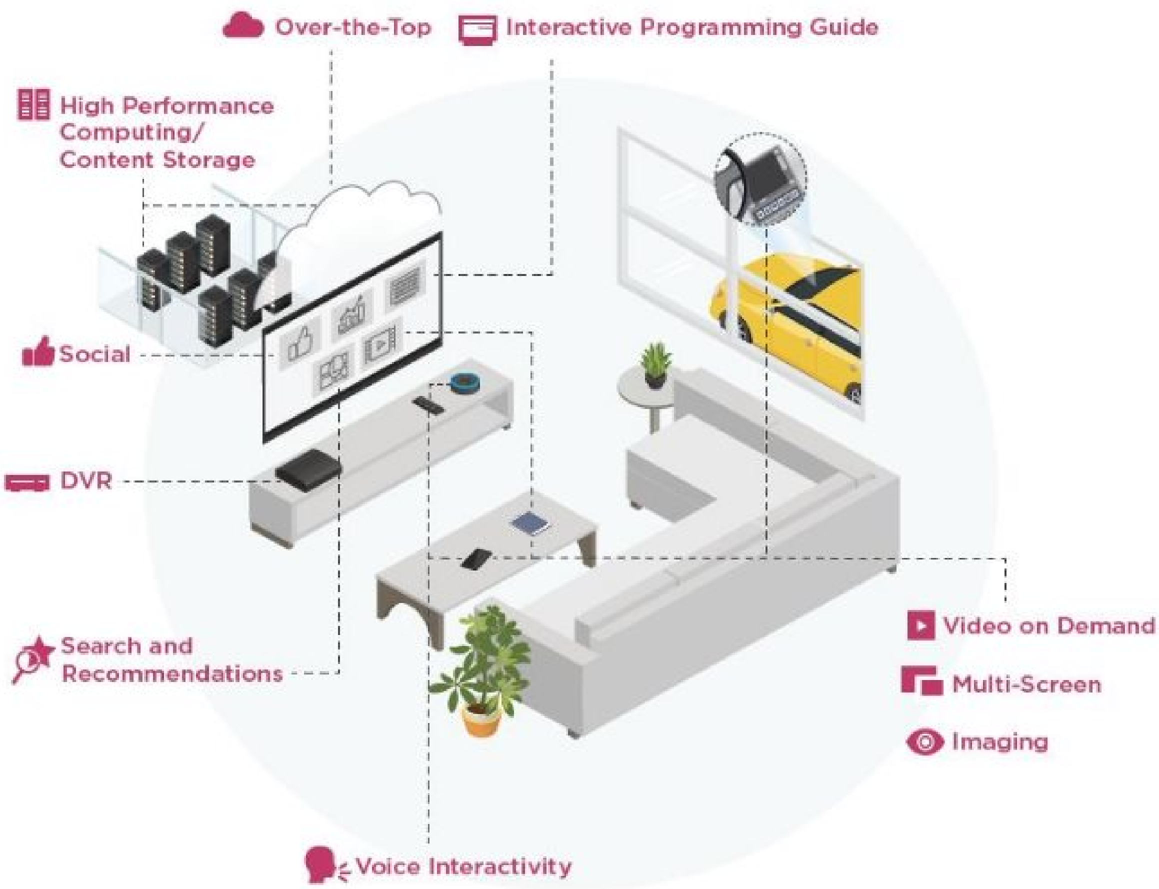
We invent, develop, and license fundamental innovations that shape the way millions of people explore and experience entertainment and enhance billions of devices in an increasingly connected world. From TVs to smartphones, in almost any place you can think of, from home to work to on the go, and in all types of entertainment experiences, from Pay-TV to over-the-top ("OTT") delivery, managing content and connections in a way that is smart, immersive, and personal is precisely what our innovations do.

Our patented innovations broadly cover all aspects of the entertainment experience, including guidance, discovery, search, recommendations, DVR, VOD, OTT, multi-screen, personalization, data analytics, advertising, imaging, content storage, and high-performance computing.

We license our patented media innovations for use with traditional linear television both in North America and internationally, and increasingly in connection with over-the-top, direct-to-consumer, and social media services that provide access to entertainment inside and outside the home on a broad array of devices. We believe the continued growth of video consumption, the evolution of how consumers explore and experience video, and need for content storage and high performance computing present new opportunities for us to continue to develop patentable innovations, expand the industries we serve, and to license additional patent rights.

IP Licensing

Innovations that shape the way millions of people explore and experience entertainment and enhance billions of devices in an increasingly connected world.



Our licensing business provides a strong foundation of recurring, annual revenue. That revenue is derived from licensing our patent portfolios across multiple markets, including:

- **Multichannel Video Programming Distributors (“MVPD”):** includes cable, satellite and telecommunications television providers that aggregate and distribute linear content over their own networks (MVPDs), as well as television providers that aggregate and stream linear content over broadband networks (virtual MVPDs). Customers typically pay us a monthly per-subscriber fee and include many of the leading MVPDs and virtual MVPDs such as Altice USA (including Cablevision), AT&T (including DirecTV and AT&T Now), Charter, Comcast (including Sky), Cox, Dish Network (including Sling TV), Google (including YouTube TV), Shaw, Verizon and Vodafone.

- **Over-The-Top (“OTT”) Video Service Providers, Social Media and Other New Media Companies**: includes subscription video-on-demand (“SVOD”) service providers that offer online services and devices that enable internet streaming and downloading of movies, television shows and other video programing, content providers, networks and media companies that provide content directly to consumers through a variety of business models (e.g. SVOD, AVOD, EST, etc.) and social media companies that increasingly incorporate video as an integral part of their offerings. Customers have typically paid us fixed fees for specified periods of time and include some of the leading new media companies including Google (including YouTube), HBOMax, Peacock, Starz, Paramount (including Pluto TV) and several of the leading social media companies.

- **Consumer Electronics (CE) Manufacturers**: includes producers of content access points such as smart televisions, streaming media devices, video game consoles, mobile devices, DVRs and other connected media devices. Our CE licensees typically are structured as license fees based on the number of units licensed, for specified products, in defined territories. Our agreements with some of the larger CE manufacturers generally allow customers to ship an unlimited number of units, provided they pay us fixed fees for specified periods of time. Select customers include Panasonic, Roku, Samsung Electronics, TCL and Vizio.

- **Semiconductors:** includes providers of sensors, radio frequency (RF) components, memory and logic devices commonly used in electronic products such as mobile phones, laptops, PCs, game consoles and servers. Customers typically have paid us fixed fees for specified periods of time, or a per-unit fee, and include Micron, OmniVision, Samsung, SK hynix, Sony, UMC and Yangtze Memory Technologies.

We continue to strengthen the foundation of our IP Licensing Segment with several specific growth opportunities, including:

- **Greater penetration in OTT:** The OTT market is currently experiencing explosive growth. For example, the largest providers of SVOD now have approximately 200 million worldwide subscribers, driven in part by the recent launch of several new services. While these services have a significantly lower ARPU when compared to traditional Pay-TV, the scale of the overall OTT video market continues to grow and presents an increasingly important licensing opportunity for our business. While we are at a comparatively earlier stage of licensing the key providers in this market, we are confident that the fundamental innovations from our patent portfolios will be similarly relevant to these new and widely-adopted OTT video services.

- **Expansion of MVPD licensing in Canada:** We continue to license MVPDs in Canada and have already successfully licensed several leading providers, including two of the top five MVPDs. Licensing the remaining Canadian MVPD providers presents a significant opportunity for expanding our IP licensing business.

- **Re-establish the Semiconductor licensing business:** With the rising cost and complexity of developing cutting-edge semiconductor manufacturing processes, the industry is increasingly looking beyond Moore’s Law towards advanced packaging and 3D integration technologies. Leveraging the combination of our highly-experienced technologists, scientists and engineers and our advanced research and development labs, we continue to develop industry-leading 3D integration solutions such as hybrid bonding that meet the demand for greater functionality, higher performance and smaller size for the next generation of electronics.

Competition

Due to the exclusionary nature of patent rights, we do not compete, in a traditional sense, with other patent holders for patent licensing relationships. Other patent holders do not have the same rights to the inventions and technologies encompassed by our patent portfolio. In any service, device or piece of equipment that contains intellectual property, the provider or manufacturer 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 a certain service(s) or product(s), which may face practical limitations.

We compete primarily with internal technology development groups within our respective technology licensing markets, who may create their own solutions that compete with technologies that we license. In general, there may be several ways to solve a particular technical problem and there can be no assurance that our inventions and approaches will be the ones generally adopted by the industry. We also compete with other companies in acquiring patent portfolios.

Protecting Our Investment

Although we are engaged with and have successfully licensed and transferred our technologies to many companies, some of the companies that use our patented technologies have nonetheless chosen not to enter into license agreements with us. Consequently, we have, at times, initiated litigation to enforce our IP rights and protect our investment. We view litigation as an instrument of last resort, and we use it only when our efforts to reach negotiated licenses have stalled or failed. If we are unable to secure license agreements on favorable terms through negotiations, or if licensees do not comply with the terms of their licenses, we might have to file new litigation to enforce our rights. See Part 1, Item 3-*Legal Proceedings*.

Product Segment

Xperi makes the ordinary extraordinary. Our product business creates extraordinary experiences at home and on the go for millions of consumers around the world, elevating content and how audiences connect with it in a way that is more intelligent, immersive and personal. Powering smart devices, connected cars, entertainment experiences and more, we've created ecosystems that reach highly engaged consumers, that have and will uncovered new business opportunities. We group our business into four categories based on the products delivered and customers served: Pay-TV, Consumer Electronics, Connected Car, and Media Platform.

Strategy

Xperi's product segment focuses on creating extraordinary experiences at home and on the go for millions of consumers around the world, elevating content and how audiences connect with it, in a way that is more intelligent, immersive and personal:

- **Pay-TV**: We transform the traditional television user experience from linear multi-channel video program distribution ("MVPD") with cloud-based digital video recording ("DVR") to an immersive, intuitive and hyper-personalized experience. Our iconic user experience gets people to the entertainment they love faster than ever. Content-first and AI-powered, it's the one place for all of today's amazing TV shows, movies, sports and more across live, recorded, on-demand and streaming TV. Brilliant imagery and relevant, personalized recommendations make the experience more enjoyable and engaging, everywhere people watch.
- **Consumer Electronics**: We create memorable entertainment experiences at every turn. With clear, bright visuals and heart-pounding, immersive sound, we're everywhere people listen, watch and play – at the movies, throughout the home and on the most popular mobile devices and gaming platforms. Also, we are developing our machine-learning capabilities through our Perceive subsidiary which delivers datacenter-class accuracy and performance to edge-based devices at ultra-low power.
- **Connected Car**: We transform the automotive experience by bringing high-quality multimedia and personalization to the connected car, just like at home. We immerse drivers in more of their favorite audio content, with crystal-clear, subscription-free digital radio. And, give drivers confidence, as vehicles with our AI-powered in-cabin sensing solutions improve the safety, comfort and security of everyone in the car. With autonomous vehicles evolving consumer expectations, we are innovating to create the dashboard of the future, accommodating more types of entertainment, from video to gaming and more.
- **Media Platform**: We reach highly engaged consumers wherever they watch. We endeavor to connect advertisers and entertainment producers to audiences they can't reach on other platforms, thanks to our content-first user experience that monetizes live and streaming TV across devices. Our unique footprint includes millions of traditional, linear TV households, where we deterministically capture viewership throughout the home, as well as anyone streaming from our ad-supported content network. With users searching less and watching more, networks and studios grow audiences, while consumer brands build incremental exposure to their campaigns over time.

Pay TV

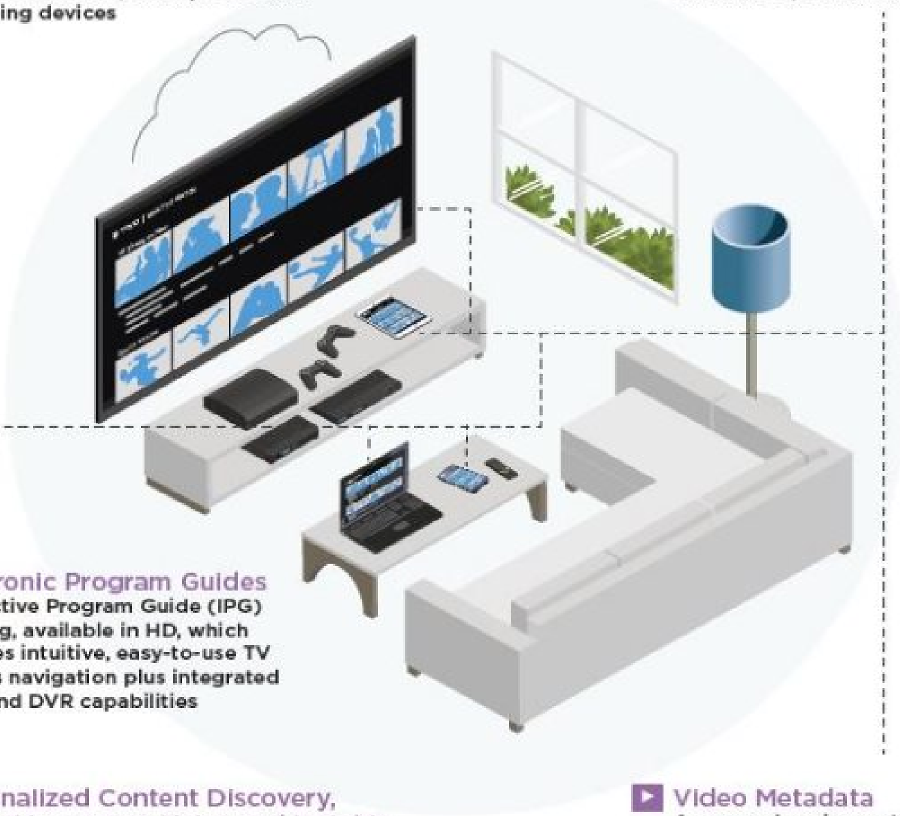
Transforming the traditional television user experience from linear program distribution with digital video recording to a modern content discovery platform that breaks down content silos and boundaries, creating a unified media experience that enables unprecedented end user engagement

IPTV Solutions

Our most advanced platform, offering a fully-integrated cloud-based solution that powers the TiVo client software which operates on STBs in consumer homes, as well as applications that operate on third party software platforms, such as iOS, Android, and BYOD streaming devices that power tablets, smartphones and streaming devices

TV as a Service IPTV Program

A Managed IPTV Service that is a customizable, cloud-enabled, end-to-end streaming video solution that enables operators to quickly launch a branded, fully compliant, full-featured pay TV service that leverages devices such as Apple TV, Android TV, and Amazon Fire TV



Electronic Program Guides

Interactive Program Guide (IPG) offering, available in HD, which includes intuitive, easy-to-use TV listings navigation plus integrated VOD and DVR capabilities

Personalized Content Discovery, Natural Language Voice and Insights

Provides service providers, content owners and applications, CE device manufacturers and application/service developers a way to enable their customers to quickly find, discover and access content across linear broadcast television, VOD, DVR, and OTT sources

Video Metadata

A comprehensive metadata library covering television, sports, movies, celebrities, books, and video games

Pay TV Features

Video on demand	Start over	Catch up
Pay Per View	Aggregation of content	Network DVR

Our Pay-TV business delivers a range of User Experience ("UX") solutions servicing Pay-TV operators on a world-wide basis with products that address the evolving user experience around TV content consumption, creating a truly unified media experience. Immersive, intuitive and hyper-personalized, our iconic user experience gets people to the entertainment they love faster than ever. Content-first and AI-powered, it's the one place for all of today's amazing TV shows, movies, sports and more across live, recorded, on-demand and streaming TV. Brilliant imagery and relevant, personalized recommendations make the experience more enjoyable and engaging. We integrate virtual channels of internet-delivered video directly into the consumer's primary video consumption platform to provide universal search, discovery and consumption regardless of where the content originates. Our solutions make it easy for consumers to find, watch and enjoy content. The following are some of the key solutions we license to operators:

Electronic Program Guides. Electronic Program Guides is our interactive program guide offering that includes intuitive, easy-to-use TV listings navigation plus integrated video-on-demand ("VOD") and DVR capabilities.

Our UX Solutions:

- Allow service providers to customize certain elements of the interactive program guide for their customers and to upgrade the programming features and services they offer.
- Provide content producers with a platform for monetizing their content.
- Allow viewers to build their own entertainment bundle to truly personalize their experience with current and future program information.
- Are compatible with service providers' linear, network DVR, Start-Over/Catch-Up subscription management, pay-per-view ("PPV") and VOD services.

We currently offer UX Solutions marketed to service providers under the TiVo, iGuide and Passport brands in the U.S., Canada and Latin America. Service providers generally pay us a monthly per-subscriber fee to license our UX Solutions. We also offer UX Solutions to the consumer electronics industry under the G-GUIDE brand in Japan. Our UX Solutions may include advertising and we typically share a portion of the advertising revenue with the service provider. Such advertising revenue tied to our UX Solutions is included in the Media Platform category described below.

Internet-Protocol Television ("IPTV") Solutions. The TiVo IPTV Service is our most advanced platform, offering a fully integrated, cloud-based solution that powers the TiVo client software which operates on set-top-boxes in consumer homes, as well as applications that operate on third party software platforms, such as iOS, Android, and bring-your-own-device ("BYOD") streaming devices that power tablets, smartphones and streaming devices. Our IPTV solution supports multiple services and applications, such as TV programming, broadband OTT video content, digital music, photos and other media experiences. The cloud-based service manages interaction with the clients, automatically connecting TiVo-enabled devices to provide program guide data, content recommendations, media promotion, advertising, broadband content and client software upgrades. We have enabled the TiVo client software to operate on set-top-boxes as well as Android TV™ boxes and streamers from a variety of manufacturers, for deployment in MVPD networks. We also enable a full suite of cloud-based IPTV experiences, including internet protocol linear, VOD, start-over, catch-up and network DVR. We allow Pay-TV operators the flexibility to transition to IPTV while utilizing their current infrastructure to take advantage of internet video and OTT content. Our IPTV solution allows set-top-boxes to operate in multiple settings in the home. Over the past few years, the TiVo client software has undergone a significant refactoring. In addition to developing a new look and feel, our next generation IPTV service platform integrates all of our most advanced technologies and solutions, including advanced cross-platform conversational voice search, personalized recommendations, predictions and insights, rich video metadata, robust data collection and new back-office capabilities. These advanced technologies allow our hardware partners' devices to connect with third-party consumer devices and services to enable both existing and future functionality.

TV as a Service IPTV Program. We also offer a Managed IPTV Service that is a customizable, cloud-enabled, end-to-end streaming video solution that enables operators to quickly launch a branded, fully compliant, full-featured Pay-TV service that leverages devices such as Apple TV, Android TV, and Amazon Fire TV.

Our Managed IPTV Service enables broadband operators, 5G network providers and cable operators to offer TV-as-a-service without having to invest in video head-end infrastructure or end-user set-top-boxes. Our TV as a Service IPTV solution includes a full cable programming lineup with local channels, DVR, recommendations, Dynamic Ad Insertion ("DAI") and more, all with the same ease as signing up for and using top streaming services.

Video Metadata. Our metadata products are a critical component of delivering an interactive entertainment experience. We offer the industry's most comprehensive metadata library covering television, sports, movies, digital-first, celebrities, books, and video games. We develop our metadata through a technology platform that combines machine learning techniques and platform-mediated work with our proprietary and patented knowledge graph technology. Our focus on quality, robustness and consistent international depth has made us a recognized leader in entertainment metadata services worldwide.

We offer several metadata and service offerings, including the following: schedules, listings, app content linking services, and advanced metadata such as moods, tones, themes and topics. Customers typically pay us a monthly or quarterly licensing fee for the rights to use the metadata, receive regular updates, and integrate metadata into their own service. We deliver metadata using real-time APIs and as bulk data files depending on customer requirements.

Personalized Content Discovery, Natural Language Voice and Insights. Personalized Content Discovery with conversation services provides our customers (including content owners and applications, CE device manufacturers, and application/service developers and providers) with a way to enable their customers (the device user) to quickly find, discover and access content across linear broadcast television, VOD, DVR, and OTT sources. The ongoing investment in our Personalized Content Discovery platform enables us to provide some of the most advanced capabilities in media personalization, prediction and voice search. The advanced algorithms of our technology understand the nature and relationship of content information and the context surrounding a user's behavior to deliver an advanced personalized content discovery experience. Results can be generated through traditional text entry, voice interaction, or through our content recommendations. Our natural language voice solution, when combined with our advanced search and recommendations technology, enables a conversational interaction between a viewer and their content experience. Engagement behaviors are then analyzed and may be optimized through our Insight platform, thereby providing our customers with the ability to continuously engage and improve the consumer experience, with the ultimate goal of reducing churn.

Legacy TiVo DVR Subscriptions. We offer a direct-to-consumer retail TiVo subscription in North America. The TiVo Service Platform includes a modular front-end that allows the basic platform to be used by hardware manufacturers to build set-top-boxes that support digital and analog broadcast, cable, internet TV, OTT and VOD services. Consumers purchase TiVo DVRs and companion TiVo Mini whole-home devices for a user experience upgrade to the set-top-box experience provided by a standard cable service.

Our customers apply these technologies to Pay-TV, internet TV, and video services from virtual service providers, content producers, and CE manufacturers. Customers typically pay us a per-subscriber or per-device fee. Our search and recommendation solutions are widely deployed with many leading Pay-TV service providers including Charter and Vodafone.

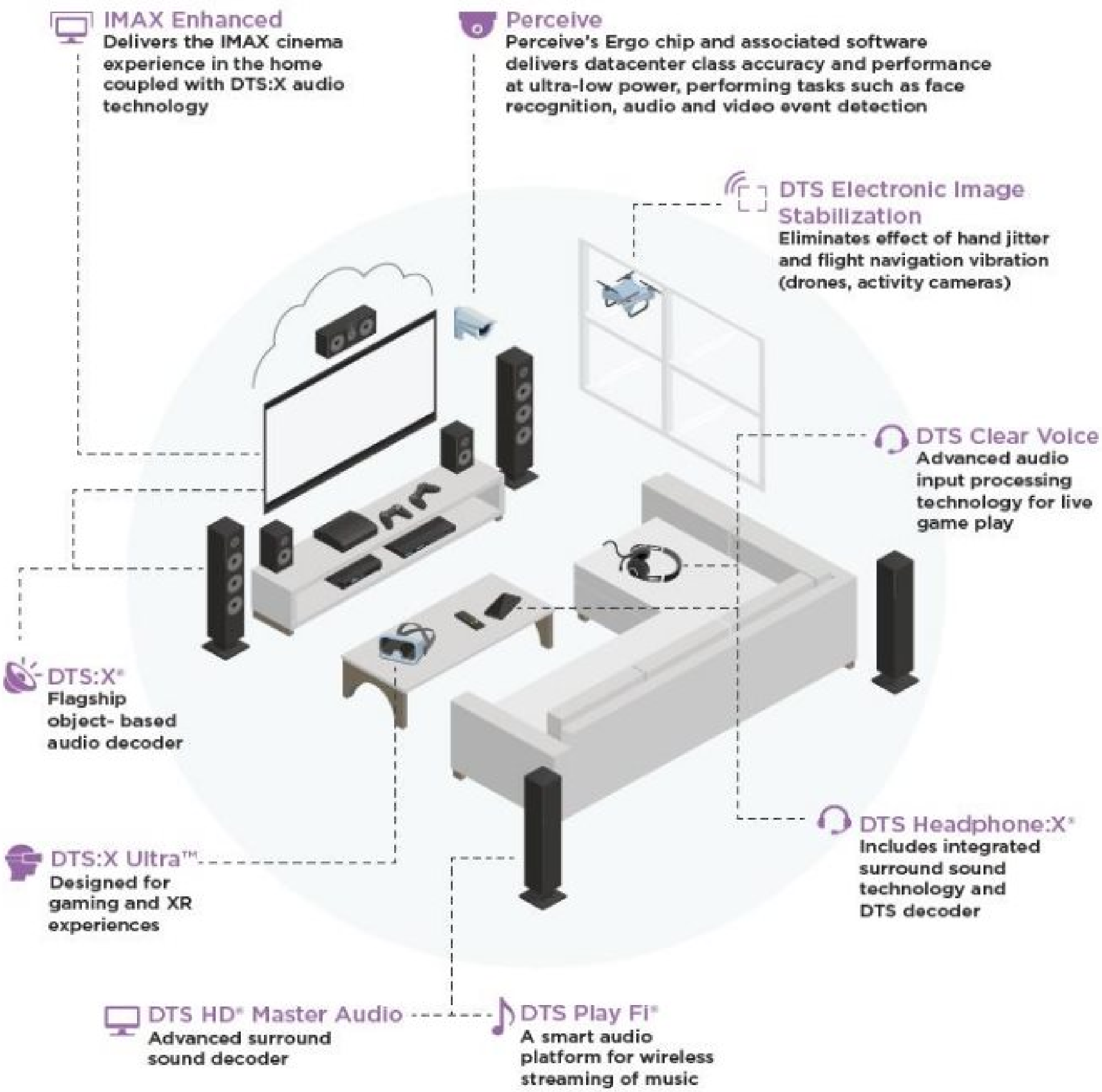
UX Business Operations and Technical Support. Our UX Business has technical support and certification operations to support our products:

- We provide training, technical support and integration services to Pay-TV service providers who license our products.
- We operate the internet-based services required for our service offerings including data delivery, search, recommendation, advertising, device management and media recognition.
- We provide broadcast delivery of television programming data and advertising to UXs on TVs and set-top-boxes in major European markets and in Japan. In North America, we deliver similar programming and advertising data via the internet.
- We support our customers with porting and engineering services to ensure our interactive program guides and DVRs operate properly.

We also provide customer care for UX and DVR customers to resolve data, advertising and consumer functional issues.

Consumer Electronics

Innovative audio and media technology for consumer devices that enhance how people consume entertainment in the home and on the go



Our Consumer Electronics business represents technology solutions delivered to our customers to enhance their entertainment experience in the home and on-the-go. Below are some of the key solutions we license:

Home and Mobile Audio Solutions. Our solutions consist of premier audio technology for high-definition entertainment experiences. Our DTS codec is designed to enable recording, delivery and playback of immersive high-definition audio and is incorporated by hundreds of customers around the world into an array of consumer electronics devices. We provide products and services to entertainment media ecosystem partners such as motion picture studios, game developers and other content creators to facilitate the inclusion of compelling, realistic DTS-encoded audio within their content. This in turn allows consumers to experience immersive and compelling audio wherever they choose to enjoy it. Home and Mobile devices that incorporate DTS audio codec technology include televisions ("TVs"), personal computers ("PCs"), smartphones, tablets, set top boxes ("STBs"), video game consoles, Blu-ray Disc players, audio/video receivers, soundbars, wireless speakers and home theater systems. We also offer DTS post-processing audio solutions designed to enhance the entertainment experience for users of consumer electronics devices, particularly those subject to the physical limitations of smaller speakers, such as TVs, PCs and mobile devices. In 2018, we launched the IMAX Enhanced program, which Xperi manages and licenses to consumer electronics customers worldwide to deliver the ultimate home cinema experience with unique IMAX cinematic content that leverages the DTS:X audio format to deliver signature IMAX audio mixes. In addition, our DTS Play-Fi technology leverages our audio and technology expertise to enable a variety of high-quality audio playback options across wireless speakers, set-top-boxes, TVs and mobile devices.

The proliferation of connected devices that can support streaming and downloadable content has made our active participation within the digital ecosystem increasingly important, as the availability of DTS-encoded content helps drive consumer demand for electronics that support DTS technologies.

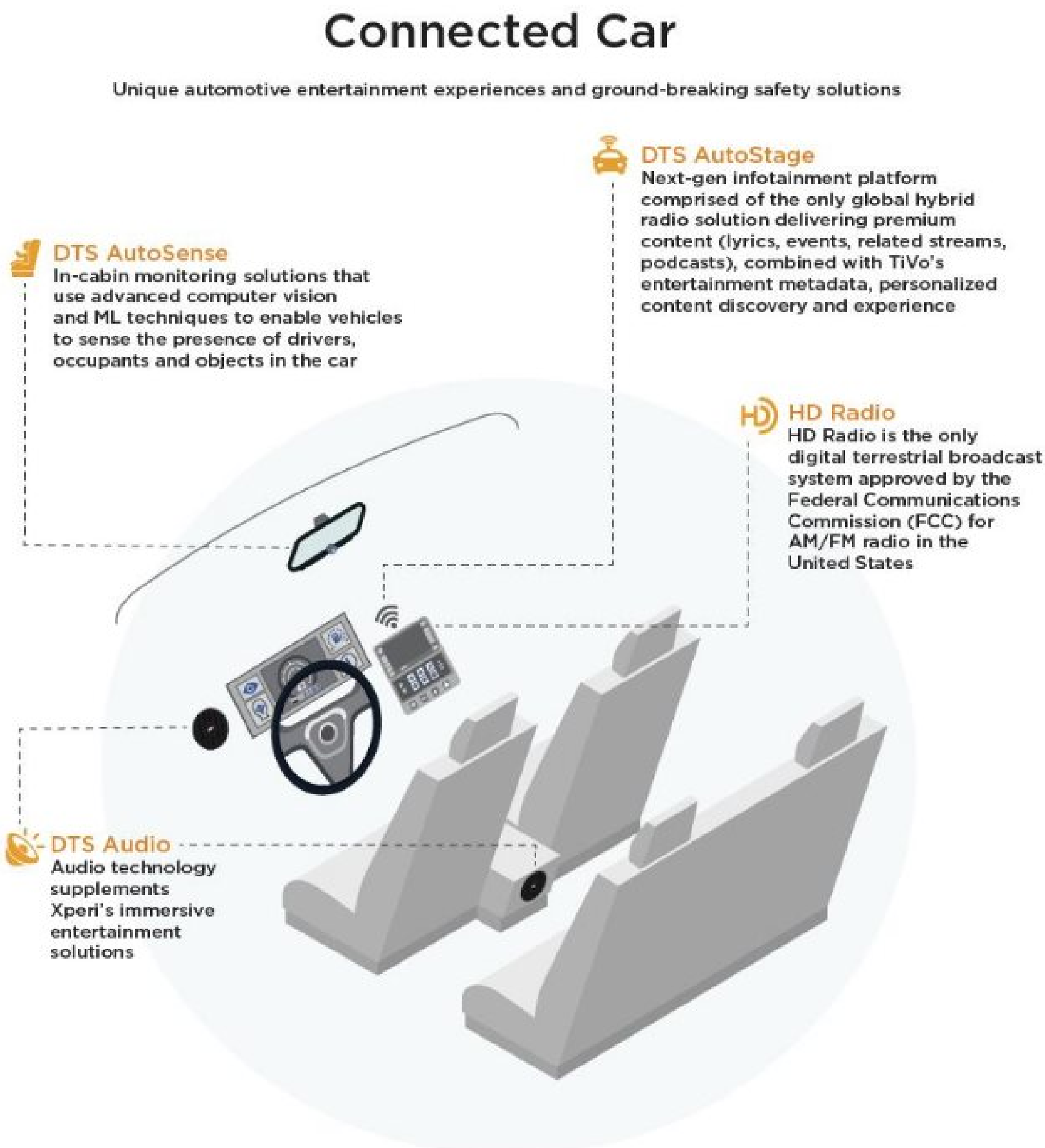
Our immersive audio solutions, such as DTS-HD and DTS:X, empower content creators and are supported by all major Hollywood studios, many cinema operators in the U.S. and Asia, and leading streaming service providers in the U.S., Europe and Asia. We have licensed our audio technologies and related trademarks to substantially all of the major consumer electronics product manufacturers worldwide. These customers include Denso, Harman, Hisense, LG, Microsoft, Panasonic, Samsung, Sony, and others.

Traditionally, our audio technologies are delivered as software code on integrated circuit ("IC") chips. We license a defined and limited set of rights to incorporate our technology onto IC chips, and the IC manufacturers deliver these Xperi-enabled chips to our customers, the consumer electronics product manufacturers. We also work closely with the world's leading IC manufacturers to support our technologies on the new programmable architectures that enable our customers to deploy our technologies in their consumer electronic products. Our IC partners specialize in key vertical markets and work closely with us to enable our latest technologies for these programmable parts. Together, we license solutions to Xperi's consumer electronics manufacturers.

We have devoted significant time and resources to develop a broad range of solutions with key partners including Amlogic, Analog Devices, Cadence, Cirrus Logic, Mediatek, Mstar, NXP, Qualcomm, Realtek, Synaptics, Texas Instruments, and others.

Perceive

Our Perceive subsidiary provides silicon and software solutions for edge inference, which provides two differentiating factors: low power and high performance. Perceive's Ergo chip and associated software deliver breakthrough innovation – delivering datacenter class accuracy and performance at ultra-low power, performing tasks such as face recognition, and audio/video event detection. These solutions are expected to have initial market applications in consumer security cameras and doorbells, laptops, PCs, advanced wearables and other battery powered consumer devices, made by industry leaders.



We group our Connected Car business into three main categories based on the products delivered to our customers: HD Radio, Automotive Connected Media, and In-Cabin Monitoring Solutions.

HD Radio. HD Radio is the only digital terrestrial broadcast system approved by the Federal Communications Commission ("FCC") for AM/FM radio in the U.S., offering additional channels, crystal-clear sound and advanced data services with no subscription fees. HD Radio enables a high-quality in-vehicle radio experience with innovative features and digital capabilities such as real time traffic and weather updates.

HD Radio technology enables digital AM/FM broadcast radio, creating significant benefits to all participants in the radio broadcasting ecosystem. HD Radio is supported by more than 2,400 radio stations, including 98 of the top 100 most listened to stations in the U.S. Furthermore, we believe HD Radio provides compelling advantages to consumers over traditional radio as listeners enjoy upgraded audio quality, expanded content choices, content information (such as song and artist names) and new digital services.

Our HD Radio technology is incorporated into several of our automotive partners' products, including vehicles from Acura, Audi, BMW, Ford, Honda, Hyundai, Tesla, and Toyota, among many others.

DTS AutoStage. DTS AutoStage is our comprehensive automotive infotainment offering integrating industry-leading music and audio entertainment metadata, media search and discovery and our DTS premium audio solutions. DTS AutoStage is a global system that enables car makers to utilize a single platform to deliver an enhanced radio experience across different analog and digital broadcast systems deployed regionally. Using an internet protocol connection installed in a vehicle, DTS AutoStage delivers an innovative analog AM/FM and digital (DAB and HD Radio) experience by pairing broadcast programming with internet-protocol-delivered content. Daimler launched the first series of automobiles featuring the DTS AutoStage platform in September 2020.

DTS AutoSense In-Cabin Monitoring. Built upon our legacy as a pioneer in computational imaging solutions, DTS AutoSense includes driver monitoring systems ("DMS") and occupant monitoring systems ("OMS") to enable a full suite of detection and analysis products for automakers. These technologies enable state-of-the-art attentiveness assessment and fatigue detection for the driver as well as in-cabin monitoring and customization options, based on occupant detection and analysis.

International agencies that publish automotive safety ratings are increasingly requiring in-cabin sensing solutions to award automakers high safety ratings. To meet these requirements, DTS AutoSense Occupancy Monitoring System is dedicated to saving the lives of vehicle passengers and drivers and to improving the in-cabin experience. DTS AutoSense is effective even if vehicle passengers/occupants are masked, and includes child seat detection, child presence detection, occupant detection, emotion detection, and passenger authentication. DTS AutoSense OMS uses a single camera and leverages the company's extensive experience with image processing (20+ years) and artificial intelligence. The solution's advanced computer vision and machine learning techniques enable vehicles to sense, in real time, the presence of occupants and objects (for example, a laptop accidentally left in the vehicle). The technology can also enable personalization of infotainment recommendations, such as playlists, content, volume of music, choice of radio station options, in-cabin temperature adjustments or any setting that can be adapted to a user's specific taste. Working together the OMS and DMS provide insights into activity inside the vehicle, including the driver, passengers, pets and objects. BMW launched the first automobiles with DTS AutoSense in 2021.

Media Platform

TiVo Stream OS (our proprietary operating system) platform, and the devices connected to that platform monetized through ad supported content, SVOD and MVPD services, ad placements on the home screen, branded buttons on remotes, data licensing and off-platform ads

Platform

TiVo Stream OS

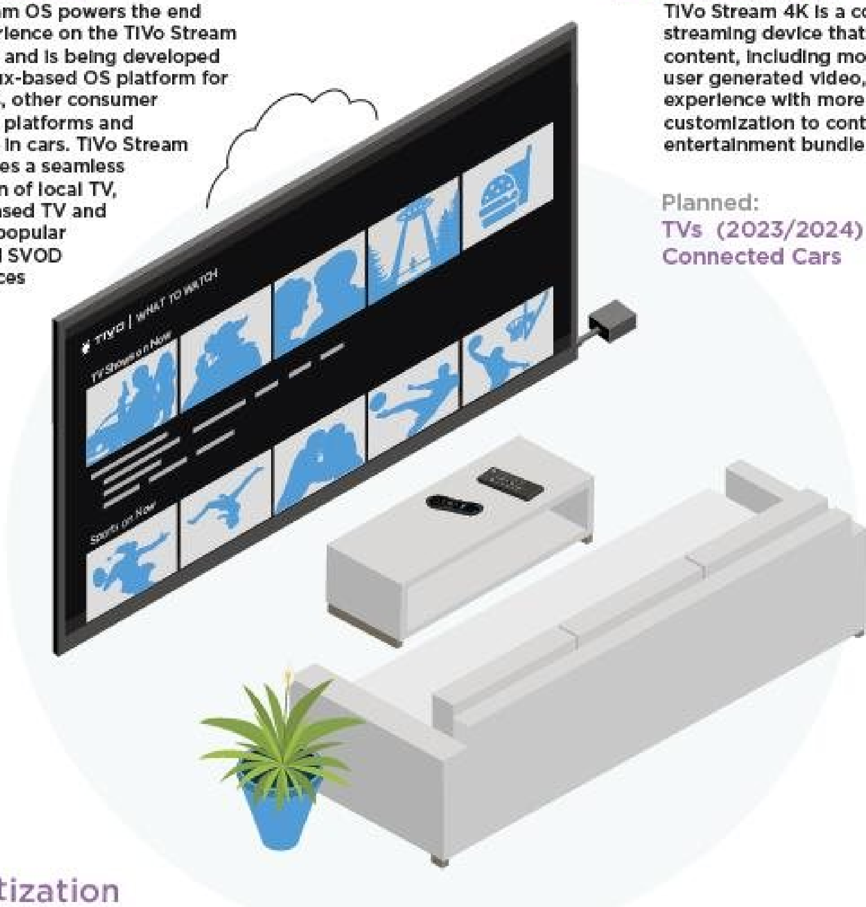
TiVo Stream OS powers the end user experience on the TiVo Stream 4K device and is being developed into a Linux-based OS platform for Smart TVs, other consumer electronic platforms and ultimately in cars. TiVo Stream OS provides a seamless integration of local TV, free ad-based TV and the most popular AVOD and SVOD OTT services

Devices

TiVo Stream 4K

TiVo Stream 4K is a consumer streaming device that presents content, including movies, TV and user generated video, in a single experience with more end user customization to control their entertainment bundles

Planned:
TVs (2023/2024)
Connected Cars



Monetization

Ad Supported Content

Ad inventory on services such as TiVo+ and certain third-party AVOD services

SVOD & MVPD

Revenue shared by SVOD and vMVPD services on new user subscriptions activated or reactivated through the TiVo platform

Home Screen

Ad placements on our TiVo Stream 4k and ultimately TiVo OS home screen by streaming services, studios and other consumer brands

Data Licensing

Fees from advertisers, advertising agencies and networks to license data generated from our TiVo platforms to inform their ad buying decisions

Off-platform Ads

Xperi will take Household IDs from the TiVo platform and use them to target on other media sources

Media Platform provides industry-leading technology that enables extraordinary experiences as consumers find, watch, and enjoy their favorite media entertainment on connected devices. We connect advertisers and entertainment producers to audiences they can't reach on other platforms due to our content-first user experience that monetizes live and streaming TV across devices. Our unique footprint includes millions of linear TV households, where we capture viewership throughout the home, as well as anyone streaming from our ad-supported content network. With users searching less and watching more, networks and studios grow audiences, while consumer brands build incremental exposure to their campaigns over time.

Media Platform includes the TiVo Stream OS, our evolving proprietary media operating system, consumer devices that leverage the TiVo Stream OS (TiVo Stream 4K), future potential consumer devices that leverage the TiVo Stream OS (Connected TVs, Connected Cars.), and the monetization of TiVo Stream OS.

TiVo Stream OS is monetized in several ways: through ad-supported video content displayed on TiVo Stream OS client-connected devices; subscription video-on-demand, virtual multichannel video programming distributor ("vMVPD") service bounties and revenue shares facilitated by TiVo Stream OS client connected devices; on screen display advertisements on TiVo Stream OS client connected devices; data licensing of anonymous behavior data sourced from TiVo Stream OS client connected devices, off-platform ads leveraging TiVo Stream OS client connected device data, and other opportunities on device clients that connect to and leverage TiVo Stream OS.

Revenue in this category will be driven primarily by expanding the active footprint of client-connected devices utilizing the TiVo Stream OS, increasing user engagement with media via the TiVo Stream OS, and successfully executing monetization tactics.

Platform - TiVo Stream OS

TiVo Stream OS leverages the key technologies and services that enable consumers to easily find their favorite media entertainment across an increasingly fragmented content service provider landscape. TiVo Stream OS is built upon 25+ years of media technology development learnings, servicing 20 million+ TiVo DVR service households.

TiVo Stream OS enables ubiquitous footprint scale required by content service providers, advertisers, and other ecosystem partners; drives platform consumer engagement by leveraging proprietary content discovery, display, and delivery technologies; and serves as a control mechanism to ensure extraordinary experience quality for consumers.

TiVo Stream OS scales across client-connected devices by creating and deploying uniform micro services across multiple endpoints to direct device provisioning, account management, firmware updates, media discovery, voice services, content service provider integration, ad delivery, usage reporting, and other future needs. Upon integration of a content service provider's media catalogue and service with TiVo Stream OS, it is rapidly deployed across multiple client-connected devices with minimal customization. Additionally, advertisers can plan campaigns across multiple client-connected devices to reach their intended audiences leveraging TiVo Stream OS singular ad delivery service.

TiVo Stream OS drives industry-leading consumer engagement by delivering rich metadata, personalization, natural language understanding and voice control, and content integration services. TiVo Stream OS provides client-connected devices with rich metadata including imagery and content descriptors, inviting consumers to continually engage with media. TiVo Stream OS provides industry-leading content recommendations based on AI-defined insights encouraging consumers to continually discover their next new favorite. These insights are derived from anonymous behavioral data combined with multiple on-device and off-device contextual variables. TiVo Stream OS provides best-in-class voice services and natural language understanding providing customers and effortless navigation and media discovery experience. This voice technology is media platform optimized, based on proprietary AI-produced insights derived from an entertainment-based knowledge graph. TiVo Stream OS uniquely brings services from long-time partners such as Disney, Sling, and YouTubeTV, among others, and seamlessly integrates local TV, free ad-based TV and the most popular AVOD, SVOD and vMVPD services. As the TiVo Stream OS footprint increases, the inventory of Free Ad Supported TV ("FAST") and Ad-supported Video on Demand ("AVOD") services such as our own TiVo+ network increases and provides a robust opportunity to monetize this unique connected TV advertisement inventory. This inventory is further enriched based on anonymous user behavioral data collected from the Stream OS devices.

Devices – TiVo Stream 4K

TiVo Stream 4K is a best-in-class streaming media player that currently leverages components of TiVo Stream OS with market-leading networking, video and sound technologies to provide a powerful hardware platform on which TiVo Stream OS can operate to upgrade any screen with an HDMI connection to a smart, connected device. TiVo Stream 4K is sold via online and traditional retail channels as well as through broadband partners seeking to provide a vMVPD service and streaming media player bundled offerings to their customers.

Devices – TiVo Stream OS for TV

TiVo Stream OS for TV is a Linux-based SmartTV operating system that leverages TiVo Stream OS technologies, features, and capabilities. We expect the TiVo Stream OS platform for Smart TVs to launch in 2023 or 2024.

TiVo Stream OS for TVs will leverage TiVo Stream OS micro services to direct device provisioning, account management, firmware updates, media discovery, voice services, content service provider integration, ad delivery, usage reporting, and other future needs. It also leverages TiVo Stream OS content onboarding and delivery process to rapidly deploy a content service provider's media catalogue and services with minimal customization. Lastly, the solution leverages TiVo Stream OS singular ad delivery service to plan and ad execute campaigns to reach intended TiVo Stream OS for TVs users.

TiVo Stream OS for TVs will be licensed as a software-as-a-service to consumer electronic OEMs and will include the right to monetize all or part of the end-user content engagement over the life of the product. For Tier 2 and Tier 3 Smart TV OEMs, TiVo Stream OS will provide a platform to participate in the fast-growing Connected TV monetization value chain with scale and cross platform end-user insight not available to OEMs on a standalone basis.

Monetization - TiVo Stream OS

TiVo Stream OS is primarily monetized through video or display advertisement impressions; subscription video on demand and Pay-TV service bounties and revenue shares; TV viewership data licensing; off-platform connected TV ads; and other opportunities on device clients that connect to and leverage TiVo Stream OS.

As the TiVo Stream OS platform scales, we are monetizing through the following vehicles:

- Ad Supported Content: The sale of ad inventory on services, including our own TiVo+ and certain third party AVOD services.
- SVOD and MVPD Services: Revenue shared by SVOD and virtual MVPD services on new user subscriptions activated or re-activated through our OS platform.
- Home Screen Ad Placements: Ad placements on the TiVo Stream OS platform's home screen by streaming services, studios, and other consumer brands.
- Data Licensing: Revenue from advertisers, advertising agencies, and networks to license data generated from TiVo platforms to inform their ad buying decisions.
- Off-Platform Ads: We will take household IDs from the TiVo Stream OS platform and use those IDs to target on other media sources.

Monetization – TV Viewership Data

TiVo offers TV viewership data with program airings data for millions of households. Broadcasters, MVPDs, content producers, advertising agencies and advertisers that utilize our TV viewership data can activate subscribers' TV viewership alone or in combination with third-party data sources using industry-leading data safe havens to target promotions and advertising directly, or through third party viewer segments, to monetize their subscriber customer base.

Monetization – Advertising Solutions

TiVo provides advertisers with nationwide or regionally targeted advertising on our various owned or operated devices. Advertisers place ads in a variety of display formats in both traditional linear television and digital advertising for internet delivered content, seamlessly incorporated into the user interface. Utilizing our Personalized Content Discovery platform, we also target content promotions as 'paid search' by directly including the sponsored content in user interface's recommended content carousel. We work with service providers bundling their non-TiVo advertising inventory with our native inventory, thereby giving us a more significant national footprint.

Competition

Pay-TV

There are a number of companies that produce and market advanced media solutions such as UXs, interactive program guides, DVRs, search, recommendation, natural language voice, metadata, and advanced data and analytics in the various formats which compete, or we believe will compete, with our products and services over time. Principal competitive factors include brand recognition and awareness, product and service functionality, innovation, ease of use, personalization, content access and availability, mobility and pricing. While we are competitive across this range of factors, we believe our primary competitive differentiation includes our ability to integrate all our products to create unique value to our customers and the depth and breadth of our IP portfolio.

Our Platform faces competition from companies such as Synamedia, MediaKind, Kudelski, Enghouse Systems Limited, and from solutions developed by multiple system operators ("MSOs") such as Comcast X1 and Liberty Global plc's Horizon Media, which have created competing products that provide user interface software for use on set-top-boxes and CE and mobile devices. Such companies may offer more economically attractive agreements to service providers and CE manufacturers by bundling multiple products together. We face competition for our Pay-TV product offerings from customers who choose to build their own interactive program guide and DVR solutions. We believe that we provide a strong alternative to "do-it-yourself," as we have innovative, high-quality products ready to be implemented, with local and network DVR, integrated data distribution infrastructure and content, as well as third party services (such as VOD services). We differentiate our products by continuing to integrate our broad portfolio of products into a suite of solutions and services for our customers. We believe our solutions speed our customers' time to market, are superior to "do-it-yourself" products, and can be deployed at a lower cost than internally-built products.

Video Metadata. In video metadata, we compete with other providers of entertainment-related content metadata such as Gracenote (a subsidiary of Nielsen Holdings plc) and Ericsson Group's Red Bee Media, as well as a number of local metadata providers. While we do not believe that our competitors' metadata sets offer the same comprehensive breadth of focus on media exploration, discovery, and management in as many regions of the world as we do, they present competition to our metadata business for each of their areas of focus.

Consumer Electronics

Audio. Our audio licensing products face competition from other third-party providers of similar solutions as well as internal engineering and design groups among industry IC provider and consumer electronics manufacturers.

Our primary competitor is Dolby Laboratories, which develops and markets, among other things, high-definition audio products and services. Dolby's long-standing market position, brand, business relationships, resources and inclusion in various industry standards provide it with a strong competitive position.

In addition to Dolby, we compete in specific product markets with companies such as Fraunhofer IIS and various other consumer electronics product manufacturers. Many of these competitors have a wide variety of strengths that afford them competitive advantages, such as longer operating histories, greater resources, greater name recognition, or the ability to offer their technologies for a lower price or for free. We have historically competed effectively against these companies due in part to position our brand as a premium offering that contains superior proprietary technology, the quality of our customer service, our inclusion in industry standards and our industry relationships.

Connected Car

Our HD Radio and DTS AutoStage solutions face competition from subscription-based digital service providers such as Sirius/XM, Pandora, Gracenote, and other digital audio and data service providers.

Our in-cabin monitoring technologies broadly compete with other image processing software vendors targeting the automotive industry, such as SmartEye and Seeing Machines, as well as engineering and design groups of tier one automotive suppliers that seek to provide similar technologies by employing different approaches with their internal teams.

Media Platform

TV Audience Data. We collect and analyze audience research data in an area where companies such as comScore, Inc. and Nielsen Holdings plc and other online data analytics companies compete for research spend from advertisers, advertising agencies and television networks. Other large companies are also focusing resources in this area including Comcast, Meta Platforms Inc. (Facebook) and Alphabet, Inc.'s Google business. Many of our existing customers are investing in platforms to enable their businesses with these capabilities. We believe that there is a significant opportunity for us as an independent data and technology provider, with proprietary access to critical data assets associated with consumers' engagement with entertainment media.

TiVo Stream 4K. We compete against products with on-demand OTT streaming capabilities offered by internet CE manufacturers. For example, many CE manufacturers have television or internet-enabled streaming devices for accessing video over the internet such as Apple TV, Amazon Fire TV, Google Chromecast and Roku. TVs with integrated streaming capabilities from manufacturers such as Samsung, Vizio and LG also represent competition to our Stream 4K.

Stream OS. We compete for SmartTV platform support with Roku, Alphabet, Inc's GoogleTV and Amazon's FireTV. We believe the overall OTT streaming market growth, our differentiated end-user solution, and our more inclusive business model for Tier 2 and Tier 3 SmartTV OEMs represents an opportunity where we can establish a strong niche position.

In approaching content owners, advertisers and ad agencies to participate in the Stream OS platform, we are competing with the same platforms and TV OEMs operating their own TVOS such as Samsung, Vizio and LG. In this fast-expanding Connected TV advertising market, we believe our cross-platform data insight from Pay-TV and Stream OS households will allow us to create and promote a unique and compelling offering for advertisers.

Over time, we expect to see new competitors and other competing technologies emerge.

Intellectual Property Portfolio

We operate in an industry in which innovation, investment in new ideas and protection of our intellectual property rights are critical for success. We protect our innovations and inventions through a variety of means, including but not limited to applying for patent protection domestically and internationally.

As of December 31, 2021, we held approximately 5,000 United States issued patents and 1,400 patent applications, as well as approximately 3,900 foreign issued patents and 1,400 patent applications. The last of our currently issued patents to expire is in 2040.

From time to time, we acquire complementary IP portfolios. Our criteria for patent acquisitions include: compatibility with our existing portfolios, the number and jurisdiction of patent assets, the technical and legal strength of the patents, the actual or likely adoption by industry, and the economic value of the inventions. See Part I, Item 1A- Risk Factors.

Research & Development

As demonstrated by our portfolio of industry recognized, widely-deployed advanced technologies and intellectual property (IP), we have a long track record of innovating in the fields of audio, imaging, video discovery, and semiconductors. We believe that ongoing investment in R&D is required for us to remain competitive in the markets we serve.

Today, we have a collection of world-class talent and strong research and development capabilities in various locations throughout the world. Starting with core research, machine learning and advanced algorithm development, we continue to focus on IP development and next generation technology solutions. Our ongoing investment in R&D supported by a strong industry network of partners enables us to deliver differentiated, cost-effective solutions that enhance the end-user experience for an ever-larger universe of addressable markets.

Legislative and Regulatory Actions

A number of government and legislative initiatives have been enacted to encourage development and implementation of technologies that protect the rights and intellectual property of the content owners. For example, the U.S. and other countries have adopted certain laws, including the Digital Millennium Copyright Act of 1998 ("DMCA") and the European Copyright Directive, which are aimed at the prevention of content piracy and the manufacture and sale of products that circumvent copy protection technologies, such as those covered by our patents.

Compatibility Between Cable Systems and CE Equipment

The Federal Communications Commission ("FCC") has been working for over a decade to implement a congressional mandate to create a competitive market for cable television STBs and other devices to access video programming on cable systems ("navigation devices") and give consumers a choice in the devices used to access such programming, while still allowing the cable systems to have control over the secured access to their systems.

To meet its statutory obligation without compromising the security of video services, the FCC required cable systems to make available a security element (now known as a CableCARD) separate from the basic navigation device needed to access video program channels. In 2003, the FCC adopted regulations implementing an agreement between cable television system operators and CE manufacturers to facilitate the retail availability of so-called “plug and play” devices that utilize unidirectional CableCARDs, including digital televisions and other digital devices that enable subscribers to access cable television programming without the need for a STB (but without the ability for consumers to use interactive content). In September 2020, the FCC eliminated rules requiring cable providers to support CableCARD. While the cable industry has continued to provide CableCARDs for third-party devices like ours, we cannot predict the ultimate impact of any new technical equipment regulations on our business and operations. Current FCC regulations no longer prohibit multi-channel video service providers from deploying navigation devices with combined security and non-security functions, further developments with respect to these issues could impact the availability and/or demand for “plug and play” devices, particularly bi-directional devices and STBs, all of which could affect demand for UXs incorporated in STBs or CE devices.

General Government Regulation

We are subject to a number of foreign and domestic laws and regulations that affect companies that import or export software and technology, including encryption technology, such as the U.S. export control regulations as administered by the U.S. Department of Commerce.

We are also subject to a number of foreign and domestic laws that affect companies conducting business on the internet. In addition, because of the increasing popularity of the internet and the growth of online services, laws relating to user privacy, freedom of expression, content, advertising, accessibility, network neutrality, information security and intellectual property rights are being debated and considered for adoption by many countries throughout the world. Each jurisdiction may enact different standards, which could impact our ability to deliver data, services or other solutions through the internet.

We are subject to international laws (including the General Data Protection Regulation and the Personal Information Protection Law) associated with data protection, privacy, and other aspects of our business in Europe, China and elsewhere and the interpretation and application of data protection laws remains uncertain. In addition, because our services are accessible worldwide, foreign jurisdictions may claim that we are required to comply with their laws. Further, the application of existing laws regulating or requiring licenses for certain businesses of our advertisers can be unclear. The resulting regulation, if any, may alter our ability to target advertising or provide data about the end-users and/or customers and their behavior.

Additionally, the privacy regulatory landscape in the U.S. changes rapidly and we may become subject to new privacy or cybersecurity regulations. Such laws and regulations could affect our ability to process personal data (in particular, our ability to use certain data for purposes such as risk or fraud avoidance, marketing or advertising), our ability to control our costs by using certain vendors or service providers or our ability to offer certain services in certain jurisdictions. For example, the California Consumer Privacy Act, or CCPA, became effective on January 1, 2020. The CCPA creates new individual privacy rights for consumers (as that word is broadly defined in the law) and places increased privacy and security obligations on entities handling personal data of consumers or households. The CCPA requires covered businesses to provide new disclosures to California consumers, and allows for a new cause of action for data breaches. The CCPA also provides a consumer with the right to (i) opt out of certain sales of personal information, (ii) know the personal information that the business maintains about the consumer, and (iii) request deletion of personal information. It is unclear how the CCPA will be interpreted, but as currently written, it will likely impact our business activities and exemplifies the vulnerability of our business to not only cyber threats but also the evolving regulatory environment related to personal data. The CCPA’s privacy measures will be strengthened by the California Privacy Rights Act, or CPRA, which will become effective on January 1, 2023, with enforcement commencing on July 1, 2023.

In the U.S., service providers have been subject to claims of defamation, libel, invasion of privacy and other data protection claims, torts, unlawful activity, copyright or trademark infringement, or other theories based on the nature and content of the materials searched and the ads posted or the content generated by users. In addition, several other federal laws could have an impact on our business. For example, the DMCA has provisions that limit, but do not eliminate, our liability for hosting or linking to third-party websites that include materials that infringe copyrights or other rights, so long as we comply with the statutory requirements of this act. The Children's Online Privacy Protection Act restricts the ability of service providers to collect information from minors and the Protection of Children from Sexual Predators Act of 1998 requires service providers to report evidence of violations of federal child pornography laws under certain circumstances.

Our operations in China may also be subject to privacy regulations. China recently passed the Personal Information Protection Law effective November 1, 2021, which creates a comprehensive set of data privacy and security obligations that not only apply to the processing of personal information within China, but also to the processing outside of China if such processing is for purposes of providing products and services to, or analyzing and evaluating the behavior of, individuals located in China. The law provides for various requirements on personal information protection, including obligations of obtaining informed consent and limiting to the minimum scope necessary for the collection and processing of personal information, requirements for conducting a personal information protection impact assessment for certain data processing activities, and responsibilities of adopting necessary measures to safeguard the security of the personal information, etc. The law also requires a security assessment and regulatory approval, government certification and/or conclusion of a standard data transfer agreement with the overseas recipient before transferring personal information outside of China. Lastly, the law imposes significant fines of up to RMB 50 million (approx. $7.7 million) or 5% of annual revenues for violation of the law. Chinese data protection laws are still evolving which may impose additional restrictions on companies doing business in China. Our efforts to comply with these laws and regulations may likely result in increased costs of doing business.

Human Capital Resources

The opportunities for our success and growth depend in large part on our ability to attract, develop, and retain a talented and engaged workforce. In particular, we are competing for technical talent and we need to offer not only robust and attractive compensation packages but also provide broad opportunities for our employees to make an impact, grow, and develop. As of December 31, 2021, we had a global talent base consisting of approximately 1,900 full-time employees.

To enable our talent to actively contribute to, and have a positive impact on, the overall business and culture, we developed and maintain a set of programs and initiatives. These programs include competitive compensation and benefits offerings, company culture and employee resource group events, skill development opportunities, diversity and inclusion initiatives, and goal and performance management. In support of these efforts, our Board of Directors monitors many of these programs and initiatives and provides guidance and feedback as appropriate. Our goal is to provide a work environment that empowers our teams and enables employees to enjoy a healthy and productive work-life balance for themselves, their families, and our community.

Our incentives are based on merits, and we have a strong pay-for-performance culture. We benchmark our total rewards annually to ensure our compensation and benefit programs remain competitive with industry peers. Our compensation framework for employees reflects a combination of fixed and variable pay including base salary, bonuses, performance awards, and stock-based compensation. We offer employees benefits that vary by country and are designed to meet or exceed local laws and that are competitive in the marketplace.

We invest in the career growth of our employees by providing a wide range of development opportunities, including face-to-face (where possible), virtual, social and self-directed learning, mentoring, coaching, training and external development. We also conduct annual assessment of employees to identify development needs based on department goals. We believe in the principles of a learning organization and strive to provide continuous educational opportunities for our employees. In 2021, we curated and delivered courses through our online learning platform, providing a wide range of skill development opportunities for employees to become more knowledgeable and effective in their roles.

We leverage our manager ecosystem, coupled with industry-standard performance management tools, to align corporate goals with employee objectives. We have delivered management training and supplementary resources to enable our management community to provide excellent support and guidance to their teams. We have recently launched ongoing People Management Community sessions and a Manager Resources Hub, which serves as a one-stop shop for managers. Employees are encouraged to create and align individual, functional and team-based goals, track performance against goals, write self-evaluations, and provide feedback to supervisors or management members.

We have demonstrated support and commitment to developing a culture of non-discrimination and embracing diversity and inclusion throughout our workforce. Our current employee resource groups represent the LGBTQ+ community, the black community, women, and veterans. We also have formed a Diversity and Inclusion council comprised of all levels of employees and senior executives. The purpose of the council is, among other things, to identify and address issues of diversity and inclusion through multiple and unique perspectives from a diverse group of our employees. We continue to be a part of the business coalition in support of the Equality Act, a measure that supports federal legislation that would provide the same basic protections to LGBTQ+ people as are provided to other protected groups under federal law. Additionally, we currently comply fully with California's board diversity legislation that requires a minimum number of female directors and directors from underrepresented communities.

We measure employee experience by collecting insight and understanding of engagement and satisfaction. We use an employee engagement survey, executive roundtables, and employee focus groups to solicit input.

During the ongoing COVID-19 pandemic, we have focused on the health, safety, and well-being of our employees. We have:

- Established office reentry guidelines consistent with CDC, state and local government mandates.
- Developed a hybrid-work model methodology and implemented a consultative approach with our employees around the flexible work arrangements that they need in order to maintain productivity and their health and well-being.

- Offered various training and learning opportunities, including relevant trainings to help employees better manage remote working, childcare, social isolation, and other work-from-home challenges.
- Enhanced internal communications strategies using multiple vehicles such as a corporate intranet, Zoom, Slack, videos, etc., to ensure connection and contacts among employees.
- Provided a number of well-being offerings and events including resources and guidance on burn-out, access to Headspace (a mindfulness app), and various online training events.
- Extended our Working From Home Connectivity Allowance and New Hire WFH Allowance, which covers certain costs associated with setting up home offices, into 2022.

None of our employees are covered by a collective bargaining agreement or are represented by a labor union. We have not experienced any organized work stoppages, and we consider the relationships with our employees to be positive.

Climate Change

We published our first ESG report on February 7, 2022 which can be found at https://3tzoo1wg2mg2h6j5g2fflok1-wpengine.netdna-ssl.com/wp-content/uploads/2022/02/ESG_Report_February_2022.pdf. Using insights we gleaned from the development of our inaugural materiality assessment, we developed an ESG program around three key focus areas: Culture & Belonging, Community Impact, and Resilience. Our Resilience pillar includes a focus on reducing the impact of climate change. We have already taken steps to reduce our carbon footprint through actions such as increasing energy efficiency within our office buildings and reducing and migrating the majority of on-premise IT assets towards more energy efficient solutions. At the beginning of 2022, we began the exercise of measuring our greenhouse gas baseline emissions and will establish associated goals linked to that activity, and we intend to present those goals in a subsequent ESG report.

Available Information

Our internet address is www.xperi.com, where 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 and any amendments to those reports, as soon as reasonably practicable after we electronically file such material with, or furnish it to, the SEC. Our SEC reports can be accessed through the investor relations section of our website. The information found on our website and in our ESG report is not incorporated into this or any other report we file with or furnish to the SEC.

Item 1A. Risk Factors

Our operations and financial results are subject to various risks and uncertainties, including those described below, that could adversely affect our business, financial condition, results of operations, cash flows, and the trading price of our common stock. Any of the following risks and uncertainties may be exacerbated by the impacts of the COVID-19 pandemic and related events.

Risk Factor Summary

- We may not be able to complete the planned business separation in a timely manner or at all, and even if such separation occurs, we may not achieve the expected benefits (including the tax treatment) of such transaction.
- We may not be able to manage our disparate business operations efficiently, which may lead to disposition of such business and related assets.
- Our business has been, and is expected to continue to be, impacted by the global COVID-19 pandemic.
- We enter into license agreements that have fixed expiration dates and we may not be able to renew or replace such license agreements on terms favorable to us.
- The nature of some of our business relationships may restrict our ability to operate freely in the future and could be interpreted in a manner that adversely affects revenue, including from licensing, under those agreements.
- The success of our patent licensing business is dependent on the quality of our patent assets and our ability to create and implement new technologies or expand our licensable technology through acquisitions.
- The structure and timing of our license and settlement agreements may cause fluctuations in our quarterly or annual financial results.
- The long-term success of our business is dependent on a royalty-based business model, which is inherently risky.
- It is difficult for us to verify royalty amounts owed to us under our licensing agreements.
- We may not be able to develop and deliver, on a timely basis, innovative technologies and services in response to changes in our markets and industries.
- We face competitive risks in the provision of entertainment offerings involving the distribution of digital content provided by third party application providers through broadband.

- Our pursuit of acquisitions and divestures may adversely affect our business or stock price if we cannot successfully execute our strategies.
- If we fail to protect and enforce our intellectual property rights, contract rights, our confidential information, or our brand, or if third parties assert that we violate their intellectual property rights, our business may suffer.
- Our licensees may delay, refuse to or be unable to make payments to us due to financial difficulties or otherwise, or shift their licensed products to other companies to lower their royalties to us.
- Some of our Semiconductor IP license agreements may convert to fully paid-up licenses at the expiration of their terms, or upon certain milestones, and we may not receive royalties after that time.
- We may not be able to maintain a sufficient amount of content released in the DTS audio format, which may reduce demand for our technologies, products, and services.
- Demand for our HD Radio technology may be insufficient to sustain projected growth.
- If we are unable to further penetrate the streaming and downloadable content delivery markets and adapt our technologies for those markets, our royalties and ability to grow our business could be adversely impacted.
- The success of certain of our solutions depends on the interoperability of our technologies with other devices.
- Our failure to adequately manage our increasingly complex distribution agreements, including licensing, development and engineering services, may cause unexpected delays and loss of revenue.
- We make significant investments in new products and services that may not achieve technological feasibility or profitability or that may limit our growth.
- Our products and services could be susceptible to errors, defects, or unintended performance problems that could result in lost revenue, liability or delayed or limited market acceptance.
- Dependence on the cooperation of Pay-TV service providers, television broadcasters, hardware manufacturers, data providers and delivery mechanisms could adversely affect our revenue.
- We are dependent on third parties for metadata and content.
- We depend on a limited number of third parties to design, manufacture, distribute and supply hardware devices upon which our TiVo software and service operate.
- We maintain inventories of TiVo-branded products based on our demand forecast, which may be incorrect and lead to our carrying excess or insufficient inventory.
- Qualifying, certifying and supporting our technologies, products and services is time-consuming and expensive.
- We are exposed to the risks related to international sales and operations.
- Further deterioration of trade relations between the United States and China, other trade conflicts and barriers, economic sanctions, and national security protection policies could limit or prevent existing or potential customers from doing business with us.
- Our systems, networks and online business activities are subject to cybersecurity and stability risks, information technology system failures, and security breaches.
- Our business operations are subject to natural disasters and industry-wide failure and adverse events.
- Changes in U.S. generally accepted accounting principles could affect our financial position and results of operations.
- We have significant indebtedness which could adversely affect our financial position.
- Our variable rate indebtedness may expose us to interest rate risk, which could cause our debt costs to increase significantly.
- We may not be able to generate sufficient cash to service our debt obligations.
- Repayment of debt is dependent on cash flow generated by our subsidiaries and their respective subsidiaries.
- An impairment of goodwill and other intangible assets may result in significant charge to earnings.
- We may in the future identify a material weakness in our internal control over financial reporting which could impact overall investor confidence and the value of our common stock.
- Changes in, or interpretations of, tax rules and regulations, could adversely affect our effective tax rates and negatively affect our business and financial condition.
- Our effective tax rate depends on our ability to secure the tax benefits of our international corporate structure, on the application of the tax laws of various jurisdictions and on how we operate our business.
- Our subsidiaries may record significant valuation allowances on our deferred tax assets, which may have a material impact on our results of operations.
- The IRS may assert positions that may negatively impact the tax-free status of distributions intended to qualify for tax-free treatment, and the desired benefits of such distributions may not be achieved.
- The investment of our cash, cash equivalents and investments in marketable debt and equity securities is subject to risks which may cause losses and affect the liquidity of these investments.
- New governmental regulations or new interpretations of existing laws may weaken patent protection or copyright law that could cause legal uncertainties and result in harm to our business.
- Failure to safeguard the security and privacy of our customers' confidential data and remain in compliance with laws that govern such data may harm our reputation and brand and expose us to legal action.

- Current and future governmental and industry standards may significantly limit our business opportunities.
- Our activities to advertise, market and sell our services directly to consumers are highly impacted by constantly evolving state and federal laws and regulations.
- Some software we provide may be subject to “open source” licenses, which may restrict how we use or distribute our software or require that we release the source code of certain products.
- Seasonal trends may cause our quarterly operating results to fluctuate and our inability to forecast these trends may adversely affect the market price of our common stock.
- We may not pay dividends or pay dividends at a consistent rate.
- Our stock repurchase program could increase the volatility of the price of our common stock and may cause the trading price of our common stock to decline.
- Provisions of our certificate of incorporation and bylaws or Delaware law might delay or prevent a change of control transaction and depress the market price of our stock.
- Decreased effectiveness of stock-based compensation could adversely affect our ability to attract and retain employees.
- Use of our common stock for future acquisitions may be limited.
- Stock transfer restrictions in our certificate of incorporation may act as an anti-takeover device.
- Our amended and restated certificate of incorporation contains forum selection provisions limiting the ability of stockholders to bring claims against us and our directors and officers in jurisdictions preferred by stockholders.

Risks Relating to the Planned Separation of the IP and Product Businesses

We may not be able to complete the planned business separation in a timely manner, and we may not achieve the expected benefits (including the tax treatment) of such transaction.

As previously disclosed, we are pursuing a separation of our product business and IP licensing business through a tax-efficient transaction, resulting in two independent, publicly traded companies. We currently project that the separation will be completed in the second half of 2022. We currently anticipate that the business separation transaction will be achieved through a pro-rata spin-off transaction intended to qualify as tax-free under Section 355 of the Internal Revenue Code, in which our stockholders, at such time, would receive shares of capital stock in the resulting spun-off company. Our board may ultimately determine to abandon this planned business separation transaction, and such determination could have an adverse impact on the value of our company and stock price. Additionally, a successful separation of a large and complex organization such as ours requires comprehensive and careful planning and analysis of various considerations, including the capital structure of the two businesses and allocation of liabilities among them. As such, there are many factors that could impact the structure or timing of, the anticipated benefits from, or determination to ultimately proceed with, any planned business separation. These factors include, but are not limited to:

- global and regional economic conditions;
- instability in credit markets;
- declining consumer and business confidence;
- fluctuating commodity prices and interest rates;
- volatile exchange rates;
- tax considerations;
- competitive and market conditions in our industry;
- shortage of talent and qualified personnel; and
- changes in the regulatory or legal environment.

These and other factors could adversely impact the value of a planned business separation transaction to our stockholders. Additionally, the consummation of such transaction is a complex, costly and time-consuming process, and there can be no guarantee that such separation will be completed in accordance with the timeline that we establish or achieve the intended benefits (including the tax treatment). An inability to realize the full extent of the anticipated benefits (including the tax treatment) of the planned business separation, as well as any delays encountered in the process, could have an adverse effect upon the revenue, level of expenses and operating results of the product business and/or the IP licensing business.

We may not be able to rationalize and effectively manage our disparate business operations, which may cause us to dispose of or discontinue product lines, technologies, assets or operations if they do not fit into the strategic vision or meet forecasted results.

Our effort to rationalize the disparate business operations could require our management to refocus on certain business operations while disinvesting in others. We have been integrating the respective product and licensing businesses and operating them as separate business units in order to facilitate a potential separation of these units at a later date. Additionally, as business strategy and product markets continue to evolve, we may dispose, discontinue, or divest product lines or business divisions. Disposing or discontinuing existing product lines or business divisions, or separating business units, provides no assurance that operating expenses will be reduced or will not cause us to incur material charges associated with such decisions. Furthermore, the disposition or discontinuance of an existing product line or business division, or separation or spinoff of a business unit, entails various risks, including the risk of not being able to obtain a purchaser, or, if obtained, that the purchase price may not be equal to at least the net asset book value for the product line or business unit, or the value that investors place on it as reflected by our stock price. We may not be able to achieve any separation of our product and licensing businesses despite our current consideration of such a separation. Other risks of such actions include adversely affecting employee morale, managing the expectations of, and maintaining good relations with, customers of disposed or discontinued product lines or business divisions, which could prevent selling other products to them. We may also incur other significant liabilities and costs associated with disposal or discontinuance of product lines or business divisions, or separation of business units, including employee severance costs, relocation expenses, and impairment of lease obligations and long-lived assets. The effects of such actions may adversely impact our business operations and financial results.

Risks Relating to Our Business Operations

Our business and results of operations have been, and are expected to continue to be, impacted by the global COVID-19 pandemic.

Our business and results of operations have been adversely affected by the global COVID-19 pandemic and related events and we expect its impact to continue. The impact to date has included periods of significant volatility in various markets and industries. The volatility has had, and we anticipate it will continue to have, an adverse effect on our customers and on our business, financial condition and results of operations, and may result in an impairment of our long-lived assets, including goodwill, increased credit losses and impairments of investments in other companies. In particular, the automotive market, as well as the broad consumer electronics industry, has been and may continue to be impacted by the pandemic and/or other events beyond our control, and further volatility could have an additional negative impact on these industries, customers, and on our business operations, which may lead to reduced royalty revenue. In addition, the COVID-19 pandemic and, to a lesser extent, U.S. restrictions on trade with certain customers based on China, have impacted and may continue to impact the financial conditions of our customers who may not be able to satisfy their obligations under our agreements timely or at all.

In addition, actions by United States federal, state and local governments, as well as by foreign governments, to address the COVID-19 pandemic, including travel bans, stay-at-home orders and school, business and entertainment venue closures, also had a significant adverse effect on the markets in which we conduct our businesses. COVID-19 poses the risk that our workforce, suppliers, and other partners may be prevented from conducting normal business activities for an extended period of time, including due to shutdowns or stay-at-home orders that may be requested or mandated by governmental authorities. We also implemented policies to allow our employees to work remotely as a result of the pandemic as we reviewed processes related to workplace safety, including social distancing and sanitation practices recommended by the Centers for Disease Control and Prevention. The impacts of the COVID-19 pandemic could also cause delays in acquiring new customers and executing renewals and could also impact our business as consumer behavior changes in response to the slowed economic conditions.

The rapid spread of the highly contagious Delta and Omicron variants of COVID-19 have led to periodic spikes in COVID-19 cases, hospitalizations and deaths in various jurisdictions in which we operate. Businesses and consumers have been adjusting their plans to comply with renewed and evolving mask and vaccine mandates, travel restrictions, event cancellations and delayed office reopenings. Our operations and those of our customers have also been negatively impacted by certain recent trends arising from the COVID-19 pandemic, including labor market constraints, shortage of semiconductor components and manufacturing capacities, and delays in shipments, product development and product launches. In addition, the widespread supply chain disruption has and is expected to continue to impede global and regional economic activities, such as consumer spending and product availabilities, which may adversely affect our business operations and financial results. Moreover, the COVID-19 pandemic, its related impact, and United States federal, state and foreign government policies enacted to combat the pandemic have contributed to a recent rise of inflation that may increase the cost of our operations and reduce demand for our products and services, which may adversely affect our financial performance.

The full extent of the future impact of the COVID-19 pandemic on our operational and financial performance is uncertain and will depend on many factors beyond our control, including, without limitation, the timing, extent, trajectory and duration of the pandemic; the availability, distribution and effectiveness of vaccines; the spread of new variants of COVID-19; the continued and renewed imposition of protective public safety measures; the continuing global disruption in supply chains in our industries and the impact of the pandemic on the global economy, inflation and demand for consumer products. Even after the pandemic has subsided and economic activities gradually increase, we may continue to experience material and adverse impacts to our business, operating results, and financial condition as a result of the pandemic's lasting global economic impact, including any recession that has occurred or may occur in the future in our industries or continuing inflationary impacts.

We enter into license agreements that have fixed expiration dates and if, upon expiration or termination, we are unable to renew or replace such license agreements on terms favorable to us, our results of operations could be harmed.

We enter into license agreements that have fixed expiration dates. Upon expiration of such agreements we need to renew or replace these agreements in order to maintain our royalty base. If we are unable to replace the royalties from an expiring license, either through a renewal or with similar royalties from other customers, our results of operations could be adversely impacted as compared to periods prior to such expiration.

Furthermore, we may not be able to continue licensing customers on terms favorable to us, under the existing terms or at all, which would harm our results of operations. While we have expanded our licensable technology portfolio through internal development and patents purchased from third parties, there is no guarantee that these measures will lead to continued royalties. If we fail to continue to do business with our current licensees, our business would be materially adversely affected.

The nature of some of our business relationships may restrict our ability to operate freely in the future and could be interpreted in a manner that adversely affects revenue, including from licensing, under those agreements.

From time to time, we have engaged and may engage in the future in discussions with other parties concerning business relationships, which have included and may in the future include exclusivity provisions (such as geographic or product specific limitations), most favored customer limitations, and patent licensing arrangements. While we believe that such business relationships have historically enhanced our ability to finance and develop our business model or otherwise were justified by the terms of the particular relationship, the terms and conditions of such business relationships may place some restrictions on the operation of our business, including where we operate, who we work with, and what kinds of activities we may engage in. Additionally, some of our license agreements contain "most favored nation" clauses, which typically provide that if we enter into an agreement with another licensee on more favorable terms, we must offer some of those terms to our existing licensees. We have entered into a number of license agreements with terms that differ in some respects from those contained in other agreements. These agreements may obligate us to provide different, more favorable, terms to licensees, which could, if applied, result in lower revenue or otherwise adversely affect our business, financial condition, and results of operations. While we believe that we have appropriately complied with the most favored nation terms included in our license agreements, these contracts are complex and other parties could reach a different conclusion that, if enforced, could have an adverse effect on our financial condition or results of operations.

The success of our IP licensing business is dependent on the quality of our patent assets and our ability to create and implement new technologies or expand our licensable technology through acquisitions.

We derive a significant portion of our revenue from patent licenses and royalties, including structured settlement payments. The success of our patent licensing business depends on our ability to continue to develop and acquire high quality patents. We devote significant resources to developing new technologies and to developing and acquiring patents to address the evolving needs of the media and semiconductor industries, and we must continue to do so in the future to remain competitive. Developments in our technologies are inherently complex and require long development cycles and a substantial investment before we can determine their commercial viability. Moreover, competition for acquiring high quality patents is intense and there is no assurance that we can continue to acquire such patents on favorable terms. We may not be able to develop and market new or improved technologies, or to develop or acquire high quality patents, in a timely or commercially acceptable fashion. Furthermore, our patents will expire in the future. Our current U.S. issued patents expire at various times through 2040. We need to develop or acquire successful innovations and obtain royalty-generating patents on those innovations before our current patents expire, and our failure to do so would significantly harm our business, financial position, results of operations and cash flows.

The structure and timing of our license and settlement agreements may cause fluctuations in our quarterly or annual financial results.

From time to time we enter into license and settlement agreements that include pricing or payment terms that result in quarter-to-quarter or year-over-year fluctuations in our revenue and cash flows. The effect of these terms may also cause our aggregate annual revenue to grow less rapidly than annual growth in the applicable end market. Additionally, our customers may fail to pay, delay payment of or underpay what they owe to us under our license and settlement agreements, which may in turn require us to enforce our contractual rights through legal proceedings, resulting in payment amounts and timing different than expected based on the terms of our license and settlement agreements. This also may cause our revenue and cash flows to fluctuate on a quarter-to-quarter or year-over-year basis.

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

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

The long-term success of our business is dependent on a royalty-based business model, which is inherently risky.

The long-term success of our business is dependent on future royalties paid to us by customers. Royalty payments under our licenses may be based upon, among other things, the number of subscribers for Pay-TV, a percent of net sales, a per-unit sold basis or a fixed quarterly or annual amount. We are dependent upon our ability to structure, negotiate and enforce agreements for the determination and payment of royalties, as well as upon our customers' compliance with their agreements. We face risks inherent in a royalty-based business model, many of which are outside of our control, such as the following:

- the number of subscribers our Pay-TV customers have or the number of set top-boxes our Pay-TV customers provide to their end-user subscribers;
- the rate of adoption and incorporation of our technology by semiconductor manufacturers, assemblers, foundries, manufacturers of consumer and communication electronics, and the automotive and surveillance industry;
- the willingness and ability of suppliers to produce materials and equipment that support our licensed technology in a quantity sufficient to enable volume manufacturing;
- the ability of our customers to purchase such materials and equipment on a cost-effective and timely basis;
- the length of the design cycle and the ability of us and our customers to successfully integrate certain of our imaging technologies into their integrated circuits;
- the demand for products that incorporate our licensed technology;
- the cyclicality of supply and demand for products using our licensed technology;
- the impact of economic downturns; and
- the impact of poor financial performance of our customers.

For example, the ability to enjoy digital entertainment content downloaded or streamed over the internet has caused some consumers to elect to cancel their Pay-TV subscriptions. If our Pay-TV customers are unable to maintain their subscriber bases, the royalties they owe us may decline.

Our licensees may delay, refuse to or be unable to make payments to us due to financial difficulties or otherwise, or shift their licensed products to other companies to lower their royalties to us.

A number of our customers may face severe financial difficulties from time to time, which may result in their inability to make payments to us in a timely manner, or at all. In addition, we have had a history of, and we may in the future experience, customers that delay or refuse to make payments owed to us under license or settlement agreements. Our customers may also merge with or may shift the manufacture of licensed products to companies that are not currently licensees of our technology. This could make the collection process complex, difficult and costly, which could adversely impact our business, financial condition, results of operations and cash flows.

It is difficult for us to verify royalty amounts owed to us under our licensing agreements, and this may cause us to lose revenue.

The terms of our license agreements often require our customers to document their use of our technology and report related data to us on a quarterly basis. Although our license terms generally give us the right to audit books and records of our customers to verify this information, audits can be expensive, time consuming, and may not be cost justified based on our understanding of our customers' businesses, especially given the international nature of our customers. Our license compliance program audits certain customers to review the accuracy of the information contained in their royalty reports in an effort to decrease the likelihood that we will not receive the royalty to which we are entitled under the terms of our license agreements, but we cannot give assurances that such audits will be effective to that end.

If we fail to develop and timely deliver innovative technologies and services in response to changes in our markets and industries, our business could decline.

The markets for our products, services and technologies are characterized by rapid change and technological evolution and obsolescence, new and improved product introduction, changing consumer demand, increasingly competitive landscape, and evolving industry standards. We will need to continue to expend considerable resources on research and development in the future in order to continue to design, deliver and enhance innovative audio, imaging, media, entertainment, and semiconductor products, services and technologies. The development of enhanced and new technologies, products, and services is a complex, costly and uncertain process requiring high levels of innovation, highly skilled engineering and development personnel, and the accurate anticipation of technological and market trends. Despite our efforts, we:

- may not receive significant revenue from our current research and development efforts for several years, if at all;
- cannot assure you that the level of funding and significant resources we are committing for investments in new products, services and technologies will be sufficient or result in successful new products, services or technologies;
- cannot assure you that our newly developed products, services or technologies can be successfully protected as proprietary intellectual property rights or will not infringe the intellectual property rights of others;
- cannot assure you that any new products or services that we develop will achieve market acceptance;
- cannot prevent our products, services and technologies from becoming obsolete due to rapid advancements in technology and changes in consumer preferences;
- cannot assure you that revenue from new products, services or technologies will offset any decline in revenue from our products, services and technologies which may become obsolete;
- cannot assure you that our competitors and/or potential customers may not develop products, services or technologies similar to those developed by us, resulting in a reduction in the potential demand for our newly developed products, services or technologies; and
- may not correctly identify new or changing market trends at an early enough stage to capitalize on market opportunities.

Furthermore, the decision by a party dominant in the value chain to provide competing technologies at very low or no cost could cause our customers and other manufacturers not to utilize our technologies or services. Our customers may choose to use technologies that their own in-house engineering teams have developed, or in which they have an interest. Accordingly, our revenue could decline if our customers choose not to incorporate our technologies in their products, or if they sell fewer products incorporating our technologies. Our failure to successfully develop new and improved products, services and technologies, including as a result of any of the risks described above, may reduce our future growth and profitability and may adversely affect our business, results and financial condition.

Our products and services face intense competition from various sources, and we may not be able to compete effectively.

We expect that our technologies will continue to compete with technologies of internal design groups at competing companies or from our customers. The internal design groups of these companies create their own audio, imaging, media and semiconductor solutions. If these internal design groups design around our patents or introduce unique solutions superior to our technology, they may not need to license our technology. These groups may design technology that is less expensive to implement or that enables products with higher performance or additional features. Many of these groups have substantially greater resources, greater financial strength and lower cost structures which may allow them to undercut our price. They also have the inherent advantage of access to internal corporate strategies, technology roadmaps and technical information. As a result, they may be able to bring alternative solutions to market more easily and quickly. We face competitive risks across all our businesses, including:

- our Platform Solutions face significant competition from companies that produce and market program guides as well as television schedule information in a variety of formats, including passive and interactive on-screen electronic guide services, online listings, over the top applications and against customers and potential customers who choose to build their own IPG, including both those who do and those who do not elect to license our patents;
- our advanced video solutions compete with other CE products and home entertainment services (such as Roku, AppleTV, Amazon FireTV and Chromecast) as well as products and service offerings built by other service providers or their suppliers for consumer spending;
- our audio technologies compete with other providers of audio products and services, with Dolby Laboratories as the primary competitor in high-definition audio processing, which enjoys advantages in selling its digital multi-channel audio technology, having introduced such technology before we did, and having achieved mandatory standard status in product categories that we have not, including terrestrial digital TV broadcasts in the United States;

- our embedded image processing technologies compete with other image processing software vendors such as SmartEye, Seeing Machines and ArcSoft, Inc., as well as internal design groups of automotive, mobile phone, and digital camera manufacturers providing similar technologies by employing different approaches; and
- our competitive position is affected by the rate of adoption and incorporation of our technology by semiconductor manufacturers, assemblers, foundry, manufacturers of consumer and communication electronics, and the automotive and surveillance industry.

In the future, our licensed technologies may also compete with other emerging technologies that may be less expensive and provide higher performance than our solutions. Companies with these competing technologies may also have greater resources. Technological change could render our technologies obsolete, and new, competitive technologies could emerge that achieve broad adoption and adversely affect the use of our technologies and intellectual property.

Some of our current or future competitors may have significantly greater financial, technical, marketing and other resources than we do, may enjoy greater brand recognition than we do, or may have more experience or advantages than we have in the markets in which they compete. Further, many of the consumer hardware and software products that include our technologies also include technologies developed by our competitors. In order for us to remain competitive in this market, we must continue to invest significant resources in product development in order to enhance our technologies and our existing products and services and introduce new high-quality technologies, products and services to meet the wide variety of such competitive pressures. Our ability to generate revenue from our business will suffer if we fail to do so successfully.

We face competitive risks in the provision of entertainment offerings involving the distribution of digital content provided by third party application providers through broadband.

We have previously launched access in certain of our products and services to the entertainment offerings of Amazon Prime Video, Netflix, Hulu Plus, HBO Max, Disney+, VUDU, Pandora, and others for the distribution of digital content directly to broadband-connected TiVo devices. These entertainment offerings typically involve no significant long-term commitments. We face competitive, technological and business risks in our ongoing provision of entertainments offering involving the distribution of digital content through broadband to consumer televisions with such offerings, including the availability of premium and high-definition content, as well as the speed and quality of the delivery of such content to TiVo devices. For instance, we face increased competition from a growing number of broadband-enabled devices from providers such as Roku, AppleTV, Amazon FireTV and Chromecast that provide broadband delivered digital content directly to a consumer's television connected to such a device. Additionally, we face competition from online content providers and other PC software providers who deliver digital content directly to a consumer's personal computer, which in some cases may then be viewed on a consumer's television. If we are unable to provide a competitive entertainment offering on our own, or an equivalent offering with other third parties, the attractiveness of the TiVo service to new subscribers would be harmed as consumers increasingly look for new ways to receive and view digital content and our ability to retain and attract subscribers would be harmed.
Our future success depends on our ability to establish and maintain licensing relationships with companies in related business fields, including:

- Pay-TV service providers;
- operators of entertainment content distributors, including PPV and VOD networks;
- CE, digital set-top hardware manufacturers, DVD hardware manufacturers and personal computer manufacturers;
- motion-picture studios;
- semiconductor and equipment manufacturers;
- content rights holders;
- retailers and advertisers;
- digital rights management suppliers; and
- internet portals and other digital distribution companies.

Substantially all of our license agreements are non-exclusive, and therefore our licensees are free to enter into similar agreements with third parties, including our competitors. Our licensees may develop or pursue alternative technologies either on their own or in collaboration with others, including our competitors.

Some of our third-party license arrangements require that we license others' technologies and/or integrate our solutions with others. In addition, we rely on third parties to report usage and volume information to us. Delays, errors or omissions in this information could harm our business. If these third parties choose not to support integration efforts or delay the integration of our solutions, our business could be harmed.

Relationships have historically played an important role in the entertainment industries that we serve. If we fail to maintain and strengthen these relationships, these industry participants may not purchase and use our technologies or facilitate the adoption of our technologies, which will harm our results of operations and prospects and may make it more difficult for us to enter into new markets. In addition, if major industry participants form strategic relationships that exclude us, our business and prospects could be materially adversely affected.

Our pursuit of acquisitions and divestures may adversely affect our business operations or stock price if we cannot successfully execute our strategies.

We have made several acquisitions, domestically and internationally, and it is our current plan to continue to acquire assets, patents, technologies or companies that we believe are strategic to our future business. Acquisitions involve challenges in terms of successful integration of technologies, products, services and employees.

If our growth continues, it may place a significant strain on our management team and on our operational and financial systems, procedures, and controls. Our future success will depend, in part, upon the ability of our management team to manage any growth effectively, requiring our management to:

- recruit, hire, and train additional personnel;
- implement and improve our operational and financial systems, procedures, and controls;
- maintain our cost structure at an appropriate level based on the royalties, revenue and cash we forecast and generate;
- manage multiple concurrent development projects; and
- manage operations in multiple time zones with different cultures and languages.

We may not realize the anticipated benefits of the other acquisitions we may complete in the future, and we may not be able to incorporate any acquired services, products or technologies with our existing operations, or integrate personnel, systems, processes and operations from the acquired businesses, in which case our business could be harmed.

Financing for future acquisitions may not be available on favorable terms, or at all. If we use our equity securities to fund the acquisition, it may result in significant dilution to our existing stockholders. If we identify an appropriate acquisition candidate for any of our businesses, we may not be able to negotiate the terms of the acquisition successfully, finance the acquisition or integrate the acquired business, products, service offerings, technologies or employees into our existing business and operations. Future acquisitions and divestitures may not be well-received by the investment community, which may cause the value of our stock to fall. We cannot ensure that we will be able to successfully complete any acquisition or divestiture in the future. Further, the terms of our indebtedness constrain our ability to make and finance additional acquisitions or divestitures.

If we are unable to maintain a sufficient amount of content released in the DTS audio format, demand for the technologies, products, and services that we offer to consumer electronics product manufacturers may significantly decline, which would adversely impact our business and prospects.

We expect to derive a significant percentage of our revenue from the technologies, products, and services that we offer to manufacturers of consumer electronics products. We believe that demand for our audio technologies in growing markets for multi-channel and/or high resolution audio, including TVs, tablets, mobile phones, video game consoles, automobiles, and soundbars, will be based on the amount, quality, and popularity of content (such as movies, TV shows, music, and games) either released in the DTS audio format or capable of being coded and played in the DTS format. In particular, our ability to penetrate the growing markets in the network-connected space depends on the presence of streaming and downloadable content released in the DTS audio format. We generally do not have contracts that require providers of streaming and downloadable content to develop and release such content in a DTS audio format. Accordingly, our revenue could decline if these providers elect not to incorporate DTS audio into their content or if they sell less content that incorporates DTS audio.

In addition, we may not be successful in maintaining existing relationships or developing new relationships with other existing or new content providers. As a result, we cannot assure you that a sufficient amount of content will be released in a DTS audio format to ensure that manufacturers continue offering DTS decoders in the consumer electronics products that they sell.

Demand for our HD Radio technology may be insufficient to sustain projected growth.

Demand for and adoption of HD Radio technology may not be sufficient for us to continue to increase the number of customers of our HD Radio system, which include IC manufacturers, manufacturers of broadcast transmission equipment, consumer electronics products manufacturers, component manufacturers, data service providers, manufacturers of specialized and test equipment and radio broadcasters.

Among other things, continuing and increased consumer acceptance of HD Radio technology will depend upon:

- the number of radio stations broadcasting digitally using HD Radio technology;
- the willingness of automobile manufacturers to include HD Radio receivers in their vehicles;
- the willingness of manufacturers to incorporate HD Radio technology into their products;
- the cost and availability of HD Radio enabled products; and
- the marketing and pricing strategies that we employ and that are employed by our customers and retailers.

Demand for HD Radio also may be impacted by declines in the automotive industry which historically has been cyclical and experienced downturns during declining economic conditions. In addition, the persistent downturn in the automotive markets resulting from the COVID-19 pandemic and related events reduced demand for our HD Radio technology in 2020. While we have experienced a modest recovery in 2021, there is no guarantee that growth trends will return to our pre-pandemic level, and a sustained reduction in our automotive based royalties may cause us to fail to meet our previously projected growth rates.

If we are unable to further penetrate the streaming and downloadable content delivery markets and adapt our technologies for those markets, our royalties and ability to grow our business could be adversely impacted.

Prior to the advent of streaming and downloadable content services, video and audio content was purchased and consumed primarily via optical disc-based media. The growth of the internet and network-connected device usage, along with the rapid advancement of online and mobile content delivery, has resulted in download and streaming services becoming mainstream with consumers in various parts of the world. We expect the shift away from optical disc-based media to streaming and downloadable content consumption to continue. If we fail to continue to further penetrate the streaming and downloadable content delivery market, our business could suffer.

The services that provide content from the internet are not generally governed by international or national standards and are thus free to choose any media format(s) to deliver their products and services. This freedom of choice on the part of online content providers could limit our ability to grow if such content providers do not incorporate our technologies into their services, which could affect demand for our technologies.

Furthermore, our inclusion in mobile and other network-connected devices may be less profitable for us than optical disc players. The online and mobile markets are characterized by intense competition, evolving industry standards and business and distribution models, disruptive software and hardware technology developments, frequent new product and service introductions, short product and service life cycles, and price sensitivity on the part of consumers, all of which may result in downward pressure on pricing. If we are unable to adequately and timely respond to the foregoing, our business and operating results could be adversely affected.

The success of certain of our solutions depends on the interoperability of our technologies with consumer hardware devices.

To be successful, we design certain of our solutions to interoperate effectively with a variety of consumer hardware devices, including personal computers, DVD players and recorders, Blu-ray players, digital still cameras, digital camcorders, portable media players, digital TVs, home media centers, set-top boxes, video game consoles, MP3 devices, multi-media storage devices, mobile tablets and smartphones. We depend on significant cooperation with manufacturers of these devices and the components integrated into these devices, as well as software providers that create the operating systems for such devices, to incorporate certain of our technologies into their product offerings and ensure consistent playback of encoded files. Currently, a limited number of devices are designed to support certain of our technologies. If we are unsuccessful in causing component manufacturers, device manufacturers and software providers to integrate certain of our technologies into their product offerings, those technologies may become less accessible to consumers, which would adversely affect our revenue potential.

Our failure to adequately manage our increasingly complex distribution agreements, including licensing, development and engineering services, may cause unexpected delays and loss of revenue in the deployment of advanced television solutions.

In connection with our deployment arrangements for TiVo products, we engage in complex licensing, development and engineering services arrangements with our marketing partners and distributors. These deployment agreements with television service providers usually provide for some or all of the following deliverables: software engineering services, solution integration services, hosting the TiVo Service, maintenance and support. In general, these contracts are long-term and complex and often rely on the timely performance of such television service provider's third-party vendors that are outside TiVo's control. The engineering services and technology we agree to provide and/or develop may be essential to the functionality of the licensed software and delivered product or such software may involve significant customization and modification for each customer. We have experienced in the past, and may in the future experience, delays in delivery with television service providers as well as significant increases in expected costs of development and performance in certain instances. Additional delays could lead to additional costs and adverse accounting treatments forcing us to recognize costs earlier than expected. If we are unable to deliver the contracted-for technology, including specified customizations and modifications, and services in a timely manner or at all, then we could face penalties in the form of unreimbursed engineering development work, loss of subscriber or minimum financial commitments on the part of our partners or in extreme cases the early termination of such distribution agreements. In any such case our business would be harmed.

In addition, when we enter into such deployment agreements with television service providers, we are typically required to make cost estimates based on historical experience and various other assumptions. These estimates are assessed continually during the term of the contract and revisions are reflected when the conditions become known. Using different cost estimates related to engineering services may produce materially different operating results, in addition to differences in timing and income statement classification of related expenses and revenue. An unfavorable change in estimates could result in a reduction of profit due to higher cost or the recording of a loss once such a loss becomes known to us that would be borne solely by us. We also recognize revenue for software engineering services using the percentage-of-completion method. We recognize revenue by measuring progress toward completion based on the ratio of costs incurred, principally labor, to total estimated costs of the project, an input method. If we are unable to measure and estimate our progress properly or accurately toward completion in such circumstances, we could incur unexpected additional costs, be required to recognize certain costs earlier than expected, or otherwise be required to delay recognition of revenue unexpectedly. A material inability to properly manage, estimate and perform these development and engineering services for our television service provider customers could cause us to incur unexpected losses and reduce or even eliminate any profit from these arrangements, and in such a case our business would be harmed.

We make significant investments in new products and services that may not achieve technological feasibility or profitability or that may limit our growth.

We have made and will continue to make significant investments in research, development, and marketing of new technologies, products and services, including audio, imaging, media, advanced semiconductor packaging, bonding, and interconnect technologies, as well as our Perceive subsidiary and its hardware and software solutions for high-performance inference at the edge. Investments in new technologies are speculative and technological feasibility may not be achieved. Commercial success depends on many factors including demand for innovative technology, availability of materials and equipment, selling price the market is willing to bear, competition and effective licensing or product sales. We may not achieve significant revenue from new product and service investments for a number of years, if at all. Moreover, new technologies, products and services may not be profitable, and even if they are profitable, operating margins for new products and businesses may not be as high as the margins we have experienced historically or originally anticipated.

For example, we have incurred, and expect to continue to incur, substantial research and development expenses through our Perceive subsidiary focused on delivering edge inference solutions. We do not have prior experience as a company in the development or marketing of similar hardware or software. We will need to continue to find and hire qualified and experienced personnel to advance this new business. In addition, chip technologies such as what we are developing are subject to extensive competition and a relentless pace of innovation. These new products could be copied or functionally surpassed by other designers, manufacturers, or innovators, some of whom may have far greater financial resources than us, and who may be able to develop products with greater capabilities or lower cost.

Our products and services could be susceptible to errors, defects, or unintended performance problems that could result in lost revenue, liability or delayed or limited market acceptance.

We develop and offer complex solutions, which we license and otherwise provide to customers. The performance of these solutions typically involves working with sophisticated software, computing and communications systems. Due to the complexity of these products and services, and despite our quality assurance testing, the products may contain undetected defects or errors that may affect the proper use or application of such products or services by the customer. Because certain of our products and services are embedded in digital content and other software, or rely on stable transmissions, our solutions' performance could unintentionally jeopardize our customers' product performance. Because customers rely on our products and services as used in their software and applications, defects or errors in our products or services may discourage customers from purchasing our products or services. These defects or errors could also result in product liability, service level agreement claims or warranty claims. Although we attempt to reduce the risk of losses resulting from these claims through warranty disclaimers and limitation of liability clauses in our agreements, these contractual provisions may not be enforceable in every instance. Any such defects, errors, or unintended performance problems in existing or new products or services, and any inability to meet customer expectations in a timely manner, could result in loss of revenue or market share, failure to achieve market acceptance, diversion of development resources, injury to our reputation, increased insurance costs and increased service costs, any of which could materially harm our business.

Dependence on the cooperation of third parties for the provision and delivery of our metadata could adversely affect our revenue.

We rely on third party providers to deliver our metadata to some of the CE devices that include our UXs and IPGs. Further, our national data network provides customized and localized listings for Pay-TV and licensees of our data used in third party IPGs for Pay-TV. In addition, we purchase certain metadata from commercial vendors that we redistribute. The quality, accuracy and timeliness of that metadata may not continue to meet our standards or be acceptable to consumers. There can be no assurance that commercial vendors will distribute data to us without error, or at all, or that the agreements that govern some of these relationships can be maintained on favorable economic terms. Technological changes may also impede the ability to distribute metadata. Our inability to renew these existing arrangements on terms that are favorable to us, or enter into alternative arrangements that allow us to effectively transmit our metadata to CE devices, could have a material adverse effect on our CE IPG business and cause our revenue or margins to decline.

We distribute, as a revenue generating activity, metadata. In the future, we may not be able to obtain this content, or may not be able to obtain it on the same terms. Such a failure to obtain the content, or obtain it on the same terms, could damage the attractiveness of our metadata offerings to our customers, or could increase the costs associated with providing our metadata offerings, and could thus cause revenue or margins to decrease.

We depend on a limited number of third parties to design, manufacture, distribute and supply hardware devices upon which our TiVo software and service operate.

Our TiVo software and services operate on a number of hardware products, including DVR and non-DVR STBs, produced by third-party hardware companies. If we fail to effectively manage the integration of our software and services with our hardware partners' devices, we could suffer from product recalls, poorly performing product and higher than anticipated warranty costs. We have contracted for the design, manufacture and distribution of certain TiVo-branded DVRs and non-DVRs with a third-party partner. This third-party partner does not typically enter into long-term volume commitments with the major retail distributors. We currently rely on our TiVo-branded hardware partner's relationships with major retail distributors, including Best Buy, Amazon and others, for the distribution of TiVo-enabled DVRs and non-DVR products within the United States. If one or several major retail partners were to discontinue selling TiVo-enabled products, the volume of TiVo-enabled DVRs and non-DVRs sold to consumers could decrease, which could harm TiVo’s service business.

We also depend on a third-party partner for certain TiVo-branded hardware devices that are sold through the TiVo website. If this third-party partner fails to perform its obligations, we may be unable to find alternative suppliers or deliver our products and services sold through the TiVo website in a timely manner or with the features and functionality customers expect. In addition, our third-party partner may depend on sole suppliers for key components and services in order to manufacture DVRs and non-DVR STBs which run our software, and they may be subject to risks of supply shortages and unexpected cost increases, including the recent supply chain disruption resulting from the COVID-19 pandemic. Additionally, certain features and functionalities of our TiVo service and DVRs depend on third-party components and technologies. If TiVo or our third-party partner is unable to purchase or license such third-party components or technologies, we may not be able to offer certain related features and functionalities to our customers. In such a case, the desirability of our products to our customers could be reduced, thus harming our business.

We also rely on third parties to whom we outsource supply-chain activities related to inventory warehousing, order fulfillment, distribution and other direct sales logistics to provide cost-effective and efficient supply chain services. We cannot be sure that these parties will perform their obligations as expected or that any revenue, cost savings or other benefits will be derived from the efforts of these parties. If one or several of our third-party supply chain partners were to discontinue service to us, our ability to fulfill sales orders through the TiVo website and distribute inventory timely, cost-effectively, or at all, may be delayed or prevented, which could harm our business. Any of these events could require us to undertake unforeseen additional responsibilities or devote additional resources to commercialize our TiVo service. Any of these outcomes could harm our ability to compete effectively and achieve increased market acceptance and brand recognition.

We maintain inventories of TiVo-branded products based on our demand forecast, which may be incorrect and lead to excess or insufficient inventory.

In connection with our sales of TiVo-branded products through the TiVo website, we maintain an inventory of certain DVR and non-DVR products based on our demand forecast. Due to the seasonality in our business and the nature of long-lead time product development and manufacturing cycles, we make demand forecasts for these products well in advance of our peak selling periods. As such, we are subject to risks in managing the inventory needs of our business during the year, including estimating the appropriate quantity and mix of demand across our older and newer DVR and non-DVR products. Should actual market conditions differ from our estimates, our future results of operations could be materially affected. Our ability to forecast demand accurately and maintain appropriate inventory may also be adversely affected by factors that are difficult to predict, such as global supply chain disruptions. Excess purchase commitments as a result of unforeseen changes in our sales forecast, pricing terms or cost structures may require us to record a loss that may adversely affect our financial conditions and results of operations.

Qualifying, certifying and supporting our technologies, products and services is time-consuming and expensive.

We devote significant time and resources to qualify and support our software products on various personal computer, CE and mobile platforms, including operating systems from Apple, Google and Microsoft. In addition, we maintain high-quality standards for products that incorporate our technologies and products through a quality control certification process. To the extent that any previously qualified, certified and/or supported platform or product is modified or upgraded, or we need to qualify, certify or support a new platform or product, we could be required to expend additional engineering time and resources, which could add significantly to our development expenses and adversely affect our operating results.

We are exposed to the risks related to international sales and operations.

We derive a large portion of our total revenue from operations outside of the United States. Therefore, we face exposure to risks of operating in many foreign countries, including:

- difficulties and costs associated with complying with a wide variety of complex laws, treaties, regulations and compliance requirements;
- unexpected changes in political or regulatory environments;
- differing employment practices, labor compliance and costs associated with a global workforce;
- earnings and cash flows that may be subject to tax withholding requirements or the imposition of tariffs;
- exchange controls or other restrictions;
- restrictions on, or difficulties and costs associated with, the repatriation of cash from foreign countries to the United States;
- political and economic instability and trade conflict;
- import and export restrictions and other trade barriers;
- difficulties in maintaining overseas subsidiaries and international operations;
- difficulties in obtaining approval for significant transactions; and
- fluctuations in foreign currency exchange rates.

Any one or more of the above factors could adversely affect our international operations and could significantly affect our results of operations, financial condition and cash flows. The results of our operations will be dependent to a large extent upon the global economy. Geopolitical factors such as terrorist activities, armed conflict or global health conditions that adversely affect the global economy may adversely affect our operating results and financial condition.

We are also subject to risks associated with compliance with applicable anti-corruption laws, including the Foreign Corrupt Practices Act (FCPA), which generally prohibits companies and their employees and intermediaries from making payments to foreign officials for the purpose of obtaining an advantage or benefits, and requires public companies to maintain accurate books and records and a system of internal accounting controls. Under these laws, companies may be held liable for actions taken by directors, officers, employees, agents, or other partners or representatives. If we or our intermediaries fail to comply with the requirements of the FCPA or similar laws, governmental authorities could commence an investigation or seek to impose civil and criminal fines and penalties which could have a material adverse effect on our business, results of operations and financial condition.

Additionally, our business could be materially adversely affected if foreign markets do not continue to develop, if we do not receive additional orders to supply our technologies, products or services for use by international Pay-TV service providers, CE and STB manufacturers, PPV/VOD providers and others or if regulations governing our international businesses change. Any changes to the statutes or the regulations with respect to export of encryption technologies could require us to redesign our products or technologies or prevent us from selling and exporting our products and licensing our technologies internationally.

Further deterioration of trade relations between the United States and China, other trade conflicts and barriers, economic sanctions, and national security protection policies could limit or prevent existing or potential customers from doing business with us.

The increased trade conflicts between the United States and its major trading partners in recent years, evidenced by trade restrictions such as tariffs, taxes, export controls, economic sanctions, and enhanced policies designed to protect national security, have had and may continue to have adverse impact on our revenue if such policies continue. In particular, our business and sales activities have been impacted due to the increase in trade conflicts between the United States and China. Further United States government actions to protect domestic economic and security interests could lead to further restrictions. Moreover, growing trade conflicts and uncertainties may lead to decreased use of foreign-owned technologies in China and other countries, due to efforts by foreign governments and enterprises to find alternative sources of supply, to develop proprietary domestic technologies, and otherwise to reduce reliance on foreign technology sources. Any such trends could have a material adverse impact on our revenue.

Our systems, networks and online business activities and those of third parties that we utilize in our operations are subject to cybersecurity and stability risks, information technology system failures, and security breaches.

Despite our provisions for system redundancy and the implementation of security measures within our internal and external information technology and networking systems, our information technology systems and those of third parties that we utilize in our operations may be subject to security breaches, unauthorized access (malicious or accidental), misuse of information by authorized users, data leaks or unintentional exposure of information, failed processes or other bugs, loss of data, damages from computer viruses or malware, natural disasters, terrorism, telecommunication failures or disruption of service. In addition, our online business activities depend on the ability to store and transmit confidential information and licensed intellectual property securely on our systems, third party systems and over private, hybrid and public networks. Any compromise of our ability to store or transmit such information and data securely or reliably, and any costs associated with preventing or eliminating such problems, could harm our business. Our storage and online transmissions and business activities are subject to a number of security and stability risks, including:

- our own or licensed encryption and authentication technology, or access or security procedures, may be compromised, breached or otherwise be insufficient to ensure the security of customer information or intellectual property;
- we could experience unauthorized access, computer viruses, ransomware, system interference or destruction, “denial of service” attacks and other disruptive problems, whether intentional or accidental, that may inhibit or prevent access to our websites and infrastructure or use of our products and services, or cause customer information or other sensitive information to be disclosed to a perpetrator, others or the general public;
- someone could circumvent our security measures and misappropriate our, our information, or our customers' proprietary information or content, interrupt operations, or jeopardize our licensing arrangements, many of which are contingent on our sustaining appropriate security protections;
- our computer systems could fail and lead to service interruptions or downtime for television or other guidance systems, or websites, which may include e-commerce websites;
- we could inadvertently disclose customer information; or
- we may need to grow, reconfigure or relocate our data centers in response to changing business needs, which may be costly and lead to unplanned disruptions of service.

Each of the foregoing risks also applies to the computer systems of third parties that we rely upon in our operations, including our suppliers and vendors, including providers of cloud storage and services. The occurrence of any of these or similar events could damage our business, hurt our ability to distribute products and services and collect revenue, threaten the proprietary or confidential nature of our technology, harm our reputation, increase the costs of our ongoing cybersecurity protections and enhancements, and expose us to litigation and other liabilities. Because some of our technologies and businesses are intended to inhibit use of or restrict access to our customers' intellectual property, we may become the target of hackers or other persons whose use of, or access to, our customers' intellectual property is affected by our technologies. Also, hackers may, for financial gain or other motives, seek to infiltrate or damage our systems, or obtain sensitive business information or customer information. We also may be exposed to customer claims, or other liability, in connection with any security breach or inadvertent disclosure. We may be required to expend significant capital or other resources to protect against the threat of security breaches, hacker attacks or system malfunctions or to alleviate problems caused by such breaches, attacks or failures. For example, we utilize SolarWinds for network device management. SolarWinds announced in December 2020 that its system was infected with malicious software during 2020, which might have impacted its customers. We implemented software patches and other security measures recommended by SolarWinds and other security experts in connection with this matter. While we do not believe we were targeted by malicious actors through the SolarWinds system, and we found no evidence that any of our information was exfiltrated from our systems, there is no guarantee that future hacks and attacks on the network will be unsuccessful or resolved without damage to us or our customers.

Our product and service offerings rely on a variety of systems, networks and databases, many of which are maintained by us at our data centers or third-party data centers (e.g., cloud services). We do not have complete redundancy for all of our systems, and we do not maintain real-time back-up of our data, so in the event of significant system disruption, particularly during peak periods, we could experience loss of data processing capabilities, which could prevent us from providing our products and services to our customers for an uncertain amount of time, cause us to lose customers as a result of such breaches, and could harm our operating results through loss of revenue and increased costs to remediate such cybersecurity incidents. Notwithstanding our efforts to protect against "down time" for products and services, we do occasionally experience unplanned outages or technical difficulties. In order to provide products and services, we must protect the security of our systems, networks, databases and software. Furthermore, we do not have control over the security protocols of third party cloud service providers, and if such providers experience cyber attacks and information system breaches, it can harm our business operations and undercut our ability to serve our customers, which may adversely affect our financial conditions and results of operations.

To the extent that any disruption or security breach results in inappropriate disclosure of our confidential information, we may incur liability or additional costs to remedy the damages caused by these disruptions or security breaches.

Risks Related to Financial Matters

We have significant indebtedness which could adversely affect our financial position.

As of December 31, 2021, we had $789.8 million of total debt outstanding under our Refinanced Term B Loans. Our Refinanced Term B Loans are guaranteed by us and our wholly-owned material domestic subsidiaries and are secured by substantially all of our and the subsidiary guarantors' assets. Our indebtedness may:

- limit our ability to borrow additional funds for working capital, capital expenditures, acquisitions or other general business purposes;
- limit our ability to use our cash flow or obtain additional financing for future working capital, capital expenditures, acquisitions or other general business purposes;
- require us to use a substantial portion of our cash flow from operations to make debt service payments;
- limit our flexibility to plan for, or react to, changes in our business and industry;
- place us at a competitive disadvantage compared to our less leveraged competitors; and
- increase our vulnerability to the impact of adverse economic and industry conditions.

Our ability to meet our debt service obligations will depend on our future performance, which will be subject to financial, business and other factors affecting our operations, many of which are beyond our control.

Our variable rate indebtedness may expose us to interest rate risk, which could cause our debt costs to increase significantly.

As of December 31, 2021, we had $789.8 million of outstanding indebtedness that was subject to floating interest rates. Changes in economic conditions outside of our control could result in higher interest rates, thereby increasing our interest expense and reducing the funds available for capital investment, operations or other purposes. At December 31, 2021, a 1% increase in the effective interest rate on our outstanding debt throughout a one-year period would result in an annual increase in our interest expense of approximately $7.9 million. Any significant increase in our interest expense could negatively impact our results of operations and cash flows and also our ability to pay dividends in the future. If the U.S. Federal Reserve raises its benchmark interest rate, as currently anticipated by many banking analysts, any increases would likely impact the borrowing rate on our outstanding indebtedness and increase our interest expense.

We may not be able to generate sufficient cash to service our debt obligations.

Our ability to make payments on and to refinance our indebtedness will depend on our financial and operating performance, which is subject to prevailing economic and competitive conditions and to certain financial, business and other factors beyond our control. We may be unable to maintain a level of cash flows from operating activities sufficient to permit us to pay the principal and interest on our indebtedness when due.

If our cash flows and capital resources are insufficient to timely fund our debt service obligations, we may be forced to reduce or delay investments and capital expenditures, or to sell assets, seek additional capital or restructure or refinance our indebtedness. These alternative measures may not be successful and may not permit us to meet our scheduled debt service obligations. In the absence of cash flows and capital resources, we could face substantial liquidity problems and might be required to dispose of material assets or operations to meet our debt service and other obligations. Our Credit Agreement restricts our ability to dispose of assets, use the proceeds from any disposition of assets and refinance our indebtedness. We may not be able to consummate those dispositions or to maximize the proceeds that we could realize from them and these proceeds may not be adequate to meet any debt service obligations then due.

Repayment of debt is dependent on cash flow generated by our subsidiaries and their respective subsidiaries.

Our subsidiaries own a significant portion of our assets and conduct substantially all of our operations. Each subsidiary is a distinct legal entity, and, under certain circumstances, legal and contractual restrictions may limit our ability to obtain cash from our subsidiaries. Our subsidiaries may not be able to, or may not be permitted to, make distributions to enable us to make payments in respect of our indebtedness. Additionally, distributions from our non-U.S. subsidiaries may be subject to foreign withholding taxes and would be subject to U.S. federal and state income tax which could reduce the net cash available for principal and interest payments.

If we fail to maintain proper and effective internal controls, our ability to produce accurate financial statements could be impaired, which could increase our operating costs and affect our ability to operate our business.

We have a complex business that is international in scope. Ensuring that we have adequate internal controls and procedures in place to facilitate the production of accurate financial statements on a timely basis is a costly and time-consuming effort that needs to be re-evaluated frequently. We are continually in the process of documenting, reviewing and, if appropriate, improving our internal controls and procedures in connection with Section 404 of the Sarbanes-Oxley Act of 2002, which requires annual management assessments of the effectiveness of our internal control over financial reporting and a report by our independent registered public accountants on the effectiveness of our internal control over financial reporting. If we identify areas for further attention or improvement, implementing any appropriate changes to our internal controls may require specific compliance training of our directors, officers and employees, entail substantial costs in order to modify our existing accounting systems and take a significant amount of time to complete. We have in the past identified, and may in the future identify, significant deficiencies in the design and operation of our internal controls, which have been or will in the future need to be remediated. For example, we have identified material weaknesses in our internal control over financial reporting relating to the design and operation of controls to review forecast assumptions used in the determination of fair value of intangible assets acquired through business combinations and in the testing of goodwill impairment, and we concluded that our internal controls over financial reporting were not effective as of December 31, 2020. While we implemented remediation plans in response to such material weaknesses and concluded that such material weaknesses were remediated as of December 31, 2021, there is no guarantee that in the future we will be able to remediate any identified material weakness timely or at all, or in a cost effective manner. See “Item 9A—Controls and Procedures.”

Finally, in the event we make another significant acquisition, such as the merger with TiVo, or a series of smaller acquisitions, we may face significant challenges in implementing the required processes and procedures in the acquired operations. This could result in an adverse reaction in the financial markets due to investors' perceptions that our internal controls are inadequate or that we are unable to produce accurate financial statements.

If our goodwill and other intangible assets become impaired, we may be required to record a significant charge to earnings.

In addition to internal development, we intend to acquire additional businesses, technology and intellectual property through strategic relationships and transactions. We believe these strategic relationships and transactions will enhance the competitiveness and size of our current businesses and provide diversification into markets and technologies that complement our current businesses. Future transactions could be in the form of asset purchases, equity investments, or business combinations. As a result, we may have significant goodwill from such transactions and other intangible assets which are amortized over their estimated useful lives. We review our amortizable intangible assets for impairment when events or changes in circumstances indicate the carrying value may not be recoverable or the useful life is shorter than originally estimated. Factors that may be considered a change in circumstances indicating that the carrying value of our amortizable or other intangible assets may not be recoverable include a decline in future cash flows, fluctuations in market capitalization, slower growth rates in our industry or slower than anticipated adoption of our products by our customers. As we continue to review for factors that may affect our business which may not be in our control, we may be required to record a significant charge to earnings in our financial statements during the period in which any impairment of goodwill and other intangible assets or equity investments is determined, resulting in an adverse impact on our business, financial position, or results of operations.

Changes in, or interpretations of, tax rules and regulations, could adversely affect our effective tax rates and negatively affect our business and financial condition.

We are subject to U.S. federal and state income taxes, as well as taxes in various international jurisdictions. As a result, our effective tax rate is derived from a combination of applicable tax rates in the various jurisdictions where we operate. In preparing our financial statements, we estimate the amount of tax to accrue in each tax jurisdiction. Nevertheless, our effective tax rate may be different than experienced in the past due to numerous factors, including from the passage of new tax laws, changes in the mix of our profitability from state to state and from country to country, the amount of payments from the company's U.S. entities to related foreign entities, the results of examinations and audits of our tax filings, our inability to secure or sustain acceptable agreements with tax authorities and changes in accounting for income taxes. Our future effective tax rates could be unfavorably affected by changes in tax rates, tax laws or the interpretation of tax laws, by changes in the amount of pre-tax income derived from countries with high statutory income tax rates, or by changes in our deferred tax assets and liabilities, including changes in our ability to realize our deferred tax assets. Our effective income tax rate could be unfavorably affected by changes in the amount of sales to customers in countries with high withholding tax rates. Any of these factors could cause us to experience an effective tax rate significantly different from previous periods or our current expectations and may result in tax obligations in excess of amounts accrued in our financial statements.

In addition, U.S. federal, U.S. state, and foreign tax jurisdictions may examine our income tax returns, including income tax returns of acquired companies and acquired tax attributes included therein. We regularly assess the likelihood of outcomes resulting from these examinations to determine the adequacy of our provision for income taxes. In making such assessments, we exercise judgment in estimating our provision for income taxes. While we believe our estimates are reasonable, we cannot assure you that the final determination from these examinations will not be materially different from that reflected in our historical income tax provisions and accruals. Any adverse outcome from these examinations may have a material adverse effect on our business and operating results.

Our ability to use net operating losses to offset future taxable income may be subject to limitations.

As of December 31, 2021, we have U.S. federal and state net operating losses of approximately $0.3 billion and $1.1 billion (post-apportioned). A portion of the federal and state net operating loss carryforwards will begin to expire, if not utilized, in 2023. Net operating losses that expire unused will be unavailable to offset future income tax liabilities. Under the Tax Cuts and Jobs Act, federal net operating losses incurred in 2018 and in future years may be carried forward indefinitely, but the deductibility of such federal net operating losses is limited. In addition, under Sections 382 and 383 of the Internal Revenue Code (the "Code") and corresponding provisions of state law, if a corporation undergoes an "ownership change," which is generally defined as a greater than fifty-percent (50%) change, by value, in its equity ownership over a three (3)-year period, the corporation's ability to use its pre-change net operating loss carryforwards and other pre-change tax attributes to offset its post-change income or taxes may be limited. We may experience ownership changes in the future as a result of subsequent shifts in our stock ownership, some of which may be outside of our control. If an ownership change occurs and our ability to utilize our net operating loss carryforwards is materially limited, it would harm our future operating results by effectively increasing our future tax obligations. In addition, at the state level, there may be periods during which the use of net operating loss carryforwards is suspended or otherwise limited, which could accelerate or permanently increase state taxes owed by us.

Our effective tax rate depends on our ability to secure the tax benefits of our international corporate structure, on the application of the tax laws of various jurisdictions and on how we operate our business.

Our international corporate structure and intercompany arrangements, including the manner in which we market, develop, use and license our intellectual property, fund our operations and structure transactions with our international subsidiaries, may result in the increase or reduction of our worldwide effective tax rate. Such international corporate structure and intercompany arrangements are subject to examination by the tax authorities of the jurisdictions in which we operate, including the United States. The application of the tax laws of these jurisdictions to our international business activities is subject to interpretation and depends on our ability to operate our business in a manner consistent with our corporate structure and intercompany arrangements. Moreover, such tax laws are subject to change. Tax authorities may disagree with our intercompany transfer pricing arrangements, including our transfer of intangibles, or determine that the manner in which we operate our business does not achieve the intended tax consequences. Additionally, current and future changes in the tax laws or interpretations may have an adverse effect on our international corporate structure and operations. For example, various levels of government and international organizations, such as the Organization for Economic Co-operation and Development (OECD) and the European Union ("EU"), increasingly focus on future tax reform that could change longstanding tax principles. Changes in the Korean tax law on royalties subject to withholding taxes from our Korean licensees may impact our financial results. Foreign countries have enacted or are contemplating legislation which imposes a digital services tax directly on a service provider which exceeds various revenue thresholds. The result of an adverse determination of any of the above items could increase our worldwide effective tax rate and harm our financial position and results of operations.

If we fail to comply with the laws and regulations relating to the collection of sales tax and payment of income taxes in the various states and foreign jurisdictions in which we do business, we could be exposed to unexpected costs, expenses, penalties and fees as a result of our noncompliance in which case our business could be harmed.

As our business grows and expands, we have started to do business in an increasing number of states nationally and in new foreign jurisdictions. By engaging in business activities in these states and foreign jurisdictions, we become subject to their various laws and regulations, including possible requirements to collect sales tax from our sales within those states and foreign jurisdictions and the payment of income taxes on revenue generated from activities in those states and foreign jurisdictions.

The laws and regulations governing the collection of sales tax and payment of income taxes are numerous, complex, and vary among states and foreign jurisdictions. If we fail to comply with these laws and regulations requiring the collection of sales tax and payment of income taxes in one or more states and foreign jurisdictions where we do business, we could be subject to significant costs, expenses, penalties and fees in which case our business would be harmed.

Our subsidiaries have in the past recorded, and may in the future record, significant valuation allowances on our deferred tax assets, and the recording and release of such allowances may have a material impact on our results of operations.

The need for a valuation allowance requires an assessment of both positive and negative evidence on a jurisdiction-by-jurisdiction basis when determining whether it is more-likely-than-not that deferred tax assets are recoverable. In making such assessment, significant weight is given to evidence that can be objectively verified. New facts and circumstances, historic profits or losses, and future financial results may require us to reevaluate our valuation allowance positions which could potentially affect our effective tax rate.

We continue to monitor the likelihood that we will be able to recover our deferred tax assets, including those for which a valuation allowance is recorded. There can be no assurance that we will generate profits in future periods enabling us to fully realize our deferred tax assets. We have applied a valuation allowance on U.S. federal, and many state, and foreign deferred tax assets to the extent they are not realizable by utilizing deferred tax liabilities as sources of income. The timing of recording a valuation allowance or the reversal of such valuation allowance is subject to objective factors that cannot be readily predicted in advance. Both the establishment of a valuation allowance and the reversal of a previously recorded valuation allowance may have a material impact on our financial results.

The IRS may assert positions that may negatively impact the tax-free status of distributions intended to qualify for tax-free treatment, and the desired benefits of such distributions may not be achieved.

In general, a corporation, which we refer to as the distributing corporation, that distributes the stock of another corporation, which we refer to as the controlled corporation, in a transaction that would otherwise qualify for tax-free treatment under Section 355 of the Internal Revenue Code (“the Code”) may be required to recognize corporate-level gain on the distribution if there is an acquisition of a 50% or greater interest (within the meaning of Section 355(d)(4) of the Code) in either the distributing corporation or the controlled corporation as part of a plan including the distribution. We currently plan, subject to any required regulatory approvals, a separation of our product business and IP licensing business in a transaction intended to qualify as tax-free under Section 355 of the Code, resulting in two independent publicly traded companies. We anticipate that such separation will be completed in the second half of 2022. This separation, if completed, would be achieved through a pro-rata spin-off transaction in which our stockholders, at such time, would receive shares of capital stock in the resulting spun-off company. It is expected that Xperi and TiVo would be able to minimize any corporate-level gain on such separation transaction in connection with our formation, because there would be no acquisition of a 50% or greater interest in either company. There can be no assurance, however, that the IRS may not take a contrary view. In addition, in the event that the IRS were to take the view that the transactions that led to our formation constitute an acquisition of a 50% or greater interest in either Xperi or TiVo, we may be restricted in our ability to implement any contemplated business separation in a tax-efficient manner. Certain steps we take in contemplation of the separation could result in the reduction of certain tax attributes or the payment of cash taxes even if we satisfy the requirements under Section 355(d)(4).

Additionally, there are many factors that could impact the structure or timing of, the anticipated benefits from, or determination to ultimately proceed with, this planned business separation, including, among others, global economic conditions, instability in credit markets, declining consumer and business confidence, fluctuating commodity prices and interest rates, volatile exchange rates, tax considerations, and other challenges that could affect the global economy, specific market conditions in one or more of the industries of the businesses planned for separation, and changes in the regulatory or legal environment. Such changes could adversely impact the value of this planned business separation transaction to our stockholders.

The investment of our cash, cash equivalents and investments in marketable debt and equity securities is subject to risks which may cause losses and affect the liquidity of these investments.

At December 31, 2021, we held approximately $201.1 million in cash and cash equivalents and $60.5 million in short-term investments. These investments include various financial securities such as corporate bonds and notes, municipal bonds and notes, commercial paper, treasury and agency notes and bills, and money market funds. Although we invest in high quality securities, ongoing financial events have at times adversely impacted the general credit, liquidity, market and interest rates for these and other types of debt securities. Recent financial market volatility resulting from the COVID-19 pandemic heightens the risk of a potential loss in the value of our investments. Changes in monetary policy by the Federal Reserve, government fiscal policies, and global economic and market conditions may adversely affect the value of our investment portfolio. We may in the future have a need to sell investments before their maturity dates, which could result in losses on the sale of those investments. The financial market and monetary risks associated with our investment portfolio have and may in the future have a material adverse effect on our financial condition, results of operations or cash flows.

Risks Related to Regulatory and Legal Matters

New governmental regulations or new interpretations of existing laws, including legislative initiatives seeking to, or judicial or regulatory decisions that, weaken patent protection or copyright law, could cause legal uncertainties and result in harm to our business.

Our business relies in part on the uniform and historically consistent application of U.S. patent laws, rules, and regulations. The standards that courts use to interpret patents are not always applied predictably or uniformly and may evolve, particularly as new technologies develop. For example, the Supreme Court of the United States has modified some legal standards applied by the U.S. Patent and Trademark Office in the examination of U.S. patent applications, which may decrease the likelihood that we will be able to obtain patents and may increase the likelihood of challenges to patents we obtain or license. For example, our patents continue to face challenges in the U.S. from Inter Partes Review (IPR) proceeding before the Patent Trial and Appeal Board (PTAB). Historically these types of proceedings have a high rate of invalidation of patents, and patents we have asserted in litigation have been and may continue to be invalidated in such proceedings. Additionally, there have been and may be bills introduced in the U.S. Congress relating to patent law that could adversely impact our business depending on the scope of any bills that may ultimately be enacted into law. Some of these changes or potential changes may not be advantageous for us and may make it more difficult to obtain adequate patent protection, or to enforce our patents against parties using them without a license or payment of royalties. These changes or potential changes could increase the costs and uncertainties surrounding the prosecution of our patent applications and the enforcement of our patent rights and could have a negative effect on our ability to license our patents and, therefore, on the royalties we can collect.

Consumer rights advocates and other constituencies also continuously challenge copyright law through both legislative and judicial actions. If our copyright protections are compromised, or devices that can circumvent our technology are permitted by law and become prevalent, this could result in reduced demand for our technologies, and our business would be harmed.

Many laws and regulations are pending and may be adopted by the U.S. federal government, individual states and local jurisdictions and other countries with respect to the internet. These laws may relate to many areas that impact our business, including intellectual property rights, digital rights management, copyright, property ownership, privacy, taxation, and the consumer electronic (“CE”) and television industry. These types of regulations are likely to differ between countries and other political and geographic divisions. Changes to or the interpretation of these laws could increase our costs, expose us to increased litigation risk, substantial defense costs and other liabilities or require us or our customers to change business practices. Laws or regulations could be interpreted to prevent or limit access to some or all television signals by certain CE devices, or impose limits on the number of copies, the ability to transfer or move copies, or the length of time a consumer may retain copies of some or all types of television programming.

In addition, the satellite transmission, cable and telecommunications industries are subject to pervasive federal regulation, including Federal Communications Commission (“FCC”) licensing and other requirements, as well as extensive regulation by local and state authorities. The FCC could promulgate new regulations or interpret existing regulations in a manner that would cause us to incur significant compliance costs or force us to alter or eliminate certain features or functionality of our products or services, which may adversely affect our business. For example, the FCC could determine that certain of our products fail to comply with regulations concerning matters such as electrical interference, copy protection, digital tuners, accessibility for blind and deaf users, or display of television programming based on rating systems.

In the United States, the FCC regulates the broadcast radio industry, interprets laws enacted by Congress and establishes and enforces regulations governing radio broadcasting. It is unclear what rules and regulations the FCC may adopt regarding digital audio broadcasting and what effect, if any, such rules and regulations will have on our product licensing business, the operations of stations using our HD Radio technology or consumer electronics manufacturers. Any additional rules and regulations imposed on digital audio broadcasting could adversely impact the attractiveness of HD Radio technology and negatively impact our business. Also, non-compliance by us, or by radio stations offering HD Radio broadcasts, with any FCC requirements or conditions could result in fines, additional license conditions, license revocation or other detrimental FCC actions.

It is difficult to anticipate the impact of current or future laws and regulations on our business. We may have significant expenses associated with staying appraised of and in compliance with local, state, federal, and international legislation and regulation of our business and in presenting the Company’s positions on proposed laws and regulations.

We need to safeguard the security and privacy of our customers' confidential data and remain in compliance with laws that govern such data, and any inability to do so may harm our reputation and brand and expose us to legal action.

Our products and services and back-end information technology systems can collect and allow us to store individual viewer and account preferences and other data our customers may consider confidential or may be considered personal information or personal data under applicable regulatory schemes. To provide better consumer experiences and to operate effectively, and for our analytics business and other businesses, we collect certain information from users. Collection and use of such information may be subject to U.S. federal and state privacy and data collection laws and regulations, standards used by credit card companies applicable to merchants processing credit card details, and foreign laws. We may also be subject to third party privacy policies and permissions and obligations we owe to third parties, including, for example, those of Pay-TV service providers. We post our privacy policies concerning the collection, use and disclosure of user data, including interactions between client and server. Privacy concerns, however, could create uncertainty in the marketplace for digital video recording and for our products and services more generally. Any failure by us to comply with privacy policies or contractual obligations, any failure to comply with standards set by credit card companies relating to privacy or data collection, any failure to conform the privacy policy to changing aspects of our business or applicable law, or any existing or new legislation regarding privacy issues could impact our data collection efforts and subject us to fines, litigation or other liability.

Further, our compliance with such laws dealing with the use, collection and processing of such customer data, including personal data, is core to our strategy. These laws are increasing in number, enforcement, fines and other penalties. All states have adopted laws requiring notice to consumers of a security breach implicating their personal information. In the event of a security breach, these laws may subject us to incident response, notice and remediation costs, as well as costs associated with any investigations that might arise from federal regulatory agencies and state attorneys general. Failure to safeguard data adequately or to destroy data securely could subject us to regulatory investigations or enforcement actions under federal or state data security, unfair practices, or consumer protection laws. The scope and interpretation of these laws could change and the associated burdens and compliance costs could increase in the future. Two such governmental regulations that have significant implications for our products and services are the General Data Protection Regulation ("GDPR") and the California Consumer Privacy Act ("CCPA").

Compliance with these and any other applicable privacy and data security laws and regulations is a rigorous and time-intensive process, and we may be required to put in place additional mechanisms ensuring compliance with the new data protection rules. If we fail to comply with any such laws or regulations, we may face significant fines and penalties that could adversely affect our business, financial condition and results of operations, and could damage and harm our reputation. Furthermore, the laws are not consistent among various international and state jurisdictions, and compliance in the event of a widespread data breach is costly.

In addition, the Children's Online Privacy Protection Act imposes civil and criminal penalties on persons collecting personal information from children under the age of 13. We do not knowingly distribute harmful materials to minors, direct our websites or services to children under the age of 13, or collect personal information from children under the age of 13. However, we are not able to control the ways in which consumers use our technology, and our technology may be used for purposes that violate this or other similar laws. The manner in which such laws may be interpreted and enforced cannot be fully determined, and future legislation could subject us to liability if we were deemed to be non-compliant.

Further, if our technological security measures are compromised, our customers may curtail or stop use of our products and services. Our products and services such as DVRs may contain the private information of our customers, and security breaches could expose us to a risk of loss of this information, which could result in potential liability and litigation.

Current and future governmental and industry standards may significantly limit our business opportunities.

Technology standards are important in the audio and video industry as they help to assure compatibility across a system or series of products. Generally, standards adoption occurs on either a mandatory basis, requiring a particular technology to be available in a particular product or medium, or an optional basis, meaning that a particular technology may be, but is not required to be, utilized. If standards are re-examined or a new standard is developed in which we are not included, our growth in that area of our business could be significantly lower than expected.

As new technologies and entertainment media emerge, new standards relating to these technologies or media may develop. New standards may also emerge in existing markets that are currently characterized by competing formats, such as the market for PCs. We may not be successful in our efforts to include our technology in any such standards.

Our activities to advertise, market and sell our services directly to consumers are highly regulated by constantly evolving state and federal laws and regulations.

We engage in various advertising, marketing and other promotional activities. For instance, in the past, we have offered gift subscriptions and mail-in-rebates to consumers, which are subject to state and federal laws and regulations. A constantly evolving network of state and federal laws is increasingly regulating these promotional activities. Additionally, we enter into subscription service contracts directly with consumers which govern both our provision of and the consumers' payment for the TiVo service. For example, consumers who activate new monthly subscriptions to the TiVo service may be required to commit to pay for the TiVo service for a minimum of one year or be subject to an early termination fee if they terminate prior to the expiration of their commitment period. If the terms of our subscription service contracts with consumers, such as our imposition of an early termination fee, or our previously offered rebate or gift subscription programs were to violate state or federal laws or regulations, we could be subject to suit, penalties, enforcement actions, and/or negative publicity in which case our business would be harmed.

Some software we provide may be subject to "open source" licenses, which may restrict how we use or distribute our software or require that we release the source code of certain products subject to those licenses.

Some of the products we support and some of our proprietary technologies incorporate open source software such as open source codecs that may be subject to the Lesser Gnu Public License or other open source licenses. The Lesser Gnu Public License and other open source licenses may require that source code subject to the license be released or made available to the public. Such open source licenses may mandate that software developed based on source code that is subject to the open source license, or combined in specific ways with such open source software, become subject to the open source license. We take steps to ensure that proprietary software we do not wish to disclose is not combined with, or does not incorporate, open source software in ways that would require such proprietary software to be subject to an open source license. However, few courts have interpreted the Lesser Gnu Public License or other open source licenses, and the manner in which these licenses may be interpreted and enforced is therefore subject to some uncertainty. We often take steps to disclose source code for which disclosure is required under an open source license, but it is possible that we have or will make mistakes in doing so, which could negatively impact our brand or our adoption in the community, or could expose us to additional liability. In addition, we rely on multiple software programmers to design our proprietary products and technologies. Although we take steps to ensure that our programmers (both internal and outsourced) do not include open source software in products and technologies we intend to keep proprietary, we cannot be certain that open source software is not incorporated into products and technologies we intend to keep proprietary. In the event that portions of our proprietary technology are determined to be subject to an open source license, or are intentionally released under an open source license, we could be required to publicly release the relevant portions of our source code, which could reduce or eliminate our ability to commercialize our products and technologies. Also, in relying on multiple software programmers to design products and technologies that we ultimately end up releasing in the open source community, we may discover that one or multiple such programmers have included code or language that would be embarrassing to us, which could negatively impact our brand or our adoption in the community, or could expose us to additional liability. Such additional liability could include claims that result in litigation, require us to seek licenses from third-parties in order to keep offering our software, require us to re-engineer our software, require us to release proprietary source code, require us to provide indemnification or otherwise subject us to liability to a customer or supplier, or require us to discontinue the sale of a product in the event re-engineering cannot be accomplished in a timely manner, any of which could adversely affect our business.

Risks relating to Ownership of our Common Stock

Our financial and operating results may vary, which may cause the price of our common stock to decline.

Our quarterly operating results have fluctuated in the past and are likely to do so in the future. Because our operating results are difficult to predict, one should not rely on quarterly or annual comparisons of our results of operations as an indication of our future performance. Factors that could cause our operating results to fluctuate during any period or that could adversely affect our ability to achieve our strategic objectives include those listed in this "Risk Factors" section of this report and the following:

- the timing of, and compliance with license or service agreements and the terms and conditions for payment to us of license or service fees under these agreements;
- fluctuations in our royalties caused by the pricing terms of certain of our license agreements;
- the amount of our product and service revenue;
- changes in the level of our operating expenses;
- the substantial research and development expenses that we have made and will continue to make on new products, as well as the uncertainty that such products will generate material revenue for the Company;

- delays in our introduction of new technologies or market acceptance of these new technologies through new license agreements;
- our ability to protect or enforce our intellectual property rights or the terms of our agreements;
- legal proceedings affecting our patents, patent applications or license agreements;
- the timing of the introduction by others of competing technologies and the extent to which new technologies replace technologies to which our solutions are targeted;
- changes in supply and demand for semiconductor chips in the specific end markets in which we concentrate;
- changes in demand for camera-enabled devices including cell phones, security systems and personal computers;
- the timing of establishing new licensing arrangements and concluding older license agreements;
- the pace at which our older product sales decline compared to the pace at which our new product revenue grows;
- changes in generally accepted accounting principles including new accounting standards which may materially affect our revenue recognition and the comparability between revenue recognition and cash flow from customer royalties;
- cyclical fluctuations in semiconductor and consumer electronics markets generally;
- supply chain constraints, and attendant effects, including but not limited to increased costs or shipping delays from our suppliers or to our customers;
- adverse labor market conditions, and any impacts on our ability to attract and retain qualified personnel;
- inflation and/or changes in central bank interest rate policies
- our ability to execute and complete successfully the planned separation transaction;
- expenses related to and the financial impact of possible acquisitions of other businesses and the integration of such businesses;
- expenses related to and the financial impact of the disposition of businesses, including post-closing indemnification obligations; and
- adverse changes in the level of economic activity in the U.S. or other major economies in which we do business as a result of the threat of terrorism, military actions taken by the U.S. or its allies, civil unrest, pandemics, natural disasters or generally weak and uncertain economic and industry conditions.

Due to fluctuations in our operating results, reports from market and security analysts, litigation-related developments, and other factors including general market conditions, the price at which our common stock will trade is likely to continue to be highly volatile. In future periods, if our revenue, royalties, cash flows or operating results are below the estimates or expectations of public market analysts and investors, our stock price could decline.

Seasonal trends may cause our quarterly operating results to fluctuate and our inability to forecast these trends may adversely affect the market price of our common stock.

Although predicting consumer demand for our products is very difficult, new consumer subscriptions for products and services, such as TiVo Service, have traditionally been higher during and immediately after the Christmas holiday shopping season than during other times of the year. If we are unable to accurately forecast and respond to consumer demand for our products, our reputation and brand will suffer and the market price of our common stock would likely fall.

We may not pay dividends or pay dividends at a consistent rate, and any decrease in or suspension of the dividend could cause our stock price to decline.

We anticipate that all dividends and stock repurchases will be paid out of our cash, cash equivalents and short-term investments. The payment of future cash dividends is subject to the final determination by our Board of Directors based on a number of factors, including our earnings, financial condition, actual and forecasted cash flows, capital resources and capital requirements, alternative uses of capital including business combinations, economic condition and other factors considered relevant by management and the Board of Directors. Since July 2020, the Board has declared quarterly cash dividends of $0.05 per share, which reflects a reduction from Xperi's historical quarterly dividend of $0.20 per share, and such reduction was primarily based on revised capital allocation strategy following the Mergers. Any decrease in the amount of the dividend, or suspension or discontinuance of payment of a dividend, could cause our stock price to decline.

Our stock repurchase program could increase the volatility of the price of our common stock, and the program may be suspended or terminated at any time, which may cause the trading price of our common stock to decline.

In June 2020, our Board of Directors authorized a stock repurchase program to repurchase up to $150 million of our outstanding shares of common stock dependent on market conditions, share price and other factors. In April 2021 our Board of Directors authorized an additional $100.0 million of stock repurchases under this program. As of December 31, 2021, the total amount available for repurchase under the plan was $95.0 million. The amount of repurchases under our stock repurchase program will vary depending on various factors. The timing of repurchases is at our discretion and the program may be suspended or discontinued at any time. Any suspension or discontinuation could cause the market price of our stock to decline. The timing of repurchases pursuant to our stock repurchase program could affect our stock price and increase its volatility. There can be no assurance that any stock repurchases will enhance stockholder value because the market price of our common stock may decline below the levels at which we effected repurchases. Furthermore, we may engage in mergers, acquisitions, or other activity that could result in us reducing or discontinuing share repurchases for a period of time. For example, as we plan for the separation of our Product business and IP Licensing business we may reduce or suspend share repurchases as we plan for the capital needs of two independent businesses. Finally, the terms of our current or future debt agreements could limit our ability to repurchase shares.

Provisions of our certificate of incorporation and bylaws or Delaware law might delay or prevent a change of control transaction and depress the market price of our stock.

Various provisions of our certificate of incorporation and bylaws might have the effect of making it more difficult for a third party to acquire, or discouraging a third party from attempting to acquire, control of our company. These provisions could limit the price that certain investors might be willing to pay in the future for shares of our common stock. Certain of these provisions eliminate cumulative voting in the election of directors, authorize the board to issue “blank check” preferred stock, prohibit stockholder action by written consent, eliminate the right of stockholders to call special meetings, and establish advance notice procedures for director nominations by stockholders and the submission of other proposals for consideration at stockholder meetings. We are also subject to provisions of Delaware law that could delay or make more difficult a merger, tender offer or proxy contest involving our company. In particular, Section 203 of the Delaware General Corporation Law prohibits a Delaware corporation from engaging in any business combination with any interested stockholder for a period of three years unless specific conditions are met. Any of these provisions could have the effect of delaying, deferring or preventing a change in control, including without limitation, discouraging a proxy contest or making more difficult the acquisition of a substantial block of our common stock.

Decreased effectiveness of stock-based compensation could adversely affect our ability to attract and retain employees.

We have historically used stock options, restricted stock grants and other forms of stock-based compensation as key components of employee compensation in order to align employees’ interests with the interests of our stockholders, encourage employee retention and provide competitive compensation and benefit packages. We incur significant compensation costs associated with our stock-based compensation programs. Failure to obtain stockholder approval of equity compensation plans or changes to the plans could make it harder or more expensive for us to grant stock-based compensation to employees in the future. As a result, we may find it difficult to attract, retain and motivate employees, and any such difficulty could have a materially adverse impact on our business.

Use of our common stock for future acquisitions may be limited.

Our ability to use common stock for future acquisitions without triggering an ownership change for the purposes of Sections 382 and 383 of the Internal Revenue Code will likely be limited for three (3) years following the Mergers. To the extent that we are unable to use our common stock to make future acquisitions, our ability to grow through acquisitions may be limited by the extent to which we are able to raise capital through debt, equity financings or operational growth. Reliance on internally generated cash or debt to complete acquisitions could substantially limit our operational and financial flexibility. If we are unable to obtain additional capital on acceptable terms, we may be required to reduce the scope of any expansion or redirect resources committed to internal purposes. Inability to use our common stock in acquisitions may hinder our ability to actively make future acquisitions and recruit talent through acquisitions and restricts the flexibility in which we can make acquisition bids.

Stock transfer restrictions in our certificate of incorporation may act as an anti-takeover device.

Our certificate of incorporation includes certain transfer restrictions intended to preserve certain of our tax attributes. Such transfer restrictions will apply to future transfers made by 4.91% stockholders, transferees related to a 4.91% stockholder, transferees acting in coordination with a 4.91% stockholder, or transfers that would result in a stockholder becoming a 4.91% stockholder in order to avoid potential limitation of such tax attributes pursuant to Section 382 of the Code. Such transfer restrictions will expire on the earlier of (i) the repeal of Section 382 or any successor statute if our board of directors determines that such restrictions are no longer necessary or desirable for the preservation of certain tax benefits, (ii) the beginning of a taxable year to which our board of directors determines that no tax benefits may be carried forward, (iii) the third anniversary of the Mergers, or (iv) such other date as our board of directors shall fix in accordance with the certificate of incorporation.

The transfer restrictions described above could make it more difficult for a third party to acquire, or could discourage a third party from acquiring, a large block of our common stock. This may adversely affect the marketability of our common stock by discouraging existing or potential investors from acquiring our stock or additional shares of our stock. It is also possible that the transfer restrictions could delay or frustrate the removal of incumbent directors and could make more difficult a merger, tender offer or proxy contest involving us, or impede an attempt to acquire a significant or controlling interest in us, even if such events might be beneficial to us and our stockholders.

Our certificate of incorporation contains forum limitations for certain disputes between us and our stockholders that could limit the ability of stockholders to bring claims against us and our directors, officers and employees in jurisdictions preferred by stockholders.

Our certificate of incorporation provides that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware is the sole and exclusive forum for (i) any derivative lawsuit brought on our stockholders, (ii) any lawsuit against our current or former directors, officers, employees, stockholders or agents asserting a breach of a duty (including any fiduciary duty) owed by any such current or former director, officer, stockholder, employee or agent to us or our stockholders, (iii) any lawsuit asserting a claim against us or any of our current or former director, officer, employee, stockholder or agent arising out of or relating to any provision of the DGCL, our charter or our bylaws (each, as in effect from time to time), or (iv) any lawsuit asserting a claim against us or any of our current or former director, officer, employee, stockholder or agent governed by the internal affairs doctrine of the State of Delaware. Our certificate of incorporation also provides that, unless we consent in writing to the selection of an alternative forum, the federal district courts of the United States of America are the sole and exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act. The foregoing forum provisions may prevent or limit a stockholder’s ability to file a lawsuit in a judicial forum that it prefers for disputes with us or our directors, officers, employees, stockholders or agents, which may discourage such lawsuits, make them more difficult or expensive to pursue, and result in outcomes that are less favorable to such stockholders than outcomes that may have been attainable in other jurisdictions.

In addition, notwithstanding the inclusion of the foregoing forum provisions in the certificate of incorporation, courts may find the foregoing forum provisions to be inapplicable or unenforceable in certain cases that the foregoing forum provisions purport to address, including claims brought under the Securities Act. If this were to occur in any particular lawsuit, we may incur additional costs associated with resolving such lawsuit in other jurisdictions or resolving lawsuits involving similar claims in multiple jurisdictions, all of which could harm our business, results of operations, and financial condition.

General Risk Factors

If we fail to protect and enforce our intellectual property rights, contract rights, and our confidential information, our business will suffer.

We rely primarily on a combination of license, development and nondisclosure agreements and other contractual provisions, as well as patent, trademark, trade secret and copyright laws, to protect our technology and intellectual property. If we fail to protect our technology, intellectual property, or contract rights, our customers and others may seek to use our technology and intellectual property without the payment of license fees and royalties, which could weaken our competitive position, reduce our operating results and increase the likelihood of costly litigation. Others may also develop technologies that are similar or superior to our technologies, duplicate our technologies or design around our patents. The growth of our business depends in large part on our ability to secure intellectual property rights in a timely manner, our ability to convince third parties of the applicability of our intellectual property rights to their products, and our ability to enforce our intellectual property rights.

In certain instances, we attempt to obtain patent protection for portions of our technology, and our license agreements typically include both issued patents and pending patent applications. If we fail to obtain patents in a timely manner or if the patents issued to us do not cover all of the inventions disclosed in our patent applications, others could use portions of our technology and intellectual property without the payment of license fees and royalties. For example, our business may suffer if we are unable to obtain patent protection in a timely manner from the US Patent and Trademark Office due to processing delays resulting from examiner turnover and a continuing backlog of patent applications.

We also rely on trade secret laws rather than patent laws to protect other portions of our proprietary technology. Trade secrets can be difficult to protect. The misappropriation of our trade secrets or other proprietary information could seriously harm our business. We protect our proprietary technology and processes, in part, through confidentiality agreements with our employees, consultants, suppliers and customers. We cannot be certain that these contracts have not been and will not be breached, that we will be able to timely detect unauthorized use or transfer of our technology and intellectual property, that we will have adequate remedies for any breach, or that our trade secrets will not otherwise become known or be independently discovered by competitors. If we fail to use adequate mechanisms to protect our technology and intellectual property, or if a court fails to enforce our intellectual property rights, our business will suffer. We cannot be certain that these protection mechanisms can be successfully asserted in the future or will not be invalidated or challenged.

Further, the laws and enforcement regimes of certain countries may not protect our technology and intellectual property to the same extent as do the laws and enforcement regimes of the U.S. In certain jurisdictions we may be unable to protect our technology and intellectual property adequately against unauthorized use, which could adversely affect our business.

We may not be able to protect our brand from third party infringement or to increase our brand awareness.

Maintaining and strengthening our brands is important to maintaining and expanding our business, as well as to our ability to enter into new markets for our technologies, products and services. If we fail to promote and maintain these brands successfully, our ability to sustain and expand our business and enter into new markets may suffer. Much of the promotion of our brand depends, among other things, on hardware device manufacturing companies and service providers displaying our trademarks on their products. If these companies choose for any reason not to display our trademarks on their products, or if these companies use our trademarks incorrectly or in an unauthorized manner, the strength of our brand may be diluted or our ability to maintain or increase our brand awareness may be harmed. We generally rely on enforcing our trademark rights to prevent unauthorized use of our brand and technologies. Our ability to prevent unauthorized uses of our brand and technologies would be negatively impacted if our trademark registrations were overturned in the jurisdictions where we do business. We also have trademark applications pending in a number of jurisdictions that may not ultimately be granted, or if granted, may be challenged or invalidated, in which case we would be unable to prevent unauthorized use of our brand and logo in such jurisdictions. We have not filed trademark registrations in all jurisdictions where our brand and logo are used.

Our business may suffer if third parties assert that we violate their intellectual property rights.

Third parties may claim that either we or our customers are infringing upon their intellectual property rights. Even if we believe that such claims are without merit, they can be time-consuming and costly to defend against and will divert management’s attention and resources away from our business. Furthermore, third parties making such claims may be able to obtain injunctive or other equitable relief that could block our ability to further develop or commercialize some or all of our products or services in the U.S. and abroad. Claims of intellectual property infringement also might require us to enter into costly settlement or license agreements, pay costly damage awards, or defend or indemnify our customers against judgments, damages, or other losses. Even if we have an agreement that provides for a third party to indemnify us against such costs, the indemnifying party may be unable to perform its contractual obligations under the agreement. If we cannot or do not license the allegedly infringed intellectual property on reasonable terms, or need to substitute similar technology from another source, our business, financial position, results of operations and cash flows could suffer.

If we lose any of our key personnel or are unable to attract, train and retain qualified personnel, we may not be able to execute our business strategy effectively.

Our success depends, in large part, on the continued contributions of our key management, engineering, sales, marketing, intellectual property, legal and finance personnel, many of whom are highly skilled and would be difficult to replace. None of our senior management, key technical personnel or key sales personnel are bound by written employment contracts that require them to remain with us for a specified period. In addition, we do not currently maintain key-person life insurance covering our key personnel or have restrictions on their post-employment ability to solicit our employees, contractors or customers if key personnel voluntarily terminate their employment. The loss of any of our senior management or other key personnel could harm our ability to implement our business strategy and respond to the rapidly changing market conditions in which we operate. Our future success will depend to a significant extent on the ability of these executives to effectively drive execution of our business strategy, and on the ability of our management team to work together effectively.

Our success also depends on our ability to attract, train and retain highly skilled managerial, engineering, sales, marketing, legal and finance personnel and on the abilities of new personnel to function effectively, both individually and as a group. Competition for qualified management, technical and other personnel is intense, particularly in the technology industry in which we operate, and we may not be successful in attracting and retaining such personnel. If we fail to attract and retain qualified employees, including internationally, our ability to grow our business could be harmed. In order to attract and retain personnel in a competitive marketplace, we believe that we must provide a competitive compensation package, including cash and equity-based compensation. Some of the companies with which we compete for experienced personnel may be able to offer more attractive terms of employment to potential candidates. Volatility in our stock price may from time to time adversely affect our ability to recruit or retain employees. We have also experienced difficulty in hiring and retaining highly skilled engineers with appropriate qualifications to support our growth and expansion. Further, we must train our new personnel, especially our technical support personnel, to respond to and support our licensees and customers. If we fail to do this, it could lead to dissatisfaction among our licensees or customers, which could slow our growth or result in a loss of business.

Our business operations are subject to natural disasters and industry-wide failure and adverse events.

Our business operations depend on our ability to maintain and protect our facilities, computer systems and personnel. Our corporate headquarters are located in the San Francisco Bay Area and we have engineering activities in several locations throughout California, which in the past have experienced severe earthquakes. We do not carry earthquake insurance for any of our facilities except for the facility we own in Calabasas, California. Earthquakes, wild fires, or other natural disasters could severely disrupt our operations, and have a material adverse effect on our business, results of operations, financial condition and prospects.

The provision of certain of our products and services depends on the continuing operation of communications and transmission systems and mechanisms, including satellite, cable, wire, internet and over-the-air. These communication and transmission systems and mechanisms are subject to significant risks and any damage to or failure of these systems and mechanisms could result in an interruption of the provision of our products and services.

Several of our major business operations are subject to interruption by earthquake, fire, power shortages, terrorist attacks and other hostile acts, and other events beyond our control. The majority of our research and development activities, our corporate headquarters, our principal information technology systems and other critical business operations are located near major seismic faults. Our operating results and financial condition could be materially harmed in the event of a major earthquake or other natural or man-made disaster that disrupts our business. The communications and transmission systems and mechanisms that we depend on are not fully redundant, and our disaster recovery planning cannot account for all eventualities.

Item 1B. Unresolved Staff Comments

Not applicable.

Item 2. Properties

Our principal corporate headquarters with approximately 61,000 square feet, which house administrative, sales, marketing and research and development facilities, are located in San Jose, California, and are held under an operating lease. We also lease another office building with approximately 127,000 square feet in San Jose, California and own an office building with approximately 89,000 square feet in Calabasas, California to house additional administrative, sales, marketing, research and development personnel. We also lease facilities in other locations, including the United States, Republic of Ireland, Romania, Poland, the United Kingdom, China, India, Japan, South Korea, Taiwan, Singapore and Mexico. We believe that our existing space is adequate for our current operations. We believe that suitable replacement and additional space, to the extent needed, will be available in the future on commercially reasonable terms.

Item 3. Legal Proceedings

In the normal course of our business, we are involved in legal proceedings. In the past, we have litigated to enforce our respective patents and other intellectual property rights, to enforce the terms of license agreements, to protect trade secrets, to determine the validity and scope of the proprietary rights of others and to defend ourselves or our customers against claims of infringement or invalidity. We expect to continue to be involved in similar legal proceedings in the future, including proceedings regarding infringement of our patents, and proceedings to ensure proper and full payment of royalties by licensees under the terms of our license agreements.

Other than to the extent the proceedings described below have concluded, we cannot predict the outcome of any of the proceedings described below. An adverse decision in any of these proceedings could significantly harm our business and our consolidated financial position, results of operations, and cash flows.

Patent Infringement Litigation

From time-to-time in the ordinary course of our patent licensing business, we are required to engage in litigation to protect our intellectual property from infringement. While litigation is never our preference and we prefer to reach mutually agreeable commercial licensing arrangements with third parties, it is sometimes a necessary step to effectively protect our investment in patented technology. As a result of these lawsuits, defendants have often filed *Inter Partes* Review (“IPR”) petitions with the U.S. Patent Office’s Patent Trial and Appeal Board (and other similar post-grant proceedings outside of the U.S.) seeking to invalidate one or more of the patents-in-suit. We are currently engaged in multiple lawsuits with several third parties.

Videotron Patent Infringement Litigation

On June 23, 2017, Rovi Guides, Inc. (“Rovi”) and TiVo Solutions Inc. (together with Rovi, “TiVo”) filed a patent infringement complaint against Videotron Ltd. and Videotron G.P. (together, “Videotron”) in Toronto, Canada, alleging infringement of six patents. Videotron was a prior licensee under the Rovi patent portfolio. The first week of trial on four patents was held the week of March 9, 2020. The Federal Court of Canada closed due to the COVID-19 pandemic on March 16, 2020, and the trial was temporarily stayed. The trial resumed on May 25, 2020, conducted remotely by video, and concluded on June 17, 2020. The parties filed their written closing submissions on September 30, 2020. The closing arguments were held in January 2021. No date is set by the Court to issue its judgement.

On May 21, 2021, Rovi filed a patent infringement complaint against Videotron in Toronto, Canada, alleging infringement of four patents. On July 21, 2021, the Federal Court of Canada held a case management conference, shortly before which Videotron filed a motion to strike various portions of the statement of claim. On October 22, 2021, the Court held a hearing on Videotron’s motion to strike. To date, the Court has not ruled on the motion. No further dates have been set.

Bell and Telus Patent Infringement Litigation

On January 19, 2018, TiVo filed a patent infringement complaint against Bell Canada (and four of its affiliates) in Toronto, Canada, alleging infringement of six patents. On February 2, 2018, TiVo filed a patent infringement complaint against Telus Corporation (and two of its affiliates) in Toronto, Canada, alleging infringement of the same six patents. Bell Canada and Telus Corporation were previously indirectly licensed to some of Rovi’s patents through a prior agreement between Rovi and one of their suppliers. The Bell Canada and Telus Corporation cases are being heard together for purposes of pre-trial and trial proceedings. On August 27, 2019, the Federal Court of Canada issued an order bifurcating the liability phase from the damages phase of the case. There is no set trial date or procedural schedule for the damages phase of the cases. The liability and injunction trial on four patents was held from July 13 – August 6, 2020. The closing arguments were held in January 2021. No date is set by the Court to issue its judgement.

On July 27, 2021, Rovi filed a patent infringement complaint against Bell Canada and four of its affiliates, Telefonaktiebolaget L M Ericsson and Ericsson Canada Inc., and MK Systems USA Inc. and MK Mediatech Canada Inc. (collectively, “Defendants”) in Toronto, Canada, alleging infringement of four patents. The Defendants filed a motion to strike various portions of the statement of claim. On October 22, 2021, the Federal Court of Canada held a hearing on the Defendants motion to strike. To date, the Court has not ruled on the motion. No further dates have been set.

NVIDIA Patent Infringement Litigation

On May 8, 2019, Invensas Corporation (“Invensas”) and Tessera Advanced Technologies, Inc. filed a complaint against NVIDIA Corporation (“NVIDIA”) in the United States District Court for the District of Delaware, alleging infringement of five patents, and requesting, among other things, that NVIDIA be ordered to pay compensatory damages in an amount no less than a reasonable royalty (the “District Court Litigation”). NVIDIA answered the complaint on July 1, 2019 and subsequently moved to transfer the case to the United States District Court for the Northern District of California. The Court denied NVIDIA’s motion to transfer on September 17, 2019.

In September 2020, the Patent Trial and Appeal Board (“PTAB”) instituted IPRs of several patents-in-suit. The parties stipulated to an order staying the litigation pending resolution of the IPR proceedings, and to dismissal of claims relating to two patents. As a result, there are three patents-in-suit remaining. One patent has no IPRs pending against it. Two patents are subject to IPRs. On June 9, 2021, the PTAB held oral arguments in the IPRs. On September 1, 2021, the PTAB issued final written decisions in the IPRs in which it found all challenged claims of the two patents invalid. On November 1, 2021, Invensas filed appeals of each of the IPR decisions with the United States Court of Appeals for the Federal Circuit, with Invensas’s opening brief due March 14, 2022, NVIDIA’s response brief due April 25, 2022, and Invensas’s reply brief due May 16, 2022. No date has been set yet for oral argument. The District Court Litigation will remain stayed pending the outcome of the IPR appeals.

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

The common stock of Xperi Holding Corporation is listed on the Nasdaq Global Select Market under the symbol "XPER." Prior to June 1, 2020 (the "TiVo Merger Date"), the common stock of Xperi Corporation (the predecessor company) was listed on the Nasdaq Global Select Market under the symbol "XPER."

As of February 7, 2022, there were 103,276,142 outstanding shares of common stock held by 373 stockholders of record. In addition, a substantially greater number of stockholders may be "street name" or beneficial holders, whose shares are held of record by banks, brokers and other financial institutions.

We have historically returned capital to shareholders through cash dividends and stock repurchases. We anticipate that all quarterly dividends and stock repurchases will be paid out of cash, cash equivalents and short-term investments.

Stock Repurchases

On June 12, 2020, our Board of Directors authorized a stock repurchase program providing for the repurchase of up to $150 million of the Company's common stock. The timing, price and volume of repurchases will be based on market conditions, relevant securities laws and other factors. The stock repurchases may be made from time to time, through solicited or unsolicited transactions in the open market, in privately negotiated transactions, or pursuant to a Rule 10b5-1 plan. The program may be discontinued or amended at any time and has no specified expiration date. For example, as we plan for the separation of our Product business and IP Licensing business we may reduce or suspend share repurchases as we plan for the capital needs of two independent businesses. There is no guarantee that such repurchases under the program will enhance the value of our stock. On April 22, 2021, our Board of Directors approved an increase in the repurchase authorization under the program by $100.0 million. All repurchases in the three months ended December 31, 2021 were made under this program as described below:

(in thousands, except share price)	Total number of shares purchased	Average price paid per share	Total number of shares purchased as part of our share repurchase program	Approximate dollar value of shares that may yet be purchased under our share repurchase program (a)
2021				
October	—	$ —	—	
November	40	$ 17.65	40	
December	1,248	$ 19.52	1,248	
Total	1,288	$ 19.46	1,288	$ 95,031

(a) Calculated as of December 31, 2021.

Stock Performance Graph

The common stock of Xperi Holding Corporation commenced trading on June 2, 2020 following the completion of the Mergers. The following graph shows a comparison of total stockholder return for holders of our common stock, the Nasdaq Composite Index, the Russell 2000 Index and the S&P 500 from June 2, 2020 through December 31, 2021. The graph and table assume that $100 was invested on June 2, 2020 in each of our common stock, the Nasdaq Composite Index, the Russell 2000 Index and the S&P 500, and that all dividends were reinvested. This graphic comparison is presented pursuant to the rules of the SEC.

	6/2/2020	6/30/2020	9/30/2020	12/30/2020	3/31/2021	6/30/2021	9/30/2021	12/31/2021
Xperi Holding Corporation	$ 100.00	$ 109.25	$ 85.38	$ 155.64	$ 160.99	$ 164.86	$ 139.99	$ 140.89
Nasdaq Composite	$ 100.00	$ 104.68	$ 116.23	$ 133.95	$ 137.87	$ 150.95	$ 150.37	$ 162.83
Russell 2000 Index	$ 100.00	$ 101.63	$ 106.31	$ 139.61	$ 156.57	$ 162.92	$ 155.43	$ 158.32
S&P 500	$ 100.00	$ 100.63	$ 109.16	$ 121.14	$ 128.96	$ 139.49	$ 139.82	$ 154.70

This section is not “soliciting material,” is not deemed “filed” with the SEC and is not incorporated by reference in any filing of the Company under the Securities Act of 1933 or the Securities Exchange Act of 1934 (“Exchange Act”), whether made before or after the date hereof and irrespective of any general incorporation language in any such filing.

Item 6. (Reserved)

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion is intended to promote understanding of the results of operations and financial condition and should be read in conjunction with our consolidated financial statements and notes thereto.

This section of this Form 10-K generally discusses 2021 and 2020 items and year-to-year comparisons between 2021 and 2020. Discussions of 2019 items and year-to-year comparisons between 2020 and 2019 that are not included in this Form 10-K can be found in "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II, Item 7 of the Annual Report on Form 10-K for the year ended December 31, 2020, filed with the SEC by Xperi Holding Corporation on February 26, 2021, which is available free of charge on the SEC's website at www.sec.gov and our Investor Relations website at investor.xperi.com.

Business Overview

On December 18, 2019, Xperi Corporation ("Xperi") entered into a definitive agreement with TiVo Corporation ("TiVo"), to combine in an all-stock merger of equals transaction (the "Mergers"). Following consummation of the Mergers on June 1, 2020, Xperi Holding Corporation became the parent company of both Xperi and TiVo. The common stock of both Xperi and TiVo were de-registered after completion of the Mergers. On June 2, 2020, Xperi Holding Corporation's common stock, par value $0.001 per share, commenced trading on the Nasdaq Global Select Market ("Nasdaq") under the ticker symbol "XPER." Xperi was determined to be the accounting acquirer in the Mergers. As a result, the historical financial statements of Xperi for periods prior to the Mergers are considered to be the historical financial statements of Xperi Holding Corporation. As used herein, the "Company," "we," "us" and "our" refer to Xperi when referring to periods prior to June 1, 2020 and Xperi Holding Corporation when referring to periods subsequent to June 1, 2020. Our results of operations include the operations of TiVo after June 1, 2020. For further discussion on the Mergers, refer to "Item 1A. Risk Factors," and "Note 9 – Business Combinations" in the Notes to Consolidated Financial Statements.

We are a leading consumer and entertainment product/solutions licensing company and one of the industry's largest intellectual property licensing platforms, with a diverse portfolio of media and semiconductor intellectual property and more than 11,000 patents and patent applications worldwide. We create extraordinary experiences at home and on the go for millions of consumers around the world, elevating content and how audiences connect with it in a way that is more intelligent, immersive and personal. Powering smart devices, connected cars, entertainment experiences and more, we've created a unified ecosystem that reaches highly engaged consumers, uncovering significant new business opportunities, now and in the future. Our technologies are integrated into billions of consumer devices, media platforms, and semiconductors worldwide, driving increased value for partners, customers and consumers. Headquartered in Silicon Valley with operations around the world, we have approximately 1,900 employees and more than 35 years of operating experience.

We are currently planning, subject to any required regulatory approvals, a separation of our Product business and IP Licensing business through a tax-efficient transaction, resulting in two independent, publicly traded companies. We continue to evaluate the optimal timing of the contemplated business separation and currently anticipate that such separation will be completed in the second half of 2022.

COVID-19 Impact

Our business and results of operations have been adversely affected by the global COVID-19 pandemic and related events and we expect its impact to continue. The impact to date has included periods of significant volatility in various markets and industries. The volatility has had, and we anticipate it will continue to have, an adverse effect on our customers and on our business, financial condition and results of operations, and may result in an impairment of our long-lived assets, including goodwill, increased credit losses and impairments of investments in other companies. In particular, the automotive market, as well as the broad consumer electronics industry, has been and may continue to be impacted by the pandemic and/or other events beyond our control, and further volatility could have an additional negative impact on these industries, customers, and our business. In addition, the COVID-19 pandemic and, to a lesser extent, U.S. restrictions on trade with certain Chinese customers, have impacted and may continue to impact the financial conditions of our customers.

Actions by United States federal, state and local governments, as well as by foreign governments, to address the COVID-19 pandemic, including travel bans, stay-at-home orders and school, business and entertainment venue closures, also had a significant adverse effect on the markets in which we conduct our businesses. COVID-19 poses the risk that our workforce, suppliers, and other partners may be prevented from conducting normal business activities for an extended period of time, including due to shutdowns or stay-at-home orders that may be requested or mandated by governmental authorities. We have implemented policies to allow our employees to work remotely as a result of the pandemic as we reviewed processes related to workplace safety, including social distancing and sanitation practices recommended by the Centers for Disease Control and Prevention. The COVID-19 pandemic could also cause delays in acquiring new customers and executing renewals and could also impact our business as consumer behaviors continue to change in response to the pandemic.

Since the start of the summer of 2021, there has been rapid spread of the contagious Delta variant of COVID-19, particularly in the regions and among the age groups with low vaccination rates, leading to a resurgence in cases, hospitalizations and deaths. With the emergence of the highly transmissible Omicron variant in November 2021, COVID-19 daily cases in the U.S. reached the highest level in January 2022. Businesses and consumers have been adjusting their plans to comply with renewed mask and vaccine mandates, travel restrictions, event cancellations and delayed office reopenings. Our operations and those of our customers have also been negatively impacted by certain trends arising from the COVID-19 pandemic, including labor market constraints, shortage of semiconductor components and manufacturing capacities, and delays in shipments, product development and product launches. In addition, the widespread supply chain disruption is expected to impede global and regional economic activities, such as consumer spending and product availabilities, which may adversely affect our business operations and financial results. Moreover, the COVID-19 pandemic, its related impact, and United States federal, state and foreign government policies enacted to combat the pandemic have contributed to a recent rise of inflation that may increase the cost of our operations and reduce demand for our products and services and those of our customers, which may adversely affect our financial performance.

We have been closely monitoring the COVID-19 pandemic and its impact on our business, including legislation to mitigate the impact of COVID-19 such as the Coronavirus Aid, Relief, and Economic Security (CARES) Act which was enacted in March 2020, and the American Rescue Plan Act of 2021 which was enacted in March 2021. Although a significant portion of our anticipated revenue for 2022 is derived from fixed-fee and minimum-guarantee arrangements, primarily from large, well-capitalized customers which we believe somewhat mitigates the risks to our business, our per-unit and variable-fee based revenue will continue to be susceptible to the volatility, labor shortages, supply chain disruptions, microchip shortages, and potential market downturns precipitated by the COVID-19 pandemic.

The full extent of the future impact of the COVID-19 pandemic on our operational and financial performance is uncertain and will depend on many factors outside our control, including, without limitation, the timing, extent, trajectory and duration of the pandemic; the availability, distribution and effectiveness of vaccines; the spread of new variants of COVID-19; the continued and renewed imposition of protective public safety measures; the continuing global disruption in supply chains in our industries; and the impact of the pandemic on the global economy and demand for consumer products. Although we are unable to predict the full impact and duration of the COVID-19 pandemic on our business, we are actively managing our financial expenditures in response to continued uncertainty. Further discussion of the potential impacts on our business from the COVID-19 pandemic is provided under Part I, *Item 1A – Risk Factors*.

Key Metrics

In evaluating our financial condition and operating performance, we focus on revenue and cash flow from operations. For the year ended December 31, 2021 as compared to the year ended December 31, 2020:

- Revenue decreased by $14.3 million, or 2%, from $892.0 million to $877.7 million. The decrease was primarily due to past royalty revenue from the Comcast Corporation ("Comcast") license executed in the fourth quarter of 2020 and declines in revenue from the Semiconductor IP licensing business and the Product business driven largely by supply chain disruptions from the COVID-19 pandemic, partially offset by the inclusion of a full year of post-merger revenue from TiVo in 2021.
- Cash provided by operating activities decreased by $192.8 million, or 45%, from $427.6 million to $234.8 million. The decrease was primarily due to past royalties received from Comcast in the fourth quarter of 2020, partially offset by reductions in merger-related transaction costs and litigation expense in 2021 as compared to 2020.

Results of Operations

Significant events occurred over the past two years that affect the comparability of our financial statements. Key events and their financial impacts include the following:

- On November 9, 2020, we entered into a patent license agreement (the "Agreement") with Comcast Corporation ("Comcast") and certain of its affiliates. In connection with the Agreement, we resolved all of the outstanding litigation with Comcast. The Agreement is effective as of the expiration of Comcast's prior agreement in 2016 and its term continues into 2031. Due to revenue recognized for the unlicensed period from 2016, the Agreement had a significant positive impact on our financial results and cash flows in 2020.

- On June 1, 2020, we completed the Mergers with TiVo. As a result, we incurred significant one-time expenses in 2020 such as transaction related costs (e.g. bankers fees, legal fees, consultant fees), lease impairment charges due to facilities consolidation, severance and retention costs (including stock-based compensation expense resulting from the contractually-required acceleration of equity instruments for departing executives). Additionally, our amortization expense increased significantly due to the valuation of TiVo's intangible assets recorded as a result of the Mergers. TiVo's results of operations and cash flows have been included in our consolidated financial statements for periods subsequent to June 1, 2020.

Revenue

We derive the majority of our revenue from the licensing of our technologies and intellectual property ("IP") rights to customers. For our revenue recognition policy including descriptions of revenue-generating activities, refer to "Note 4 – *Revenue*" of the Notes to Consolidated Financial Statements.

The following table presents our historical operating results for the periods indicated as a percentage of revenue:

	Years ended December 31,		
	2021	**2020**	**2019**
Revenue	100%	100%	100%
Operating expenses:			
Cost of revenue, excluding depreciation and amortization of intangible assets	14	8	3
Research, development and other related costs	27	22	40
Selling, general and administrative	30	28	42
Depreciation expense	3	2	2
Amortization expense	23	18	36
Litigation expense	1	2	2
Total operating expenses	98	80	125
Operating income (loss)	2	20	(25)
Interest expense	(5)	(4)	(8)
Other income and expense, net	—	—	3
Loss on debt extinguishment	(1)	(1)	—
Income (loss) before taxes	(4)	15	(30)
Provision for (benefit from) income taxes	3	(1)	(7)
Net income (loss)	(7)%	16%	(23)%

The following table sets forth our revenue by year (in thousands, except for percentages):

	Years Ended December 31,			2021 vs. 2020	
	2021	**2020**	**2019**	**Increase**	**% Change**
Revenue	$ 877,696	$ 892,020	$ 280,067	$ (14,324)	(2)%

The $14.3 million or 2% decrease in revenue for the year ended December 31, 2021, compared to the prior year, was primarily due to past royalty revenue from Comcast recorded in the fourth quarter of 2020 and declines in revenue from the Semiconductor IP licensing business and the Product business driven largely by supply chain disruptions from the COVID-19 pandemic, partially offset by the inclusion of a full year of post-merger revenue from TiVo in 2021.

On November 9, 2020, we entered into a patent license agreement (the "Comcast Agreement") with Comcast and, as a result, we resolved all outstanding litigation with Comcast. The Comcast Agreement is effective as of the expiration of Comcast's prior agreement in 2016 and its term continues into 2031. The Comcast Agreement provided for an initial payment by Comcast upon execution and provides for ongoing payments through the remainder of the Comcast Agreement. In connection with the

Comcast Agreement, we recorded revenue for past royalties in the fourth quarter of 2020 and expect to recognize revenue from the prospective license into 2031.

Cost of revenue, Excluding Depreciation and Amortization of Intangible Assets

Cost of revenue, excluding depreciation and amortization of intangible assets, consists primarily of employee-related costs, royalties paid to third parties, hardware product-related costs, maintenance costs and an allocation of facilities costs, as well as service center and other expenses related to providing our technology solution offerings and NRE services.

Cost of revenue, excluding depreciation and amortization of intangible assets, for the year ended December 31, 2021 was $126.8 million, as compared to $78.4 million for the year ended December 31, 2020, an increase of $48.4 million. The increase was primarily due to the inclusion of a full year of post-merger TiVo costs, and secondarily from the growth in our hardware product sales in 2021.

Research, Development and Other Related Costs

Research, development and other related costs ("R&D expense") are comprised primarily of employee-related costs, stock-based compensation expense, engineering consulting expenses associated with new product and technology development, product commercialization, quality assurance and testing costs, as well as costs related to patent applications and examinations, reverse engineering, materials, supplies, and an allocation of facilities costs. All research, development and other related costs are expensed as incurred.

R&D expense for the year ended December 31, 2021 was $232.2 million as compared to $195.2 million for the year ended December 31, 2020, an increase of $37.0 million. The increase was primarily due to the inclusion of a full year of post-merger TiVo R&D expenses in 2021, as well as employees hired in connection with the acquisition of certain assets of MobiTV on May 31, 2021, partially offset by a decrease in personnel-related costs resulting from cost synergies implemented subsequent to the Mergers.

We believe that a significant level of R&D expense will be required for us to remain competitive in the future.

Selling, General and Administrative

Selling expenses consist primarily of compensation and related costs for sales and marketing personnel engaged in sales and licensee support, reverse engineering personnel and services, marketing programs, public relations, promotional materials, travel, trade show expenses, and stock-based compensation expense. General and administrative expenses consist primarily of compensation and related costs for general management, information technology, finance personnel, legal fees and expenses, facilities costs, stock-based compensation expense, and professional services. Our general and administrative expenses, other than facilities-related expenses, are not allocated to other expense line items.

Selling, general and administrative expenses for the year ended December 31, 2021 were $266.1 million, as compared to $245.4 million for the year ended December 31, 2020, an increase of $20.7 million. The increase was due principally to the inclusion of a full year of post-merger TiVo SG&A expenses, partially offset by decreases in merger-related transaction costs, severance and retention, and provision for credit losses as well as decreased personnel-related costs resulting from cost synergies implemented in 2021.

Depreciation Expense

Depreciation expense was $23.8 million for the year ended December 31, 2021, as compared to $17.9 million for the year ended December 31, 2020, an increase of $5.9 million. The increase was primarily attributable to depreciation expense on TiVo fixed assets added through the Mergers in June 2020.

Amortization Expense

Amortization expense for the year ended December 31, 2021 was $203.4 million, as compared to $156.8 million for the year ended December 31, 2020, an increase of $46.6 million. The increase was primarily attributable to amortization of intangible assets recorded in connection with the Mergers in June 2020, and secondarily due to a significant amount of intangible assets acquired in the fourth quarter of 2020, which was partially offset by certain acquired intangible assets becoming fully amortized in the fourth quarter of 2021. As a result of the Mergers, we anticipate that amortization expenses will continue to be a significant expense since we acquired approximately $878.0 million in intangible assets which will be amortized over the next several years. See "Note 10 - *Goodwill and Identified Intangible Assets*" in the Notes to Consolidated Financial Statements for additional information.

Litigation Expense

Litigation expense for the year ended December 31, 2021 was $11.6 million, as compared to $20.8 million for the year ended December 31, 2020, a decrease of $9.2 million. The decrease was primarily due to the resolution of prior litigation and reduced case activity.

We expect that litigation expense will continue to be a material portion of our operating expenses. Litigation expense may fluctuate between periods because of planned or ongoing litigation, as described in Part I, Item 3 – Legal Proceedings, and because of litigation planned for or initiated from time to time in the future in order to enforce and protect our intellectual property and contract rights.

Upon expiration of our customers' licenses, if those licenses are not renewed, litigation may become necessary to secure payment of reasonable royalties for the use of our patented technology. If we plan for or initiate such litigation, our future litigation expenses may increase.

Stock-based Compensation Expense

The following table sets forth our stock-based compensation ("SBC") expense for the years ended December 31, 2021, 2020 and 2019 (in thousands):

	Years Ended December 31,		
	2021	2020	2019
Cost of revenue, excluding depreciation and amortization of intangible assets	$ 1,972	$ 781	$ —
Research, development and other related costs	19,833	13,592	14,643
Selling, general and administrative	36,377	24,762	16,911
Total stock-based compensation expense	$ 58,182	$ 39,135	$ 31,554

Stock-based compensation awards include restricted stock awards and units, employee stock plan purchases and employee stock options. The increase in stock-based compensation for the year ended December 31, 2021, compared to the prior year, was primarily a result of including a full year of SBC expense from assumed TiVo stock awards from the Mergers and increases in stock award grants for an expanded workforce as a result of the Mergers.

Interest Expense

Interest expense for the year ended December 31, 2021 was $39.0 million, as compared to $37.9 million for the year ended December 31, 2020. The increase in interest expense was primarily a result of a higher average debt balance in 2021 as compared to 2020 as we entered into a new term loan of $1,050 million on June 1, 2020 to refinance the indebtedness of the combined companies in connection with the Mergers, partially offset by a reduction in interest rate as a result of the debt refinancing in June 2021 described below.

We anticipate interest expense will decrease in 2022 when compared to 2021 as a result of a full year of the lower debt balance and amortization of debt discount and issuance costs. However, those reductions could potentially be offset by increasing interest rates since our interest rate is variable.

Other Income and Expense, Net

Other income and expense, net, for the year ended December 31, 2021 was $2.6 million, as compared to $4.5 million for the year ended December 31, 2020. Other income was lower in the current year principally due to a decrease in interest income from significant financing components from revenue contracts, and secondarily from a decline in interest income from our short-term investments.

Loss on Debt Extinguishment

In June 2021, we refinanced the 2020 Term B Loan Facility by, among other things, lowering the interest rate on the debt. Certain lenders of the original loan syndication did not participate in the refinancing. Accordingly, we accounted for the refinancing event for these lenders as a debt extinguishment and recorded, in 2021, a loss on debt extinguishment of $8.0 million related to the write-off of unamortized debt discount and issuance costs for the portions of the 2020 Term B Loan Facility considered to be extinguished.

In June 2020, in connection with the Mergers we refinanced the indebtedness of the combined companies by entering into the 2020 Term B Loan Facility, and consequently recognized a loss of $8.3 million on early debt extinguishment on the legacy debt of TiVo in 2020.

Provision for (benefit from) Income Taxes

For the year ended December 31, 2021, we recorded an income tax provision of $28.4 million on a pretax loss of $30.5 million, which resulted in an effective tax rate of (92.9)%. The income tax expense of $28.4 million was primarily related to foreign withholding taxes, unrealized foreign exchange loss from prior year South Korea refund claims, tax on profitable foreign subsidiary earnings, state income taxes and BEAT, partially offset by releases of unrecognized tax benefits. The negative tax rate is the result of a tax expense recorded against a pre-tax loss.

For the year ended December 31, 2020, we recorded an income tax benefit of $7.9 million on a pretax income of $135.9 million, which resulted in an effective tax rate of (5.8)%. The income tax benefit of $7.9 million was primarily related to a net decrease in valuation allowance as a result of the Mergers, eligible deductions from foreign-derived intangible income (“FDII”), releases of unrecognized tax benefits due to the lapse of applicable statutes of limitation, deductibility of certain transaction expenses, and unrealized foreign exchange gains from the prior period South Korea refund claim, partially offset by tax expense from operating income, withholding taxes, shortfalls from stock-based compensation, and certain non-deductible expenses.

The year-over-year increase in income tax expense is largely attributable to the inclusion of twelve months of TiVo activity in the current year and to further declines in the dollar value of the South Korea refund claim.

During the fourth quarter of 2019, we filed a refund claim for foreign taxes previously withheld from licensees in South Korea based on court rulings in South Korea and other business factors. These previously-withheld foreign taxes were claimed as a foreign tax credit in the U.S. As a result of the 2019 refund claim and planned refund claims for 2020 and 2021, we recorded a total of $118.1 million and $123.0 million as a noncurrent income tax receivable at December 31, 2021 and 2020, respectively, $63.1 million and $62.3 million as a noncurrent income tax payable at December 31, 2021 and 2020, respectively, and $40.6 million and $36.7 million as a reduction in deferred tax assets at December 31, 2021 and 2020, respectively. Although the refund claim is subject to judicial review, we anticipate we will receive refunds in the amount recorded in the receivable.

The need for a valuation allowance requires an assessment of both positive and negative evidence when determining whether it is more-likely-than-not that deferred tax assets are recoverable. Such assessment is required on a jurisdiction-by-jurisdiction basis. In making such assessment, significant weight is given to evidence that can be objectively verified. After considering both positive and negative evidence to assess the recoverability of our net deferred tax assets, we determined that it was not more-likely-than-not that we would realize our federal, certain state and certain foreign deferred tax assets given the substantial amount of tax attributes that will remain unutilized to offset reversing deferred tax liabilities as of December 31, 2021. We intend to continue maintaining a full valuation allowance on our federal deferred tax assets until there is sufficient evidence to support the reversal of all or some portion of these allowances. However, given our current earnings and anticipated future earnings, we believe that there is a reasonable possibility that within the next 12 months, sufficient positive evidence may become available to allow us to reach a conclusion that a significant portion of the federal valuation allowance will no longer be needed. Release of the valuation allowance would result in the recognition of certain federal deferred tax assets and a decrease to income tax expense for the period the release is recorded. However, the exact timing and amount of the valuation allowance release are subject to change based on the factors present when reevaluating both positive and negative evidence.

Segment Operating Results

We operate in two reportable segments: (1) IP Licensing and (2) Product. There are certain corporate overhead costs that are not allocated to these reportable segments because these operating amounts are not considered in evaluating the operating performance of our business segments.

Our Chief Executive Officer has been determined to be the Chief Operating Decision Maker ("CODM") in accordance with the authoritative guidance on segment reporting.

In our IP Licensing segment, we primarily license our innovations to leading companies in the broader entertainment industry, and those developing new technologies that will help drive this industry forward. Licensing arrangements include access to one or more of our foundational patent portfolios and may also include access to some of our industry-leading technologies and proven know-how. In our Product segment, we derive the majority of the revenue from licensing our technology to customers primarily through Technology License arrangements and Technology Solutions arrangements. For Technology License arrangements, the customer obtains rights to the technology delivered at the commencement of the agreement. For Technology Solutions arrangements, the customer receives access to a platform, media or data that includes frequent updates, where access to such updates is critical to the functionality of the technology.

We do not identify or allocate assets by reportable segment, nor does the CODM evaluate reportable segments using discrete asset information. Reportable segments do not record inter-segment revenue and accordingly there are none to report. Although the CODM uses operating income to evaluate reportable segments, operating costs included in one segment may benefit other segments.

The following table sets forth our segment revenue, operating expenses and operating income (loss) for the years ended December 31, 2021, 2020 and 2019 (in thousands):

	Years Ended December 31,		
	2021	**2020** (2)	**2019**
Revenue:			
IP Licensing segment	$ 391,212	$ 515,919	$ 81,943
Product segment	486,484	376,101	198,124
Total revenue	877,696	892,020	280,067
Operating expenses:			
IP Licensing segment	142,790	113,363	44,542
Product segment	449,350	351,913	186,562
Unallocated operating expenses (1)	271,744	249,117	117,671
Total operating expenses	863,884	714,393	348,775
Operating income (loss):			
IP Licensing segment	248,422	402,556	37,401
Product segment	37,134	24,188	11,562
Unallocated operating expenses (1)	(271,744)	(249,117)	(117,671)
Total operating income (loss)	$ 13,812	$ 177,627	$ (68,708)

(1) Unallocated operating expenses consist primarily of selling, marketing, general and administrative expenses, such as administration, human resources, finance, information technology, corporate development and procurement. These expenses are not allocated because these amounts are not considered in evaluating the operating performance of our business segments.

(2) Includes seven months of financial results of TiVo following the Mergers.

For year ended December 31, 2021, the unallocated operating expenses were $271.7 million compared to $249.1 million for the year ended December 31, 2020. The increase of $22.6 million was due primarily to the inclusion of a full year of post-merger TiVo expenses, partially offset by decreases in merger-related transaction costs, severance and retention, and provision for credit losses in 2021.

The revenue and operating income (loss) amounts in this section have been presented on a basis consistent with GAAP applied at the segment level. Of our $851.1 million in goodwill at December 31, 2021, approximately $527.8 million was allocated to our Product segment and approximately $323.3 million was allocated to our IP Licensing segment.

IP Licensing Segment

	Years Ended December 31,		
	2021	2020	2019
	(in thousands)		
Revenue	$ 391,212	$ 515,919	$ 81,943
Operating expenses:			
Cost of revenue	1,131	462	—
Research, development and other related costs	37,328	35,129	27,807
Litigation	5,271	17,891	3,471
Depreciation	970	1,288	1,393
Amortization	98,090	58,593	11,871
Total operating expenses (1)	142,790	113,363	44,542
Total operating income	$ 248,422	$ 402,556	$ 37,401

(1) Excludes operating expenses which are not allocated on a segment basis.

The decrease in revenue in 2021, as compared to 2020, was primarily attributable to past royalty revenue from Comcast recorded in the fourth quarter of 2020 as discussed in "Results of Operations," and secondarily a decline in revenue from the Semiconductor IP licensing business, partially offset by the inclusion of a full year of post-merger IP Licensing revenue from TiVo in 2021.

The increase in operating expenses in 2021, as compared to 2020, was primarily due to the inclusion of a full year of post-merger TiVo IP Licensing expenses, partially offset by a decrease in litigation expenses in 2021.

We expect that litigation expense will continue to be a material portion of our operating expenses and may fluctuate between periods because of planned or ongoing litigation, as described in Part I, Item 3 – *Legal Proceedings*, and because of litigation planned for or initiated from time to time in the future in order to enforce and protect our intellectual property and contract rights.

Operating income for the years ended December 31, 2021 and 2020 was $248.4 million and $402.6 million, respectively, which represented a decrease of $154.2 million, for the reasons stated above.

Product Segment

	Years Ended December 31,		
	2021	2020	2019
	(in thousands)		
Revenue	$ 486,484	$ 376,101	$ 198,124
Operating expenses:			
Cost of revenue	125,627	77,895	8,461
Research, development and other related costs	194,869	160,025	83,043
Litigation	6,371	2,864	1,656
Depreciation	17,172	12,896	5,328
Amortization	105,311	98,233	88,074
Total operating expenses (1)	449,350	351,913	186,562
Total operating income	$ 37,134	$ 24,188	$ 11,562

(1) Excludes operating expenses which are not allocated on a segment basis.

The increase in revenue in 2021, as compared to 2020, was primarily attributable to the inclusion of a full year of post-merger Product revenue from TiVo. This increase was partially offset by a decrease in Consumer Electronics revenue driven largely by supply chain constraints that impacted our customers' shipment volumes in 2021, and from entering into minimum guarantee customer contracts of shorter duration in 2021 as compared to 2020.

The increase in operating expenses in 2021, as compared to 2020, was primarily attributable to the inclusion of a full year of post-merger TiVo Product expenses, and costs of headcount added in connection with the acquisition of certain MobiTV assets in May 2021, partially offset by a decrease in personnel-related costs resulting from cost synergies implemented subsequent to the Mergers.

Operating income for the years ended December 31, 2021 and 2020 was $37.1 million and $24.2 million, respectively, which represented an increase of $12.9 million, for the reasons stated above.

Liquidity and Capital Resources

The following table presents selected financial information related to our liquidity and significant sources and uses of cash and cash equivalents as of and for the years ended December 31, 2021, 2020 and 2019:

	December 31,		
(in thousands, except for percentages)	**2021**	**2020**	**2019**
Cash and cash equivalents	$ 201,121	$ 170,188	$ 74,551
Short-term investments	60,534	86,947	46,926
Total cash, cash equivalents and short-term investments	$ 261,655	$ 257,135	$ 121,477
Percentage of total assets	11%	10%	12%

	Years Ended December 31,		
	2021	**2020**	**2019**
Net cash from operating activities	$ 234,789	$ 427,603	$ 169,253
Net cash from investing activities	$ (6,206)	$ 17,840	$ (19,143)
Net cash from financing activities	$ (196,245)	$ (351,136)	$ (189,184)

Our primary sources of liquidity and capital resources are our operating cash flows and our short-term investments. Cash, cash equivalents and short-term investments were $261.7 million at December 31, 2021, an increase of $4.6 million from $257.1 million at December 31, 2020. This increase resulted primarily from $234.8 million in cash generated from operations and $13.8 million in proceeds from the issuance of common stock under our employee stock grant programs and employee stock purchase plans, which was partially offset by $21.0 million in dividends paid, $100.8 million in repurchases of common stock, $84.0 million in repayment of long-term debt, $17.4 million in cash used to acquire certain assets and liabilities of MobiTV, Inc. (the "MobiTV Acquisition"), $14.0 million of capital expenditures and $4.3 million in net debt refinancing costs. Cash and cash equivalents totaled $201.1 million at December 31, 2021, an increase of $30.9 million from $170.2 million at December 31, 2020.

The primary objectives of our investment activities are to preserve principal and to maintain liquidity while at the same time capturing a market rate of return. To achieve these objectives, we maintain a diversified portfolio of securities including money market funds and debt securities including corporate bonds and notes, municipal bonds and notes, commercial paper, treasury and agency notes and bills and certificates of deposit. We invest excess cash predominantly in high-quality investment grade debt securities with less than three years to maturity. Our marketable debt securities are classified as available-for-sale ("AFS") with credit losses recognized as a credit loss expense and non-credit related unrealized gains and losses, net of tax, recorded in accumulated other comprehensive income or loss.

Our material cash requirements include the following contractual and other obligations.

Debt

As of December 31, 2021, we had outstanding long-term debt in an aggregate principal amount of $789.8 million, with $40.5 million payable within 12 months. Future interest payments associated with the debt, based on current interest rates, total $153.6 million, with $27.8 million payable within 12 months. The interest payments may vary with changes in interest rates. Refer to "Note 11 – Debt" of the Notes to Consolidated Financial Statements for additional information on debt obligations and maturities.

Leases

We have lease arrangements for office and research facilities, data centers and office equipment. As of December 31, 2021, fixed lease payment obligations amounted to $79.7 million, with $19.7 million payable within 12 months. Refer to “Note 8 – Leases” of the Notes to Consolidated Financial Statements for additional information on lease obligations and maturities.

Inventory Purchase Commitments

We use contract manufacturers to provide manufacturing services for our products. As of December 31, 2021, we had total purchase commitments for inventory of $15.4 million, all of which is payable within 12 months.

Other Purchase Obligations

Our other purchase obligations primarily consist of noncancelable obligations related to advertising, engineering services and internet and telecommunications services. As of December 31, 2021, we had purchase obligations of $122.7 million, with $33.4 million payable within 12 months. These purchase obligations represent commitments under enforceable and legally binding agreements, and do not represent the entire anticipated purchases in the future. Refer to “Note 16 – Commitments and Contingencies” of the Notes to Consolidated Financial Statements for additional detail.

Income Tax Payable

As of December 31, 2021, we had accrued $91.6 million of unrecognized tax benefits in long-term income taxes payable related to uncertain tax positions, which includes $2.8 million of accrued interest and penalties. At this time, we are unable to reasonably estimate the timing of the long-term payments or the amount by which the liability will increase or decrease over time. If we are successful in receiving our South Korean withholding tax refunds of $118.1 million, including interest and foreign exchange gain, then $63.1 million of unrecognized tax benefit would be payable to the U.S. tax authorities.

In addition to the cash requirements outlined above, we have returned cash to stockholders through both quarterly dividend payments and repurchases of our common stock under our stock repurchase plan.

Quarterly Dividends

In 2021, we paid quarterly dividends of $0.05 per share in each of March, June, September and December. In 2020, we paid quarterly dividends of $0.20 per share in each of March and May and quarterly dividends of $0.05 per share in each of September and December. Our capacity to pay dividends in the future depends on many factors, including our financial condition, results of operations, capital requirements, capital structure, industry practice and other business conditions that the Board of Directors considers relevant.

Stock Repurchase Plan

Following the closing of the Mergers, on June 12, 2020, our Board of Directors terminated a prior stock repurchase program and approved a new stock repurchase plan (the “Plan”) providing for the repurchase of up to $150.0 million of our common stock dependent on market conditions, share price and other factors. No expiration has been specified for this Plan. On April 22, 2021, our Board of Directors authorized an additional $100.0 million of purchases under the Plan. The stock repurchases may be made from time to time, through solicited or unsolicited transactions in the open market, in privately negotiated transactions, or pursuant to a Rule 10b5-1 plan. Since the inception of the Plan, and through December 31, 2021, we have repurchased an aggregate of approximately 9.0 million shares of common stock at a total cost of $155.0 million at an average price of $17.29. During the year ended December 31, 2021, our repurchases totaled $84.9 million. As of December 31, 2021, the total remaining amount available for repurchase under the Plan was $95.0 million. We may continue to execute authorized repurchases from time to time under the Plan. The amount and timing of any repurchases under the Plan depend on a number of factors, including but not limited to, the trading price, volume and availability of our common shares. In addition, as we plan for the separation of our Product business and IP Licensing business we may reduce or suspend share repurchases as we plan for the capital needs of two independent businesses. There is no guarantee that such repurchases under the Plan will enhance the value of our common stock.

From 2019 through 2021, we generated approximately $831.6 million of cash flows from operating activities. While we expect to continue to generate cash flows from operating activities in 2022, the COVID-19 pandemic continues to present uncertainties as to the level of such cash flows as compared to prior years. Additionally, transaction costs relating to the planned separation of our two business segments are expected to impact operating cash flow for at least the next 9 months. We have taken actions to manage cash flows by reducing discretionary spending and other variable costs, and closely monitoring receivables and payables.

We believe that based on current levels of operations and anticipated growth, our cash from operations, together with cash, cash equivalents and investments currently available, will be sufficient to satisfy our currently anticipated cash requirements through at least the next twelve (12) months and thereafter for the foreseeable future. Poor financial results, unanticipated expenses, unanticipated acquisitions of technologies or businesses, or unanticipated strategic investments could give rise to additional financing requirements sooner than we expect. There can be no assurance that equity or debt financing will be available when needed or, if available, that such financing will be on terms satisfactory to us. The sale of additional equity securities could result in dilution to our stockholders. The incurrence of indebtedness would result in increased debt service obligations and may include covenants that would restrict our operations.

Cash Flows from Operating Activities

Cash flows provided by operations were $234.8 million for the year ended December 31, 2021, primarily due to our net loss of $58.9 million being adjusted for non-cash items of depreciation of $23.8 million, amortization of intangible assets of $203.4 million, stock-based compensation expense of $58.2 million, and a loss on debt extinguishment of $8.0 million.

Cash flows provided by operations were $427.6 million for the year ended December 31, 2020, primarily due to our net income of $143.8 million, non-cash items of depreciation of $17.9 million, amortization of intangible assets of $156.8 million, stock-based compensation expense of $39.1 million and loss on debt extinguishment of $8.3 million, plus $76.8 million in changes in operating assets and liabilities. These increases were partially offset by a reduction of $34.7 million in deferred income taxes.

Cash Flows from Investing Activities

Net cash used in investing activities was $6.2 million for the year ended December 31, 2021, primarily related to purchases of short-term investments of $67.3 million, cash used in the MobiTV Acquisition of $17.4 million and capital expenditures of $14.0 million, partially offset by maturities and sales of securities of $92.7 million.

Net cash provided by investing activities was $17.8 million for the year ended December 31, 2020, primarily related to net cash acquired in the Mergers of $117.4 million and maturities and sales of securities of $35.9 million, partially offset by purchases of short-term investments of $77.2 million, purchases of intangible assets of $50.9 million and capital expenditures of $7.4 million.

Capital Expenditures

Our capital expenditures for property, plant, and equipment consist primarily of purchases of computer hardware and software, information systems, production and test equipment. During the years ended December 31, 2021 and 2020, we spent $14.0 million and $7.4 million on capital expenditures, respectively, and we expect capital expenditures in 2022 to be between $20.0 million to $25.0 million. These expenditures are expected to be financed with cash from operations, existing cash and cash equivalents, and short-term investments. There can be no assurance that current expectations will be realized and plans are subject to change upon further review of our capital expenditure needs.

Cash Flows from Financing Activities

Net cash used in financing activities was $196.2 million for the year ended December 31, 2021 principally due to $84.0 million in repayment of indebtedness, $4.3 million in net debt refinancing costs, $21.0 million in dividends paid, and $100.8 million in repurchases of common stock, partially offset by $13.8 million in proceeds from the issuance of common stock under our employee stock grant programs and employee stock purchase plans.

Net cash used in financing activities was $351.1 million for the year ended December 31, 2020 principally due to $1,254.9 million in repayment of indebtedness, $80.6 million in repurchases of common stock and $30.8 million in dividends paid, partially offset by $1,010.3 million in net long-term debt proceeds and $4.9 million in proceeds due to the issuance of common stock under our employee stock option programs and employee stock purchase plans.

Long-term Debt

On December 1, 2016, we entered into a Credit Agreement with Royal Bank of Canada (“RBC”) which provided for a $600.0 million seven-year term B loan facility. The Term B Loan Facility was scheduled to mature on November 30, 2023. During 2019 we made three voluntary principal payments totaling $150.0 million, and upon consummation of the Mergers on June 1, 2020, we repaid the full remaining balance of $344.0 million under the Credit Agreement. In addition, upon consummation of the Mergers on June 1, 2020, we repaid $734.6 million of assumed TiVo debt with the proceeds from a new borrowing of $1,050 million discussed below.

On June 1, 2020, in connection with the consummation of the Mergers, we entered into a Credit Agreement (the “2020 Credit Agreement”) by and among us, the lenders party thereto and Bank of America, N.A., as administrative agent and collateral agent. The 2020 Credit Agreement provided for a five-year senior secured term B loan facility in an aggregate principal amount of $1,050 million (the “2020 Term B Loan Facility”). The interest rate applicable to loans outstanding under the 2020 Term B Loan Facility was equal to, at our option, either (i) a base rate plus a margin of 3.00% per annum or (ii) LIBOR plus a margin of 4.00% per annum. Commencing on September 30, 2020, the 2020 Term B Loan Facility was amortized in quarterly installments equal to (i) with respect to repayments occurring on or prior to June 1, 2023, 1.25% of the original principal amount of the 2020 Term B Loan Facility and (ii) with respect to repayments occurring after June 1, 2023 and prior to June 1, 2025, 1.875% of the original principal amount of the 2020 Term B Loan Facility, with the balance payable on the maturity date of the 2020 Term B Loan Facility (in each case subject to adjustment for prepayments). The 2020 Term B Loan Facility was scheduled to mature on June 1, 2025. Upon the closing of the 2020 Credit Agreement, we borrowed $1,050 million under the 2020 Term B Loan Facility. Net proceeds were used on June 1, 2020, together with cash and cash equivalents, to repay existing indebtedness of the combined Company, including the aforementioned Term B Loan Facility with RBC. We commenced repaying quarterly installments under the 2020 Term B Loan Facility in the third quarter of 2020. The agreement permitted prepayment of principal without penalty and on December 31, 2020, we elected to make a voluntary principal payment of $150.0 million. On June 8, 2021, we paid down $50.6 million in principal balance and completed a refinancing of the 2020 Term B Loan Facility by entering into an amendment to the 2020 Term B Loan Facility (the “Refinanced Term B Loans”) to provide a new loan facility in the amount of $810.0 million, reducing the borrowing rate by 50 basis points and extending the loan maturity date to June 2028. We commenced repaying quarterly installments under the Refinanced Term B Loans in the third quarter of 2021.

At December 31, 2021, $789.8 million was outstanding under the Refinanced Term B Loans with an interest rate, including amortization of debt discount and issuance costs, of 4.2%. Interest is payable monthly. Under the existing loan agreements, we have future minimum principal payments for our debt of $40.5 million in each year from 2022 through 2027, with the remaining principal balance of $546.8 million due in 2028. We are obligated to pay a portion of excess cash flow on an annual basis beginning in March 2023 based on certain leverage ratios and our excess cash flow generated for the immediately preceding calendar year. The Refinanced Term B Loans contain customary covenants, and as of December 31, 2021, we were in full compliance with such covenants.

Critical Accounting Policies and Estimates

Management’s discussion and analysis of our financial condition and results of operations are based upon our consolidated financial statements. These financial statements have been prepared in conformity with generally accepted accounting principles (“GAAP”) in the United States which requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenue and expenses, and related disclosure of contingent assets and liabilities. By their nature, these estimates and judgments are subject to an inherent degree of uncertainty. We evaluate our estimates based on our historical experience and various other assumptions that are believed to be reasonable under the circumstances. These estimates relate to revenue recognition, the assessment of recoverability of goodwill and intangible assets, business combinations, recognition and measurement of deferred income tax assets and liabilities, the assessment of unrecognized tax benefits, and others. Actual results could differ from those estimates, and material effects on our operating results and financial position may result.

We believe the following accounting policies and estimates are most critical to understanding our consolidated financial statements. See “Note 2 - *Summary of Significant Accounting Policies*” and “Note 4 - *Revenue*” of the Notes to Consolidated Financial Statements for a full description of our accounting policies.

Revenue recognition

We derive the majority of our revenue from the licensing of our technologies and intellectual property (“IP”) rights to customers. Generally, revenue is recognized upon transfer of control of promised products, services or technologies and IP rights to customers in an amount that reflects the consideration that we expect to receive in exchange for those products, services or licensing of the technologies and IP rights. The primary judgments include estimating licensees’ quarterly royalties prior to receiving the royalty reports, estimating variable consideration, identifying the performance obligations in the contract, determining stand-alone selling price and the transaction price, and allocating consideration in an arrangement with multiple performance obligations.

We generally recognize royalty revenue from per-unit or per-subscriber licenses based on units shipped or manufactured. Revenue is recognized in the period in which the customer's sales or production are estimated to have occurred. This may result in an adjustment to revenue when actual sales or production are subsequently reported by the customer, generally in the month or quarter following sales or production. Estimating customers' quarterly royalties prior to receiving the royalty reports requires us to make significant assumptions and judgments related to forecasted trends and growth rates used to estimate quantities shipped or manufactured by customers, which could have a material impact on the amount of revenue we report on a quarterly basis.

At times, we enter into license agreements in which a licensee is released from past patent infringement claims or is granted a license to ship an unlimited number of units or for an unlimited number of subscribers over a future period for a fixed fee. In these arrangements, we allocate the transaction price between the release for past patent infringement claims and the future license. In determining the stand-alone selling price of the release for past patent infringement claims and the future license, we consider such factors as the number of units shipped in the past or the number of past subscribers and the relevant geographies of the shipped units or subscribers, the future number of subscribers or units, as well as the licensing rate we generally receive for per-subscriber or units shipped in the same geographies. As the release from past patent infringement claims is generally satisfied at execution of the agreement, the transaction price allocated to the release from past patent infringement claims is generally recognized in the period the agreement is executed and the amount of transaction price allocated to the future license is recognized ratably over the future license term.

Business combinations

The fair value valuation of assets acquired and liabilities assumed in a business combination under ASC 805 requires management to make significant estimates and assumptions. Critical estimates in determining the fair value of certain intangible assets include, but are not limited to: future expected cash flows from customer contracts, customer lists, and acquired developed technologies and patents; competitive trends and market comparables; brand awareness and market position, as well as assumptions about the period of time the brand will continue to be used in our product portfolio; and discount rates. For additional information, refer to "Note 9 – *Business Combinations*" of the Notes to Consolidated Financial Statements.

Valuation of goodwill and intangible assets

We perform an annual review of the valuation of goodwill as of the beginning of the fourth quarter, or more often if indicators of impairment exist. Triggering events for impairment reviews may be indicators such as adverse industry or economic trends, restructuring actions, lower projections of profitability, or a sustained decline in our market capitalization. Evaluations of possible impairment and, if applicable, adjustments to carrying values require us to estimate, among other factors, future cash flows, useful lives, and fair market values of our reporting units and assets. When we conduct our evaluation of goodwill, the fair value of goodwill is assessed using valuation techniques that require significant management estimates and judgment. Should conditions be different from management's last assessment, significant impairments of goodwill may be required, which would adversely affect our operating results.

As part of the annual goodwill impairment test, we elected to proceed with a quantitative goodwill impairment test as of October 1, 2021. Based on the quantitative assessment, we concluded that the fair value of the reporting units exceeded the carrying amount for both the Product and IP Licensing reporting units with the fair value calculated as approximately 25% and 200% in excess of the respective carrying value for each of the Product and IP Licensing reporting units. In performing the quantitative impairment test for goodwill, the fair value of the reporting unit is compared to its carrying amount. We determine the fair value of a reporting unit using weighted results derived from an income approach and market approaches. Under the income approach, the fair value of a reporting unit is estimated based on the present value of future cash flows and considers projected revenue growth rates, future operating margins, income tax rates and economic and market conditions, as well as risk-adjusted discount rates. Under the market approaches, the fair value of a reporting unit is estimated based on the market comparable method, which estimates the fair value based on revenue multiples from comparable companies in similar lines of business, and the market transaction method, which estimates the fair value of the reporting unit by utilizing comparable transactions and transaction multiples.

Identified finite-lived intangible assets consist of acquired patents, existing technology, customer relationships, trademarks and trade names, non-compete agreements resulting from business combinations, and acquired patents under asset purchase agreements. Our identified intangible assets are amortized on a straight-line basis over their estimated useful lives, ranging from 1 to 10 years. We make judgments about the recoverability of finite-lived intangible assets whenever facts and circumstances indicate that the useful life is shorter than originally estimated or that the carrying amount of assets may not be recoverable. If such facts and circumstances exist, we assess recoverability by comparing the projected undiscounted net cash flows associated with the related asset or group of assets over their remaining lives against their respective carrying amounts. Impairments, if any, are based on the excess of the carrying amount over the fair value of those assets. If the useful life is shorter than originally estimated, we would accelerate the rate of amortization and amortize the remaining carrying value over the new shorter useful life.

Identified indefinite-lived intangible assets include TiVo trademarks and tradenames resulting from business combinations. We evaluate the carrying value of indefinite-lived intangible assets on an annual basis, and an impairment charge would be recognized to the extent that the carrying amount of such assets exceeds their estimated fair value.

Accounting for income taxes

We must make certain estimates and judgments in determining income tax expense for financial statement purposes. These estimates and judgments are used in the calculation of tax credits, tax benefits and deductions, and in the calculation of tax assets and liabilities. Significant changes to these estimates may result in an increase or decrease to our tax provision in a subsequent period.

We must assess the likelihood that we will be able to recover our deferred tax assets. If recovery is not likely on a more-likely-than-not basis, we must increase our provision for income taxes by recording a valuation allowance against our deferred tax assets. Should there be a change in our ability to recover our deferred tax assets, our provision for income taxes would fluctuate in the period of the change.

We account for uncertain tax positions in accordance with authoritative guidance related to income taxes. The calculation of our unrecognized tax benefits involves dealing with uncertainties in the application of complex tax regulations. As such, we are required to make many subjective assumptions and judgments regarding our income tax exposures. We record unrecognized tax benefits for anticipated tax audit issues in the U.S. and other tax jurisdictions based on our estimate of whether, and the extent to which, additional tax liabilities are more-likely-than-not assuming the tax authorities have full knowledge of all relevant information. If we ultimately determine that the tax liabilities are unnecessary, we reverse the liabilities and recognize a tax benefit during the period in which it occurs. This may occur for a variety of reasons, such as the expiration of the statute of limitations on a particular tax return or the completion of an examination by the relevant tax authority. We record an additional charge in our provision for taxes in the period in which we determine that the recorded unrecognized tax benefits are less than the expected ultimate settlement.

Our policy is to classify accrued interest and penalties related to the accrued liability for unrecognized tax benefits in the provision for income taxes. For the year ended December 31, 2021, we recognized $0.3 million of interest and penalties, and for the years ended December 31, 2020, and 2019, we did not recognize any significant penalties or interest related to unrecognized tax benefits. See “Note 15 - *Income Taxes*” of the Notes to Consolidated Financial Statements for additional detail.

Recent Accounting Pronouncements

See “Note 3 – *Recent Accounting Pronouncements*” of the Notes to Consolidated Financial Statements for a full description of recent accounting pronouncements including the respective expected dates of adoption.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

The primary objectives of our investment activities are to preserve principal and maintain liquidity while at the same time capturing a market rate of return. To achieve these objectives, we maintain our portfolio of cash, cash equivalents and investments in a variety of securities, which are subject to risks including:

Interest Rate Risk

As of December 31, 2021, we had $789.8 million of outstanding indebtedness that was subject to floating interest rates. Changes in economic conditions outside of our control could result in higher interest rates, thereby increasing our interest expense and reducing the funds available for capital investment, operations or other purposes. At December 31, 2021, a 1% increase in the effective interest rate on our outstanding debt throughout a one-year period would result in an annual increase in our interest expense of approximately $7.9 million. Any significant increase in our interest expense could negatively impact our results of operations and cash flows and also our ability to pay dividends in the future. If the U.S. Federal Reserve raises its benchmark interest rate, any increases would likely impact the borrowing rate on our outstanding indebtedness, and increase our interest expense, comparably.

Investment Risk

We are exposed to market risk as it relates to changes in the market value of our investments in addition to the liquidity and credit worthiness of the underlying issuers of our investments. Our investments are subject to fluctuations in fair value due to the volatility of the credit markets and prevailing interest rates for such securities. Our marketable debt securities, consisting primarily of municipal bonds and notes, corporate bonds and notes, commercial paper, treasury and agency notes and bills and certificates of deposit, are classified as available-for-sale securities with fair values of $60.5 million and $86.9 million as of December 31, 2021 and 2020, respectively. Unrealized losses, net of tax, on these investments were approximately $0.1 million and $0.1 million as of December 31, 2021 and 2020, respectively. We did not hold any derivatives, derivative commodity instruments or other similar financial instruments in our portfolio as of December 31, 2021.

Bank Liquidity Risk

As of December 31, 2021, we have approximately $159.3 million of cash in operating accounts that are held with both domestic and international financial institutions, the majority held with domestic financial institutions. These cash balances could be lost or become inaccessible if the underlying financial institutions fail or if they are unable to meet the liquidity requirements of their depositors and they are not supported by the government of the jurisdiction where such cash is held. We have not incurred any losses and have had full access to our operating accounts to date. We believe any failures of domestic and international financial institutions could impact our ability to fund our operations in the short term.

Exchange Rate Risk

Our international business is subject to risks, including, but not limited to, differing economic conditions, changes in political climate, differing tax structures, other regulations and restrictions, and foreign exchange rate volatility when compared to the U.S. dollar. Accordingly, our future results could be materially impacted by changes in these or other factors.

Due to our operations outside the U.S., we are subject to the risks of fluctuations in foreign currency exchange rates, particularly related to the Euro, Indian rupee and British pound. As a substantial majority of our non-U.S. revenue and expense transactions are denominated in U.S. dollars, fluctuations in foreign currency exchange rates could cause our products and services to become relatively more expensive to customers in a particular country, leading to a reduction in sales or profitability in that country. Some of our subsidiaries operate in their local currency, which mitigates a portion of the exposure related to fluctuations in foreign currency exchange rates.

We are also affected by exchange rate fluctuations as the financial statements of our foreign subsidiaries are translated into U.S. dollars in consolidation. As exchange rates vary, these results, when translated, may vary from expectations and could adversely or positively impact overall profitability. During 2021, the impact of foreign exchange rate fluctuations related to translation of our foreign subsidiaries’ financial statements was immaterial to our consolidated financial statements.

Item 8. Financial Statements and Supplementary Data

Our consolidated balance sheets as of December 31, 2021 and 2020, and the related consolidated statements of operations, equity, comprehensive income (loss) and cash flows for each of the years in the three-year period ended December 31, 2021 are set forth in this Annual Report at Item 15(a)(1).

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

Not applicable.

Item 9A. Controls and Procedures

Attached as exhibits to this Form 10-K are certifications of Xperi Holding Corporation’s Chief Executive Officer and Chief Financial Officer, which are required in accordance with Rules 13a-15(e) and 15d-15(e) of the Exchange Act. This “Controls and Procedures" section includes information concerning the controls and controls evaluation referred to in the certifications and it should be read in conjunction with the certifications, for a more complete understanding of the topics presented.

Evaluation of Disclosure Controls and Procedures

Xperi Holding Corporation maintains disclosure controls and procedures that are designed to ensure information required to be disclosed in our reports filed or submitted pursuant to the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and that such information is accumulated and communicated to our management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow for timely decisions regarding required disclosure. In designing and evaluating the disclosure controls and procedures, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and management is required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures.

Under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, we conducted an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act as of the end of the period covered by this report. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded as of December 31, 2021 that our disclosure controls and procedures were effective to provide reasonable assurance that the information relating to Xperi Holding Corporation, including our consolidated subsidiaries, required to be disclosed in our reports that are filed or submitted under the Exchange Act (i) is recorded, processed, summarized and reported within the time periods specified in Commission's rules and forms, and (ii) is accumulated and communicated to Xperi Holding Corporation's management, including our Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting for Xperi Holding Corporation. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Xperi Holding Corporation's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of Xperi Holding Corporation; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of Xperi Holding Corporation are being made only in accordance with authorizations of management and directors of Xperi Holding Corporation; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of Xperi Holding Corporation's assets that could have a material effect on the financial statements.

Xperi Holding Corporation's management assessed the effectiveness of our internal control over financial reporting as of December 31, 2021, utilizing the criteria described in Internal Control-Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on the assessment by Xperi Holding Corporation's management, we determined that Xperi Holding Corporation's internal control over financial reporting was effective as of December 31, 2021. The effectiveness of Xperi Holding Corporation's internal control over financial reporting as of December 31, 2021 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears on page F-1 of this Annual Report on Form 10-K.

Remediation of Previously Disclosed Material Weaknesses

As previously disclosed in our Annual Report on Form 10-K for the year ended December 31, 2020, management concluded that material weaknesses existed in the Company's internal control over financial reporting as it did not design and maintain effective controls related to the review of cash flow forecasts used in the valuation of intangible assets acquired in a business combination and the goodwill impairment analyses. Specifically, the control activities related to the review of the inputs and assumptions used in the development of cash flow forecasts used in the valuation of intangible assets acquired in a business combination and the goodwill impairment analyses were not designed at an appropriate level of precision to prevent or detect a material misstatement.

Since identifying the material weaknesses, management has implemented its plan to remediate these control deficiencies, including updating the Company's design, documentation and implementation of certain internal controls to address the previously identified control deficiencies. Management has completed its documentation, testing and evaluation of the updated internal controls and determined that, as of December 31, 2021, these controls have been appropriately designed and implemented, and have operated effectively for a sufficient period of time to conclude that the previously identified material weaknesses have been remediated.

Changes in Internal Control over Financial Reporting

During the quarterly period ended December 31, 2021, we completed the design and implementation of certain control activities related to the review of the inputs and assumptions in our cash flow forecasts. As such, there were changes to our internal control over financial reporting, as defined in Exchange Act Rules 13a-15(f) and 15d-15(f), during the quarterly period ended December 31, 2021, that have materially affected, or that are reasonably likely to materially affect, our internal control over financial reporting.

Inherent Limitations on Effectiveness of Controls

Our management, including our Chief Executive Officer and our Chief Financial Officer, does not expect that our disclosure controls and procedures or our internal control over financial reporting will prevent or detect all errors and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of internal control will be met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of the controls must be considered relative to their costs. While our disclosure controls and procedures and internal control over financial reporting are designed to provide reasonable assurance of their effectiveness, because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, will be detected. These inherent limitations include the realities that judgments in decision making can be faulty and that breakdowns can occur because of simple errors or mistakes. Controls can also be circumvented by the individual acts of some persons, by collusion of two or more people or by management override of the controls. Because of the inherent limitations in a cost-effective control system, misstatements due to error or fraud may occur and may not be detected. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Item 9B. Other Information

Not applicable.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this Item 10 is hereby incorporated by reference from the information under the captions “Executive Officers,” “Election of Directors” and “Delinquent Section 16(a) Reports” that will be contained in the Proxy Statement for our 2022 Annual Meeting of Stockholders (the “Proxy Statement”).

We have adopted a written code of business conduct and ethics that applies to our principal executive officer, principal financial officer, principal accounting officer or controller, or persons serving similar functions. The text of our code of business conduct and ethics has been posted on our website at http://www.xperi.com.

Item 11. Executive Compensation

The information required by this Item 11 is incorporated by reference from the information under the captions “Election of Directors,” “Compensation Discussion and Analysis,” “Compensation of Named Executive Officers” and “Report of the Compensation Committee” that will be contained in the Proxy Statement.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this Item 12 is incorporated by reference from the information under the captions “Equity Compensation Plan Information” and “Security Ownership of Certain Beneficial Owners and Management” that will be contained in the Proxy Statement.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this Item 13 is incorporated by reference from the information under the captions “Certain Relationships and Related Transactions” and “Election of Directors” that will be contained in the Proxy Statement.

Item 14. Principal Accountant Fees and Services

The information required by this Item 14 is incorporated by reference from the information under the caption “Ratification of Appointment of Independent Registered Public Accounting Firm” that will be contained in the Proxy Statement.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) Documents filed as part of this report:

The exhibits listed on the Exhibit Index preceding the signature page to this Annual Report are filed as part of this Annual Report.

Auditor Firm Id: 238 Auditor Name: PricewaterhouseCoopers LLP Auditor Location: San Jose, California, USA

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Xperi Holding Corporation

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Xperi Holding Corporation and its subsidiaries (the "Company") as of December 31, 2021 and 2020, and the related consolidated statements of operations, of comprehensive income (loss), of equity and of cash flows for each of the three years in the period ended December 31, 2021, including the related notes and schedule of valuation and qualifying accounts for each of the three years in the period ended December 31, 2021 appearing under Item 15 (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2021, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2021 and 2020 and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2021 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2021, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 3 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that (i) relate to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Revenue Recognition – Allocation of Transaction Price in Fixed-Fee Media IP Licensing Arrangements

As described in Note 4 to the consolidated financial statements, at times, the Company enters into long-term fixed- fee media IP license agreements in which a licensee is released from past patent infringement claims or is granted a license to ship an unlimited number of units or for an unlimited number of subscribers over a future period for a fixed fee. In these arrangements, management allocates the transaction price between the release for past patent infringement claims and the future license which requires significant management judgment. Revenue from the initial contract recognition of fixed-fee media IP licensing arrangements is a significant component of the total IP segment revenue of $391.2 million for the year ended December 31, 2021. In determining the stand-alone selling price of the release for past patent infringement claims and the future license, management considers such factors as the number of units shipped in the past or the number of past subscribers and the relevant geographies of the shipped units or subscribers, the future number of subscribers or units, as well as the licensing rate the Company generally receives for per subscriber or units shipped in the same geographies.

The principal considerations for our determination that performing procedures relating to revenue recognition – allocation of transaction price in fixed-fee media IP licensing arrangements is a critical audit matter are the significant judgment by management in (i) estimating the stand-alone selling price for certain performance obligations and (ii) allocating the transaction price on a relative stand-alone selling price basis to those individual performance obligations; this in turn led to significant auditor judgment, subjectivity and effort in performing procedures and evaluating management's estimates of the stand-alone selling price and the allocation of transaction price to the individual performance obligations.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to fixed-fee media IP licensing revenue recognition, including controls over the estimated stand-alone selling price and the allocation of transaction price to the individual performance obligations. These procedures also included, among others, for a sample of contracts, (i) reading executed contracts to understand the terms and conditions, (ii) evaluating management's identification of the individual performance obligations, (iii) evaluating and testing the reasonableness of the factors used in management's estimation of stand-alone selling price, and (iv) testing management's determination of the transaction price and the allocation of the transaction price to the individual performance obligations based on the relative stand-alone selling price. Testing the estimation of the standalone selling price involved testing the completeness and accuracy of the data utilized by management.

Goodwill Impairment Assessment - Product Reporting Unit

As described in Note 10 to the consolidated financial statements, the Company's consolidated goodwill balance was $851.1 million as of December 31, 2021, and the goodwill associated with the Product reporting unit was $527.8 million. Goodwill is evaluated for potential impairment annually, as of the beginning of the fourth quarter, and whenever events or changes in circumstances indicate the carrying amount of goodwill may not be recoverable. As part of its annual goodwill impairment test, the Company elected to proceed with a quantitative impairment test as of October 1, 2021. Based on the quantitative assessment, the Company concluded that the fair value of the Product reporting unit exceeded the carrying amount and no goodwill impairment charges were recognized. The Company first determines the fair value of a reporting unit using weighted results derived from income and market approaches, which requires significant management estimates and judgments. The fair value using an income approach is estimated through the discounted cash flow method based on assumptions about future conditions such as revenue growth rates associated with certain revenue streams, forecasted R&D expenses, the discount rate, and other assumptions. Market approaches used by management include the market comparable method, which estimates the fair value based on revenue multiples from comparable companies in similar lines of business, and the market transaction method, which estimates the fair value by utilizing comparable transactions and transaction multiples.

The principal considerations for our determination that performing procedures relating to the goodwill impairment assessment of the Product reporting unit is a critical audit matter are the significant judgment by management when determining the fair value of the reporting unit, which in turn led to significant auditor judgment, subjectivity and effort in performing procedures and evaluating management's significant assumptions related to the revenue growth rates associated with certain revenue streams, forecasted R&D expenses, and the discount rate. In addition, the audit effort involved the use of professionals with specialized skill and knowledge. As previously disclosed by management, a material weakness existed during the year related to this matter specific to the precision of the design of controls relating to the review of the inputs and assumptions used in the development of the cash flow forecasts used to estimate the fair value of the reporting unit in performing the goodwill impairment analysis.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's goodwill impairment assessment of the Product reporting unit, including controls over the valuation of the reporting unit. These procedures also included, among others, (i) testing management's process for determining the fair value of the Product reporting unit, (ii) evaluating the appropriateness of the valuation approaches, (iii) testing the completeness and accuracy of underlying data used in the estimate, and (iv) evaluating the significant assumptions related to the revenue growth rates associated with certain revenue streams, forecasted R&D expenses, and the discount rate. Evaluating management's significant assumptions related to the revenue growth rates associated with certain revenue streams and forecasted R&D expenses involved evaluating whether the assumptions used by management were reasonable considering (i) current and past performance of the reporting unit, (ii) consistency with external market and industry data, and (iii) whether these assumptions were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in the evaluation of the valuation approaches used in estimating the fair value of the reporting unit and the discount rate assumption.

/s/ PricewaterhouseCoopers LLP
San Jose, California
February 24, 2022

We have served as the Company's auditor since 1999.

XPERI HOLDING CORPORATION
CONSOLIDATED STATEMENTS OF OPERATIONS
(in thousands, except per share amounts)

	Years Ended December 31,		
	2021	2020	2019
Revenue	$ 877,696	$ 892,020	$ 280,067
Operating expenses:			
Cost of revenue, excluding depreciation and amortization of intangible assets	126,758	78,357	8,460
Research, development and other related costs	232,197	195,154	110,850
Selling, general and administrative	266,085	245,356	117,671
Depreciation expense	23,801	17,918	6,721
Amortization expense	203,401	156,826	99,946
Litigation expense	11,642	20,782	5,127
Total operating expenses	863,884	714,393	348,775
Operating income (loss)	13,812	177,627	(68,708)
Interest expense	(38,973)	(37,873)	(23,377)
Other income and expense, net	2,638	4,455	9,028
Loss on debt extinguishment	(8,012)	(8,300)	—
Income (loss) before taxes	(30,535)	135,909	(83,057)
Provision for (benefit from) income taxes	28,378	(7,887)	(19,024)
Net income (loss)	(58,913)	143,796	(64,033)
Less: Net loss attributable to noncontrolling interest	(3,456)	(2,966)	(1,503)
Net income (loss) attributable to the Company	$ (55,457)	$ 146,762	$ (62,530)
Income (loss) per share attributable to the Company:			
Basic	$ (0.53)	$ 1.77	$ (1.27)
Diluted	$ (0.53)	$ 1.75	$ (1.27)
Weighted average number of shares used in per share calculations-basic	104,735	82,840	49,120
Weighted average number of shares used in per share calculations-diluted	104,735	83,856	49,120

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

XPERI HOLDING CORPORATION
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(in thousands)

	Years Ended December 31,		
	2021	**2020**	**2019**
Net income (loss)	$ (58,913)	$ 143,796	$ (64,033)
Other comprehensive income (loss), net of tax:			
Change in foreign currency translation adjustment	(1,975)	1,345	—
Net unrealized losses on available-for-sale debt securities	(41)	(28)	275
Other comprehensive income (loss), net of tax	(2,016)	1,317	275
Comprehensive income (loss)	(60,929)	145,113	(63,758)
Less: Comprehensive loss attributable to noncontrolling interest	(3,456)	(2,966)	(1,503)
Comprehensive income (loss) attributable to the Company	$ (57,473)	$ 148,079	$ (62,255)

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

XPERI HOLDING CORPORATION
CONSOLIDATED BALANCE SHEETS
(in thousands, except for par value)

	December 31, 2021	December 31, 2020
ASSETS		
Current assets:		
Cash and cash equivalents	$ 201,121	$ 170,188
Available-for-sale debt securities	60,534	86,947
Accounts receivable, net of allowance for credit losses of $3,102 and $7,336, respectively	143,683	115,975
Unbilled contracts receivable, net	77,677	132,431
Other current assets	36,459	40,763
Total current assets	519,474	546,304
Long-term unbilled contracts receivable	4,107	6,761
Property and equipment, net	60,974	63,207
Operating lease right-of-use assets	68,498	80,226
Intangible assets, net	817,916	1,004,379
Goodwill	851,088	847,029
Other long-term assets	147,965	153,270
Total assets	$ 2,470,022	$ 2,701,176
LIABILITIES AND EQUITY		
Current liabilities:		
Accounts payable	$ 7,811	$ 13,045
Accrued legal fees	7,190	5,783
Accrued liabilities	103,515	129,035
Current portion of long-term debt	36,095	43,689
Deferred revenue	35,136	33,119
Total current liabilities	189,747	224,671
Deferred revenue, less current portion	37,107	39,775
Long-term deferred tax liabilities	19,848	24,754
Long-term debt, net	729,392	795,661
Noncurrent operating lease liabilities	54,658	66,243
Other long-term liabilities	98,842	98,953
Total liabilities	1,129,594	1,250,057
Commitments and contingencies (Note 16)		
Company stockholders' equity:		
Preferred stock: $0.001 par value; authorized (2021: 15,000 shares; 2020: 15,000 shares) and no shares issued and outstanding	—	—
Common stock: $0.001 par value; (2021: authorized 350,000 shares, issued 113,460 shares, outstanding 103,260 shares; 2020: authorized 350,000 shares, issued 110,182 shares, outstanding 104,775 shares)	113	110
Additional paid-in capital	1,340,480	1,268,471
Treasury stock at cost (2021: 10,200 shares; 2020: 5,407 shares)	(178,022)	(77,218)
Accumulated other comprehensive income (loss)	(752)	1,264
Retained earnings	187,814	264,250
Total Company stockholders' equity	1,349,633	1,456,877
Noncontrolling interest	(9,205)	(5,758)
Total equity	1,340,428	1,451,119
Total liabilities and equity	$ 2,470,022	$ 2,701,176

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

XPERI HOLDING CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands)

	Years Ended December 31,		
	2021	2020	2019
Cash flows from operating activities:			
Net income (loss)	$ (58,913)	$ 143,796	$ (64,033)
Adjustments to reconcile net income (loss) to net cash from operating activities:			
Depreciation of property and equipment	23,801	17,918	6,721
Amortization of intangible assets	203,401	156,826	99,946
Stock-based compensation expense	58,182	39,135	31,554
Deferred income tax	(978)	(34,670)	(38,611)
Loss on debt extinguishment	8,012	8,300	—
Patent assets received in lieu of cash	(8,787)	—	—
Other	5,488	19,500	2,654
Changes in operating assets and liabilities:			
Accounts receivable	(27,615)	7,091	6,191
Unbilled contracts receivable, net	58,496	76,262	130,359
Other assets	7,497	(41,948)	3,675
Accounts payable	(5,234)	(4,863)	1,886
Accrued and other liabilities	(27,910)	21,692	(8,679)
Deferred revenue	(651)	18,564	(2,410)
Net cash from operating activities	234,789	427,603	169,253
Cash flows from investing activities:			
Purchases of property and equipment	(13,950)	(7,379)	(8,813)
Proceeds from sale of property and equipment	19	—	55
Net cash received (paid) for mergers and acquisitions	(17,400)	117,424	—
Purchases of short-term investments	(67,343)	(77,178)	(40,008)
Proceeds from sales of short-term investments	49,768	11,225	6,833
Proceeds from maturities of short-term investments	42,886	24,683	27,290
Purchases of intangible assets	(186)	(50,935)	(4,500)
Net cash from investing activities	(6,206)	17,840	(19,143)
Cash flows from financing activities:			
Repayment of debt	(84,048)	(520,250)	(150,000)
Repayment of assumed debt from merger transaction	—	(734,609)	—
Proceeds from debt, net	—	1,010,286	—
Debt refinancing costs	(4,253)	—	—
Contingent consideration payments after acquisition	—	—	(1,200)
Dividends paid	(20,979)	(30,829)	(39,502)
Proceeds from employee stock purchase program and exercise of stock options	13,839	4,855	6,024
Repurchases of common stock	(100,804)	(80,589)	(4,506)
Net cash from financing activities	(196,245)	(351,136)	(189,184)
Effect of exchange rate changes on cash and cash equivalents	(1,405)	1,330	—
Net increase (decrease) in cash and cash equivalents	30,933	95,637	(39,074)
Cash and cash equivalents at beginning of period	170,188	74,551	113,625
Cash and cash equivalents at end of period	$ 201,121	$ 170,188	$ 74,551
Supplemental disclosure of cash flow information:			
Interest paid	$ 32,363	$ 31,240	$ 20,891
Income taxes paid, net of refunds	$ 30,865	$ 43,066	$ 15,001
Stock issued in merger transaction	$ —	$ 828,334	$ —

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

XPERI HOLDING CORPORATION
CONSOLIDATED STATEMENTS OF EQUITY
(in thousands)

	Total Company Stockholders' Equity								
	Common Stock		Additional Paid-In	Treasury Stock		Accumulated Other Comprehensive	Retained	Noncontrolling	
	Shares	Amount	Capital	Shares	Amount	Income (Loss)	Earnings	Interest	Total Equity
Balance at December 31, 2018	48,408	$ 62	$ 730,695	13,804	$ (364,195)	$ (328)	$ 253,208	$ (1,295)	$ 618,147
Issuance of subsidiary shares to noncontrolling interest	—	—	13	—	—	—	—	(13)	—
Net loss	—	—	—	—	—	—	(62,530)	(1,503)	(64,033)
Other comprehensive income, net of tax	—	—	—	—	—	275	—	—	275
Other	—	—	—	—	—	—	(2,859)	—	(2,859)
Cash dividends paid on common stock ($0.80 per share)	—	—	—	—	—	—	(39,502)	—	(39,502)
Issuance of common stock in connection with exercise of stock options	42	—	694	—	—	—	—	—	694
Issuance of common stock in connection with employee stock purchase plan	386	1	5,328	—	—	—	—	—	5,329
Issuance of restricted stock, net of shares canceled	982	1	—	—	—	—	—	—	1
Withholding taxes related to net share settlement of restricted awards	(198)	—	—	198	(4,506)	—	—	—	(4,506)
Stock-based compensation expense	—	—	31,554	—	—	—	—	—	31,554
Balance at December 31, 2019	49,620	$ 64	$ 768,284	14,002	$ (368,701)	$ (53)	$ 148,317	$ (2,811)	$ 545,100
Issuance of subsidiary shares to noncontrolling interest	—	—	(19)	—	—	—	—	19	—
Net income (loss)	—	—	—	—	—	—	146,762	(2,966)	143,796
Other comprehensive income, net of tax	—	—	—	—	—	1,317	—	—	1,317
Cash dividends paid on common stock ($0.50 per share)	—	—	—	—	—	—	(30,829)	—	(30,829)
Issuance of common stock in connection with exercise of stock options	7	—	89	—	—	—	—	—	89
Issuance of common stock in connection with employee stock purchase plan	355	—	4,764	—	—	—	—	—	4,764
Issuance of restricted stock, net of shares canceled	2,083	2	—	—	—	—	—	—	2
Withholding taxes related to net share settlement of restricted awards	(671)	—	—	671	(10,508)	—	—	—	(10,508)
Repurchases of common stock	(4,919)	—	—	4,919	(70,081)	—	—	—	(70,081)
Common stock issued in merger transaction	58,300	58	828,276	—	—	—	—	—	828,334
Retirement of treasury stock	—	(14)	(372,058)	(14,185)	372,072	—	—	—	—
Stock-based compensation expense	—	—	39,135	—	—	—	—	—	39,135
Balance at December 31, 2020	104,775	$ 110	$ 1,268,471	5,407	$ (77,218)	$ 1,264	$ 264,250	$ (5,758)	$ 1,451,119
Issuance of subsidiary shares to noncontrolling interest	—	—	(9)	—	—	—	—	9	—
Net loss	—	—	—	—	—	—	(55,457)	(3,456)	(58,913)
Other comprehensive loss, net of tax	—	—	—	—	—	(2,016)	—	—	(2,016)
Cash dividends paid on common stock ($0.20 per share)	—	—	—	—	—	—	(20,979)	—	(20,979)
Issuance of common stock in connection with exercise of stock options	39	—	779	—	—	—	—	—	779
Issuance of common stock in connection with employee stock purchase plan	1,236	1	13,057	—	—	—	—	—	13,058
Issuance of restricted stock, net of shares canceled	2,003	2	—	—	—	—	—	—	2
Withholding taxes related to net share settlement of restricted awards	(751)	—	—	751	(15,916)	—	—	—	(15,916)
Repurchases of common stock	(4,042)	—	—	4,042	(84,888)	—	—	—	(84,888)
Stock-based compensation expense	—	—	58,182	—	—	—	—	—	58,182
Balance at December 31, 2021	103,260	$ 113	$ 1,340,480	10,200	$ (178,022)	$ (752)	$ 187,814	$ (9,205)	$ 1,340,428

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

XPERI HOLDING CORPORATION
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

NOTE 1 – THE COMPANY AND BASIS OF PRESENTATION

On December 18, 2019, Xperi Corporation ("Xperi") entered into an Agreement and Plan of Merger and Reorganization with TiVo Corporation ("TiVo") to combine in an all-stock merger of equals transaction (the "Mergers"). Immediately following the consummation of the Mergers on June 1, 2020, (the "Merger Date"), Xperi Holding Corporation (the "Company"), a Delaware corporation founded in December 2019 under the name "XRAY-TWOLF HoldCo Corporation," became the parent company of both Xperi and TiVo. The common stock of Xperi and TiVo were de-registered after completion of the Mergers. On June 2, 2020, Xperi Holding Corporation's common stock, par value $0.001 per share, commenced trading on the Nasdaq Global Select Market ("Nasdaq") under the ticker symbol "XPER." See "Note 9 – Business Combinations" for a more detailed description of the Mergers.

Xperi was determined to be the accounting acquirer in the Mergers. As a result, the historical financial statements of Xperi for periods prior to the Mergers are considered to be the historical financial statements of Xperi Holding Corporation. As used herein, the "Company" refers to Xperi when referring to periods prior to June 1, 2020 and to Xperi Holding Corporation when referring to periods subsequent to June 1, 2020. The Company's results of operations include the operations of TiVo after June 1, 2020, and TiVo's assets and liabilities were recorded at their estimated fair values in the Company's Consolidated Balance Sheets as of June 1, 2020.

Xperi Holding Corporation is a leading consumer and entertainment product/solutions licensing company and one of the industry's largest intellectual property licensing platforms, with a diverse portfolio of media and semiconductor intellectual property and more than 11,000 patents and patent applications worldwide. The Company creates extraordinary experiences at home and on the go for millions of consumers around the world, elevating content and how audiences connect with it in a way that is more intelligent, immersive and personal. Powering smart devices, connected cars, entertainment experiences and more, the Company has created a unified ecosystem that reaches highly engaged consumers, uncovering significant new business opportunities, now and in the future. The Company's technologies are integrated into billions of consumer devices, media platforms, and semiconductors worldwide, driving increased value for partners, customers and consumers.

The Company has two principal segments, an IP licensing segment and a product segment. The IP Licensing segment consists primarily of licensing the Company's innovations to leading companies in the broader entertainment industry, and those developing new technologies that will help drive this industry forward. Licensing arrangements include access to one or more of the Company's foundational patent portfolios and may also include access to some of its industry-leading technologies and proven know-how.

In its Product segment, the Company derives the majority of its revenue from licensing its technology to customers primarily through Technology License arrangements and Technology Solutions arrangements. For Technology License arrangements, the customer obtains rights to the technology delivered at the commencement of the agreement. For Technology Solutions arrangements, the customer receives access to a platform, media or data that includes frequent updates, where access to such updates is critical to the functionality of the technology.

The Company is currently planning, subject to any required regulatory approvals, a separation of the Company's product business and IP licensing business through a tax-efficient transaction, resulting in two independent, publicly traded companies. The Company continues to evaluate the optimal timing of the contemplated business separation and currently anticipates that such separation will be completed in the second half of 2022.

The consolidated financial statements include the accounts of Xperi Holding Corporation, its wholly owned subsidiaries, and a majority-owned subsidiary. In the fourth quarter of 2018, the Company funded a new subsidiary, Perceive Corporation ("Perceive"), which was created to focus on delivering edge inference solutions. As of December 31, 2021, the Company owned approximately 81% of Perceive. The operating results of Perceive have been consolidated in the Company's consolidated financial statements since the fourth quarter of 2018. The accompanying consolidated financial statements have been prepared in accordance with generally accepted accounting principles ("GAAP") in the United States ("U.S.") and the applicable rules and regulations of the Securities and Exchange Commission ("SEC"). All significant intercompany balances and transactions are eliminated in consolidation.

The Company's fiscal year ends on December 31. The Company employs a calendar month-end reporting period for its quarterly reporting.

Reclassification

Certain reclassifications have been made to prior period balances in order to conform to the current period's presentation.

NOTE 2 – SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Use of Estimates

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. The accounting estimates and assumptions that require management's most significant, challenging, and subjective judgment include the estimation of licensees' quarterly royalties prior to receiving the royalty reports, the determination of stand-alone selling price and the transaction price in an arrangement with multiple performance obligations, the estimation of variable consideration, the assessment of the recoverability of goodwill, the assessment of useful lives and recoverability of other intangible assets and long-lived assets, recognition and measurement of current and deferred income tax assets and liabilities, the assessment of unrecognized tax benefits, and purchase accounting resulting from business combinations, among others. Actual results experienced by the Company may differ from management's estimates.

The COVID-19 pandemic has resulted in a global slowdown of economic activity which has reduced demand for a broad variety of goods and services, while disrupting sales channels, marketing activities and supply chains. The Company's business operations have been negatively impacted by the COVID-19 pandemic and related events, and the Company expects this disruption may continue to have a negative impact on its revenue and results of operations, especially in light of the spread of the highly transmissible Omicron variant. The full extent of the future impact of the COVID-19 pandemic on the Company's operational and financial performance is currently uncertain and will depend on many factors outside the Company's control, including, without limitation, the timing, extent, trajectory and duration of the pandemic; the availability, distribution and effectiveness of vaccines; the spread of new variants of COVID-19; the continued or renewed imposition of protective public safety measures; the continuing disruption of the global supply chain affecting the Company's industry; and the impact of the pandemic on the global economy and demand for consumer products.

The impact of the COVID-19 pandemic and related events, including actions taken by various government authorities in response, have increased market volatility and make the estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes more difficult. As of the date of issuance of the financial statements, the Company is not aware of any specific event or circumstance that would require it to update its estimates, judgments or revise the carrying value of its assets or liabilities. These estimates may change, as new events occur and additional information is obtained, and are recognized in the consolidated financial statements as soon as they become known.

Revenue Recognition

Revenue is recognized when control of the promised goods or services is transferred to a customer in an amount that reflects the consideration the Company expects to receive in exchange for those goods or services, which may include various combinations of goods and services which are generally capable of being distinct and accounted for as separate performance obligations. See "Note 4 – *Revenue"* for a detailed discussion on revenue and revenue recognition.

Cash and Cash Equivalents

The Company considers all highly liquid investments purchased with an original maturity of three months or less at the date of purchase to be cash equivalents. Cash and cash equivalents are maintained with various financial institutions.

Short-term Investments

The Company has investments in debt securities which include corporate bonds and notes, treasury and agency notes and bills, commercial paper, certificates of deposit, and in equity securities consisting of money market funds. The Company classifies all investments as current as the securities are available for use, if needed, for current operations.

Marketable Debt Securities

The Company classifies its debt securities as available-for-sale ("AFS"), which are accounted for at fair value. For AFS debt securities in an unrealized loss position, the Company first assesses whether it intends to sell, or it is more-likely-than-not that it will be required to sell the security before recovery of its amortized cost basis. If either of the criteria regarding intent or requirement to sell is met, the security's amortized cost basis is written down to fair value through income. For AFS debt securities that do not meet the aforementioned criteria, the Company evaluates whether the decline in fair value has resulted from credit losses or other factors. In making this assessment, the Company considers the extent to which fair value is less than amortized cost, any changes to the rating of the security by a rating agency, and adverse conditions specifically related to the security, among other factors. If this assessment indicates that a credit loss exists, the present value of cash flows expected to be collected from the security are compared to the amortized cost basis of the security. If the present value of cash flows expected to be collected is less than the amortized cost basis, a credit loss exists and an allowance for credit losses is recorded for the credit loss, limited by the amount that the fair value is less than the amortized cost basis. Any impairment that has not been recorded through an allowance for credit losses is recognized in accumulated other comprehensive income or loss on the Consolidated Balance Sheets.

Marketable Equity Securities

Marketable equity securities are measured at fair value with unrealized gains and losses recognized in other income and expense, net, on the Consolidated Statements of Operations.

Non-Marketable Equity Investments

Investments in entities over which the Company has the ability to exercise significant influence, but does not hold a controlling interest, are accounted for using the equity method. Under the equity method, the Company records its proportionate share of income or loss in other income and expense, net, in the Consolidated Statements of Operations. Investments in entities over which the Company does not have the ability to exercise significant influence and which do not have readily determinable fair values, are initially recognized at cost and remeasured through earnings when there is an observable transaction involving the same or similar investment of the same issuer, or due to an impairment (referred to as the “measurement alternative”). The fair value of non-marketable equity investments is not estimated if there are no identified events or changes in circumstances that may have a significant adverse effect on the fair value of the investment. The Company monitors its non-marketable securities portfolio for potential impairment. When there is evidence that the expected fair value of the investment has declined to below the recorded cost, the impairment loss is recorded in other income and expense, net, in the Consolidated Statements of Operations.

Fair Value of Financial Instruments

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The carrying amount of cash equivalents, accounts receivable, accounts payable and accrued liabilities approximates fair value due to the short-term nature of these instruments. Long-term debt is carried at amortized cost and measured at fair value on a quarterly basis for disclosure purposes. See “Note 7 – *Fair Value”* for further information.

Concentration of Credit and Other Risks

Financial instruments that potentially subject the Company to significant concentrations of credit risk consist principally of cash equivalents, short-term investments and accounts receivable. The Company follows a corporate investment policy which sets credit, maturity and concentration limits and regularly monitors the composition, market risk and maturities of these investments. The Company believes that any concentration of credit risk in its accounts receivable is substantially mitigated by the Company’s evaluation process, relatively short collection terms and the high level of credit worthiness of its customers. The Company performs ongoing credit evaluations of its customers’ financial condition and limits the amount of credit extended when deemed necessary but generally requires no collateral.

At December 31, 2021, the Company had one customer representing 13% of aggregate trade receivables. At December 31, 2020, the Company had two customers representing 17% and 11% of aggregate trade receivables, respectively.

The following table sets forth revenue generated from customers which comprise 10% or more of total revenue for the periods indicated:

	Years Ended December 31,		
	2021	**2020**	**2019**
Comcast Corporation	*	27%	*
SK hynix Inc.	*	*	17%
Intel Corporation	*	*	11%

*	denotes less than 10% of total revenue.

The Company outsources to third parties certain supply-chain activities related to inventory warehousing, order fulfillment, distribution and other direct sales logistics. The Company cannot be sure that these parties will perform their obligations as expected or that any revenue, cost savings or other benefits will be derived from the efforts of these parties. If any of these parties breaches or terminates their agreement with the Company or otherwise fails to perform their obligations in a timely manner, the Company may be delayed or prevented from commercializing its products and services.

Allowance for Credit Losses

The allowance for credit losses, which includes the allowance for accounts receivable and unbilled contracts receivable, represents the Company's best estimate of lifetime expected credit losses inherent in those financial assets. The Company's lifetime expected credit losses are determined using relevant information about past events (including historical experience), current conditions, and reasonable and supportable forecasts that affect collectability. The Company monitors its credit exposure through ongoing credit evaluations of its customers' financial condition and limits the amount of credit extended when deemed necessary. In addition, the Company performs routine credit management activities such as timely account reconciliations, dispute resolution, and payment confirmations. The Company may employ collection agencies and legal counsel to pursue recovery of defaulted receivables. See "Note 4 – *Revenue*" for a further discussion of the allowance for credit losses.

Inventory

Inventories consist primarily of finished DVRs, non-DVRs, including TiVo Stream 4K, and accessories and are stated at the lower of cost or net realizable value on an aggregate basis. Cost is computed using standard cost, which approximates actual cost on a first-in, first-out basis. Adjustments to reduce the carrying amount of inventory to the lower of cost or net realizable value are made, if required, for excess or obsolete goods, which includes a review of, among other factors, demand requirements and market conditions.

Business Combinations

The Company accounts for business combinations using the acquisition method of accounting in accordance with ASC 805, "Business Combinations." Identifiable assets acquired and liabilities assumed are recorded at their acquisition date fair values. The excess of the fair value of purchase consideration over the fair values of these identifiable assets and liabilities is recorded as goodwill. Acquisition related costs are expensed as incurred. Upon acquisition, the accounts and results of operations are consolidated as of and subsequent to the acquisition date.

When determining the fair values of assets acquired and liabilities assumed, management makes significant estimates and assumptions, especially with respect to intangible assets. The Company utilizes commonly accepted valuation techniques, such as the income approach and the cost approach, as appropriate, in establishing the fair value of intangible assets. Typically, key assumptions include projections of cash flows that arise from identifiable intangible assets of acquired businesses as well as discount rates based on an analysis of the weighted average cost of capital, adjusted for specific risks associated with the assets. See "Note 9 – *Business Combinations"* for additional detail.

Goodwill and Identified Intangible Assets

Goodwill. Goodwill is recorded as the difference, if any, between the aggregate consideration paid for an acquisition and the fair value of the net tangible and identified intangible assets acquired under a business combination. Goodwill also includes acquired assembled workforce, which does not qualify as an identifiable intangible asset. The Company reviews impairment of goodwill annually as of the beginning of the fourth quarter, or more frequently if events or circumstances indicate that the goodwill might be impaired. The Company first assesses qualitative factors to determine whether it is necessary to perform the quantitative goodwill impairment test. If, after assessing the totality of events or circumstances, the Company determines that it is not more likely than not that the fair value of a reporting unit is less than its carrying amount, then the quantitative goodwill impairment test is unnecessary.

If, based on the qualitative assessment, it is determined that it is more likely than not that the fair value of a reporting unit is less than its carrying amount, then the Company proceeds to perform the quantitative goodwill impairment test. The Company first determines the fair value of a reporting unit using weighted results derived from an income approach and market approaches, which requires significant management estimates and judgments. The fair value using an income approach is estimated through the discounted cash flow method based on assumptions about future conditions such as revenue growth rates associated with certain revenue streams, forecasted R&D expense, discount rates, and other assumptions. Market approaches used by management include the market comparable method, which estimates the fair value based on revenue multiples from comparable companies in similar lines of business, and the market transaction method, which estimates the fair value of the reporting unit by utilizing comparable transactions and transaction multiples. The Company then compares the derived fair value of a reporting unit with its carrying amount. If the carrying value of a reporting unit exceeds its fair value, an impairment loss will be recognized in an amount equal to that excess, limited to the total amount of goodwill allocated to that reporting unit.

Identified intangible assets. Identified finite-lived intangible assets consist of acquired patents, existing technology, customer relationships, trademarks and trade names, non-compete agreements resulting from business combinations, and acquired patents under asset purchase agreements. The Company's identified intangible assets are amortized on a straight-line basis over their estimated useful lives, ranging from 1 to 10 years. The Company makes judgments about the recoverability of finite-lived intangible assets whenever facts and circumstances indicate that the useful life is shorter than originally estimated or that the carrying amount of assets may not be recoverable. If such facts and circumstances exist, the Company assesses recoverability by comparing the projected undiscounted net cash flows associated with the related asset or group of assets over their remaining lives against their respective carrying amounts. Impairments, if any, are based on the excess of the carrying amount over the fair value of those assets. If the useful life is shorter than originally estimated, the Company would accelerate the rate of amortization and amortize the remaining carrying value over the new shorter useful life.

Identified indefinite-lived intangible assets include TiVo tradenames and trademarks resulting from business combinations. The Company evaluates the carrying value of indefinite-lived intangible assets on an annual basis or more frequently if events or circumstances indicate that the asset might be impaired, and an impairment charge would be recognized to the extent that the carrying amount of such assets exceeds their estimated fair value.

For further discussion of goodwill and identified intangible assets, see "Note 10 – *Goodwill and Identified Intangible Assets*."

Debt Discount and Issuance Costs

Debt discount and issuance costs are presented in the consolidated balance sheet as a deduction from the carrying amount of both the short-term debt and long-term debt, and are amortized over the term of the associated debt to interest expense using the effective interest method. In addition, the Company elects to continue to defer the unamortized debt discount and issuance costs when it voluntarily pays down a portion of the debt as the prepayment is factored into the terms agreed to on the debt.

Treasury Stock

The Company accounts for stock repurchases using the cost method. For reissuance of treasury stock, to the extent that the reissuance price is more than the cost, the excess is recorded as an increase to capital in excess of par value. If the reissuance price is less than the cost, the difference is recorded in capital in excess of par value to the extent there is a cumulative treasury stock paid-in capital balance. Once the cumulative balance is reduced to zero, any remaining difference resulting from the sale of treasury stock below cost is recorded as a reduction of retained earnings.

Leases

The Company determines if an arrangement is a lease at inception. Operating leases are included in operating lease right-of-use ("ROU") assets, accrued liabilities, and noncurrent operating lease liabilities in the Company's consolidated balance sheets. The ROU assets represent the Company's right to use an underlying asset for the lease term and lease liabilities represent the Company's obligation to make lease payments arising from the lease. Operating lease ROU assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. As most of the leases do not provide an implicit rate, the Company generally uses its incremental borrowing rate based on the estimated rate of interest for collateralized borrowing over a similar term of the lease payments at commencement date. The Company's lease terms may include options to extend or terminate the lease, and these terms are factored into the valuation of ROU assets and liabilities when it is reasonably certain that the Company will exercise that option. Lease expense for lease payments is recognized on a straight-line basis over the lease term. As a practical expedient, the Company elected, for all office and facility leases, not to separate nonlease components from lease components and instead to account for each separate lease component and its associated non-lease components as a single lease component. For additional information regarding the Company's leases, refer to "Note 8 – *Leases."*

Research, Development and Other Related Costs

Research, development ("R&D") and other related costs are comprised primarily of employee-related costs, stock-based compensation expense, engineering consulting expenses associated with new product and technology development, product commercialization, quality assurance and testing costs, as well as costs related to patent applications and examinations, reverse engineering, materials, supplies, and an allocation of facilities costs. All research, development and other related costs are expensed as incurred.

Stock-based Compensation Expense

Stock-based compensation is measured at the grant date based on the estimated fair value of the award and is recognized as expense on a straight-line basis, net of estimated forfeitures, over the requisite service or performance period. Forfeiture rates are estimated at the time of grant and revised, if necessary, in subsequent periods if actual forfeitures differ from those estimates. If the actual forfeiture rate is materially different from the estimate, stock-based compensation expense could be significantly different from what was recorded in the current period.

The Company uses the closing trading price of its common stock on the date of grant as the fair value of awards of restricted stock units ("RSUs"), and performance stock units ("PSUs") that are based on company-designated performance targets. For performance stock units that are based on market conditions, or market-based PSUs, fair value is estimated by using a Monte Carlo simulation on the date of grant. The Company estimates the grant-date fair value of stock options and stock to be issued under the employee stock purchase plan ("ESPP") using the Black-Scholes pricing model. See "Note 14 – *Stock-based Compensation Expense*" for additional detail.

Performance-based PSU awards will vest if certain employee-specific or company-designated performance targets are achieved. If minimum performance thresholds are achieved, each PSU award will convert into the Company's common stock at a defined ratio depending on the degree of achievement of the performance target designated by each individual award. If minimum performance thresholds are not achieved, then no shares will be issued. The expected levels of achievement are reassessed over the requisite service periods and, to the extent that the expected levels of achievement change, stock-based compensation is adjusted in the period of change and recorded on the statements of operations and the remaining unrecognized stock-based compensation is recorded over the remaining requisite service period. For market-based PSUs, the fair value per award is fixed at the grant date and the amount of compensation expense is not adjusted during the performance period regardless of changes in the level of achievement of the market condition unless it is due to termination.

Income Taxes

The Company must make certain estimates and judgments in determining income tax expense for financial statement purposes. These estimates and judgments are used in the calculation of tax credits, tax benefits, tax deductions, and in the calculation of certain deferred taxes and tax liabilities. Significant changes to these estimates may result in an increase or decrease to the Company's tax provision in a subsequent period.

The provision for income taxes was comprised of the Company's current tax liability and changes in deferred income tax assets and liabilities. The calculation of the current tax liability involves dealing with uncertainties in the application of complex tax laws and regulations and in determining the liability for tax positions, if any, taken on the Company's tax returns in accordance with authoritative guidance on accounting for uncertainty in income taxes. Deferred income taxes are determined based on the differences between the financial reporting and tax basis of assets and liabilities. The Company must assess the likelihood that it will be able to recover the Company's deferred tax assets. If recovery is not likely on a more-likely-than-not basis, the Company must increase its provision for income taxes by recording a valuation allowance against the deferred tax assets that it estimates will not ultimately be recoverable. However, should there be a change in the Company's ability to recover its deferred tax assets, the provision for income taxes would fluctuate in the period of such change. See "Note 15 – *Income Taxes"* for additional detail.

Advertising Costs

Advertising costs are expensed as incurred and are presented within selling, general and administrative expense in the Consolidated Statements of Operations. Advertising expenses for the years ended December 31, 2021, 2020 and 2019, were $8.9 million, $11.4 million and $5.0 million, respectively.

Indemnification

The Company provides indemnification of varying scope to certain customers against claims of intellectual property infringement made by third parties arising from the use of the Company's technologies. In accordance with authoritative guidance for accounting for guarantees, the Company evaluates estimated losses for such indemnification. The Company considers such factors as the degree of probability of an unfavorable outcome and the ability to make a reasonable estimate of the amount of loss. To date, no such claims have been filed against the Company and no liability has been recorded in the Company's financial statements.

As permitted under Delaware law, the Company has agreements whereby it indemnifies its officers and directors for certain events or occurrences while the officer or director is, or was, serving at the Company's request in such capacity. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is unlimited; however, the Company believes, given the absence of any such payments in the Company's history, and the estimated low probability of such payments in the future, that the estimated fair value of these indemnification agreements is immaterial. In addition, the Company maintains a directors' and officers' liability insurance policy that is intended to reduce its financial exposure and may enable the Company to recover any payments, should they occur.

Contingencies

From time to time, the Company may be involved in legal and administrative proceedings and claims of various types. The Company records a liability in its consolidated financial statements for these matters when a loss is known or considered probable and the amount can be reasonably estimated. Management reviews these estimates in each accounting period as additional information becomes known and adjusts the loss provision when appropriate. If the loss is not probable or cannot be reasonably estimated, a liability is not recorded in the consolidated financial statements. If a loss is probable but the amount of loss cannot be reasonably estimated, the Company discloses the loss contingency and an estimate of possible loss or range of loss (unless such an estimate cannot be made). The Company does not recognize gain contingencies until they are realized. Legal costs incurred in connection with loss contingencies are expensed as incurred. See "Note 16 – *Commitments and Contingencies*," for further information regarding the Company's pending litigation.

Property and Equipment

Property and equipment are recorded at cost, less accumulated depreciation. Depreciation is calculated using the straight-line method over the related assets' estimated useful lives:

Equipment, furniture and other	1 to 5 years
Leasehold improvements	Lesser of related lease term or 5 years
Building and improvements	Up to 30 years

Expenditures that materially increase asset life are capitalized, while ordinary maintenance and repairs are expensed as incurred.

Foreign Currency Translation

The Company predominantly uses the U.S. dollar as its functional currency. Certain non-U.S. subsidiaries designate a local currency as their functional currency. The translation of assets and liabilities into U.S. dollars for subsidiaries with a functional currency other than the U.S. dollar is performed using exchange rates in effect at the balance sheet date. The translation of revenues and expenses into U.S. dollars for subsidiaries with a functional currency other than the U.S. dollar is performed using the average exchange rate for the respective period. Gains or losses from cumulative translation adjustments, net of tax, are included as a component of accumulated other comprehensive income (loss) in the Consolidated Balance Sheets. The Company records net foreign exchange transaction gains and losses resulting from the conversion of the transaction currency to the functional currency within other income and expense, net.

NOTE 3 – RECENT ACCOUNTING PRONOUNCEMENTS

Recently Adopted Accounting Pronouncements

In February 2016, the Financial Accounting Standards Board ("FASB") issued ASU No. 2016-02, "*Leases*" (Topic 842), which generally requires companies to recognize operating and financing lease liabilities and corresponding right-of-use (ROU) assets on the balance sheet. Under the standard, disclosures are required to meet the objective of enabling users of financial statements to assess the amount, timing, and uncertainty of cash flows arising from leases. On January 1, 2019, the Company adopted the new standard using the modified retrospective transition approach and elected the transition option, under which the Company initially applied the transition requirements to all leases that existed at December 31, 2018, with any residual effects of initially applying Topic 842 recognized as a cumulative effect adjustment to the opening balance of retained earnings on January 1, 2019.

The most significant impact from adopting Topic 842 was the initial recognition of operating lease ROU assets and operating lease liabilities of $17.6 million and $18.8 million, respectively, as of January 1, 2019. Operating lease liabilities consist of both current and noncurrent portions with the current portion included in the balance of accrued liabilities. The standard did not materially impact the Company's Consolidated Statements of Operations and had no impact on cash flows.

In September 2016, the FASB issued ASU No. 2016-13, "*Financial Instruments - Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*" ("ASU 2016-13"), which introduces an approach based on expected losses to estimate credit losses on certain types of financial instruments. The current expected credit loss model is based on relevant information about past events, including historical experience, current conditions and reasonable and supportable forecasts that affect collectability. Current expected credit losses, and subsequent adjustments, represent an estimate of lifetime expected credit losses that are recorded as an allowance deducted from the amortized cost of the financial instrument. The updated guidance also amends the other-than-temporary impairment model for available-for-sale debt securities by requiring the recognition of impairments for credit-related losses through an allowance and eliminating the length of time a security has been in an unrealized loss position as a consideration in the determination of whether a credit loss exists. On January 1, 2020, the Company adopted the new standard using a modified retrospective transition approach for the provisions related to application of the current expected credit loss model to financial instruments and using a prospective transition approach for the provisions related to credit losses on available-for-sale debt securities. The adoption of this standard did not have a material impact on the Company's consolidated financial statements.

In August 2018, the FASB issued ASU 2018-15, "*Intangibles—Goodwill and Other—Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract*" ("ASU 2018-15") modifying the requirements for capitalizing costs incurred to implement a hosting arrangement that is a service contract. The modified requirements were intended to align the cost capitalization requirements for hosting arrangements with the cost capitalization requirements for internal-use software. The Company adopted the standard on January 1, 2020 and applied the modified requirements prospectively to all implementation costs incurred after the date of adoption. The adoption did not have a material impact on the Company's consolidated financial statements.

In December 2019, the FASB issued ASU 2019-12, "Simplifying the Accounting for Income Taxes" ("ASU 2019-12"). The purpose of the update is to reduce the complexity pertaining to certain areas in accounting for income taxes. Key amendments from ASU 2019-12 include, but are not limited to, the accounting for hybrid tax regimes, step-up in tax basis for goodwill in non-business combination transactions, intraperiod tax allocation exception to the incremental approach, and interim period accounting for enacted changes in tax law. The Company adopted the new standard prospectively on January 1, 2021. The adoption did not have an impact on the Company's consolidated financial statements.

Recent Accounting Pronouncements

In March 2020, the FASB issued ASU 2020-04, Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting ("ASU 2020-04"). ASU 2020-04 provides optional expedients and exceptions for applying GAAP to contracts, hedging relationships, and other transactions affected by reference rate reform if certain criteria are met. The amendments in ASU 2020-04 apply only to contracts, hedging relationships, and other transactions that reference the London Interbank Offered Rate ("LIBOR") or another reference rate expected to be discontinued because of reference rate reform. In January 2021, the FASB issued ASU 2021-01, Reference Rate Reform (Topic 848), which provides further clarification on the scope of Topic 848 so that derivatives affected by the discounting transition are explicitly eligible for certain optional expedients and exceptions in Topic 848. ASU 2020-04 became effective upon issuance and may be applied prospectively to contract modifications made on or before December 31, 2022. ASU 2021-01 became effective upon issuance and may be applied on a full retrospective basis as of any date from the beginning of an interim period that includes or is subsequent to March 12, 2020 or prospectively for contract modifications made on or before December 31, 2022. The Company currently has debt agreements that reference LIBOR and will apply the amendments prospectively through December 31, 2022 as these contracts are modified to reference other rates.

In October 2021, the FASB issued ASU 2021-08, "*Accounting for Contract Assets and Contract Liabilities from Contracts with Customers*" ("ASU 2021-08"), which amends the guidance in ASC 805 to require that an entity (acquirer) recognizes and measures contract assets and contract liabilities acquired in a business combination in accordance with Topic 606. As a result of the amendments, it is expected that an acquirer will generally recognize and measure acquired contract assets and contract liabilities in a manner consistent with how the acquiree recognized and measured them in its preacquisition financial statements. ASU 2021-08 is effective for public business entities for fiscal years beginning after December 15, 2022. Early adoption is permitted. The Company expects the impact in future periods will be dependent on the contract assets and contract liabilities acquired in future business combinations.

NOTE 4 – REVENUE

Revenue Recognition

General

Revenue is recognized when control of the promised goods or services is transferred to a customer in an amount that reflects the consideration the Company expects to receive in exchange for those goods or services, which may include various combinations of goods and services which are generally capable of being distinct and accounted for as separate performance obligations. Revenue is recognized net of sales taxes collected from customers which are subsequently remitted to governmental authorities. In situations where foreign withholding taxes are withheld by the Company's licensee, revenue is recognized gross of withholding taxes that are remitted directly by the licensee to a local tax authority.

Some of the Company's contracts with customers contain multiple performance obligations. For these contracts, the individual performance obligations are separately accounted for if they are distinct. In an arrangement with multiple performance obligations, the transaction price is allocated among the separate performance obligations on a relative stand-alone selling price basis. The determination of stand-alone selling price considers market conditions, the size and scope of the contract, customer and geographic information, and other factors. When observable prices are not available, stand-alone selling price for separate performance obligations is based on the cost-plus-margin approach, considering overall pricing objectives. The allocation of transaction price among performance obligations in a contract may impact the amount and timing of revenue recognized in the Consolidated Statements of Operations during a given period.

When a contract with a customer includes a variable transaction price, an estimate of the consideration which the Company expects to be entitled to for transferring the promised goods or services is made at contract inception. The amount of variable consideration is estimated at contract inception by considering all available information (historical, current and forecast) at the time and updated as additional information becomes available. The estimate of variable consideration is included in the transaction price to the extent it is probable that a significant reversal of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is resolved. Subsequent changes in the transaction price resulting from changes in the estimate of variable consideration are allocated to the performance obligations in the contract on the same basis as at contract inception.

When variable consideration is in the form of a sales-based or usage-based royalty in exchange for a license of IP, or when a license of IP is the predominant item to which the variable consideration relates, revenue is recognized at the later of when the subsequent sale or usage occurs or the performance obligation to which some or all of the sales-based or usage-based royalty has been allocated has been satisfied or partially satisfied.

Description of Revenue-Generating Activities

The Company operates in two business segments. In its IP Licensing segment, the Company licenses its innovations to leading companies in the broader entertainment industry, and those developing new technologies that will help drive this industry forward. Licensing arrangements include access to one or more of the Company's foundational patent portfolios and may also include access to some of its industry-leading technologies and proven know-how. In its Product segment, the Company derives the majority of its revenue from licensing its technology to customers primarily through Technology License arrangements and Technology Solutions arrangements. For Technology License arrangements, the customer obtains rights to the technology delivered at the commencement of the agreement. For Technology Solutions arrangements, the customer receives access to a platform, media or data that includes frequent updates, where access to such updates is critical to the functionality of the technology.

IP License Arrangements

In its IP Licensing segment, the Company licenses (i) its media patent portfolios ("Media IP licensing") to multichannel video programming distributors, over-the-top video service providers, consumer electronics manufacturers, social media, and other new media companies and (ii) its semiconductor technologies and associated patent portfolios ("Semiconductor IP licensing") to memory, sensors, radio frequency ("RF") component, and foundry companies. The Company licenses its IP portfolios under three revenue models: (i) fixed-fee Media IP licensing, (ii) fixed-fee or minimum guarantee Semiconductor IP licensing, and (iii) per-unit or per-subscriber IP royalty licenses.

Fixed-fee Media IP licensing

The Company's long-term fixed-fee Media IP licensing agreements, which are related to the TiVo businesses following the Mergers, provide its customers with rights to future patented technologies over the term of the agreement that are highly interdependent or highly interrelated to the patented technologies provided at the inception of the agreement. The Company treats these rights as a single performance obligation with revenue recognized on a straight-line basis over the term of the fixed-fee license agreement.

At times, the Company enters into license agreements in which a licensee is released from past patent infringement claims or is granted a license to ship an unlimited number of units or for an unlimited number of subscribers over a future period for a fixed fee. In these arrangements, the Company allocates the transaction price between the release for past patent infringement claims and the future license which requires significant management judgment. In determining the stand-alone selling price of the release for past patent infringement claims and the future license, the Company considers such factors as the number of units shipped in the past or the number of past subscribers and the relevant geographies of the shipped units or subscribers, the future number of subscribers or units, as well as the licensing rate the Company generally receives for per-subscriber or units shipped in the same geographies. As the release from past patent infringement claims is generally satisfied at execution of the agreement, the transaction price allocated to the release from past patent infringement claims is generally recognized in the period the agreement is executed and the amount of transaction price allocated to the future license is recognized ratably over the future license term.

Fixed-fee or minimum guarantee Semiconductor IP licensing

The Company enters into Semiconductor IP licenses that have fixed fee or minimum guarantee arrangements, whereby licensees pay a fixed fee for the right to incorporate the Company’s IP technologies in the licensee’s products over the license term. In arrangements with a minimum guarantee, the fixed fee component corresponds to a minimum number of units or dollars that the customer must produce or pay, with additional per-unit fees for any units or dollars exceeding the minimum. The Company generally recognizes the full fixed fee as revenue at the beginning of the license term when the customer has the right to use the IP and begins to benefit from the license, net of the effect of any significant financing components calculated using customer-specific, risk-adjusted lending rates, with the related interest income being recognized over time on an effective rate basis. For minimum guarantee agreements where the customer exceeds the minimum, the Company recognizes revenue relating to any additional per-unit fees in the periods it believes the customer will exceed the minimum and adjusts the revenue based on actual usage once that is reported by the customer.

Per-unit or per-subscriber IP royalty licenses

The Company recognizes revenue from per-unit or per-subscriber IP royalty licenses in the period in which the licensee's sales or production are estimated to have occurred, which results in an adjustment to revenue when actual sales or production are subsequently reported by the licensee, which is generally in the month or quarter following usage or shipment. Estimating customers’ monthly or quarterly royalties prior to receiving the royalty reports requires the Company to make significant assumptions and judgments related to forecasted trends and growth rates used to estimate quantities shipped or manufactured by customers, which could have a material impact on the amount of revenue it reports on a quarterly basis.

Technology License Arrangements

The Company licenses its audio, digital radio and imaging technology to consumer electronics (“CE”) manufacturers, automotive manufacturers or their supply chain partners.

The Company generally recognizes royalty revenue from licenses based on units shipped or manufactured. Revenue is recognized in the period in which the customer’s sales or production are estimated to have occurred. This may result in an adjustment to revenue when actual sales or production are subsequently reported by the customer, generally in the month or quarter following sales or production. Estimating customers’ quarterly royalties prior to receiving the royalty reports requires the Company to make significant assumptions and judgments related to forecasted trends and growth rates used to estimate quantities shipped or manufactured by customers, which could have a material impact on the amount of revenue it reports on a quarterly basis.

Certain customers enter into fixed fee or minimum guarantee agreements, whereby customers pay a fixed fee for the right to incorporate the Company’s technology in the customer’s products over the license term. In arrangements with a minimum guarantee, the fixed fee component corresponds to a minimum number of units or dollars that the customer must produce or pay, with additional per-unit fees for any units or dollars exceeding the minimum. The Company generally recognizes the full fixed fee as revenue at the beginning of the license term when the customer has the right to use the technology and begins to benefit from the license, net of the effect of any significant financing components calculated using customer-specific, risk-adjusted lending rates, with the related interest income being recognized over time on an effective rate basis. For minimum guarantee agreements where the customer exceeds the minimum, the Company recognizes revenue relating to any additional per-unit fees in the periods it believes the customer will exceed the minimum and adjusts the revenue based on actual usage once that is reported by the customer.

Technology Solutions Arrangements

Technology Solutions customers are primarily multi-channel video service providers, CE manufacturers, and end consumers. Technology Solutions revenue is primarily derived from licensing the Company's Pay-TV solutions, Personalized Content Discovery, enriched Metadata, and viewership data; selling TiVo-enabled devices like the Stream 4K; and advertising.

For Technology Solutions, the Company provides on-going media or data delivery, hosting and access to its platform, and software updates. For these solutions, the Company generally receives fees on a per-subscriber per-month basis or as a fixed fee, and revenue is recognized during the month in which the solutions are provided to the customer. For most of the Technology Solutions offerings, substantially all functionality is obtained through the Company's continuous hosting and/or updating of the data and content. In these instances, the Company typically has a single performance obligation related to these ongoing activities in the underlying arrangement. For those arrangements that include multiple performance obligations, the Company allocates the consideration as described above and recognizes revenue for each distinct performance obligation when control of the promised goods or services is transferred to the customer.

The Company also generates revenue from non-recurring engineering ("NRE") services, advertising, and hardware products, each of which was less than 5% of total revenue for all periods presented.

Practical Expedients and Exemptions

The Company applies a practical expedient to not perform an evaluation of whether a contract includes a significant financing component when the timing of revenue recognition differs from the timing of cash collection by one year or less.

The Company applies a practical expedient to expense costs to obtain a contract with a customer as incurred as a component of selling, general and administrative expenses when the amortization period would have been one year or less.

The Company applies a practical expedient when disclosing revenue expected to be recognized from unsatisfied performance obligations to exclude contracts with customers with an original duration of less than one year; amounts attributable to variable consideration arising from (i) a sales-based or usage-based royalty of an intellectual property license or (ii) when variable consideration is allocated entirely to a wholly unsatisfied performance obligation; or to a wholly unsatisfied promise to transfer a distinct good or service that forms part of a single performance obligation.

Revenue Details

The following information depicts how the nature, amount, timing and uncertainty of revenue and cash flows are affected by economic factors by disaggregating revenue by product category/end market and geographic location (presented in "Note 17 - *Segment and Geographic Information*").

Revenue disaggregated by product category/end market was as follows (in thousands):

	Years Ended December 31,		
	2021	2020	2019
IP Licensing revenue	$ 391,212	$ 515,919	$ 81,943
Pay-TV	262,929	164,841	—
Consumer Electronics	99,529	111,726	116,130
Connected Car	88,306	78,848	81,994
Media Platform	35,720	20,686	—
Total Product revenue	486,484	376,101	198,124
Total revenue	$ 877,696	$ 892,020	$ 280,067

Contract Balances

Contracts Assets

Contract assets primarily consist of unbilled contracts receivable that are expected to be received from customers in future periods, where the revenue recognized to date exceeds the amount billed. The amount of unbilled contracts receivable may not exceed their net realizable value and are classified as long-term assets if the payments are expected to be received more than one year from the reporting date. Contract assets also include the incremental costs of obtaining a contract with a customer, principally sales commissions when the renewal commission is not commensurate with the initial commission, and deferred engineering costs for significant software customization or modification and set-up services to the extent deemed recoverable.

Contract assets were recorded in the Consolidated Balance Sheets as follows (in thousands):

	December 31, 2021	December 31, 2020
Unbilled contracts receivable	$ 77,677	$ 132,431
Other current assets	1,150	1,208
Long-term unbilled contracts receivable	4,107	6,761
Other long-term assets	2,310	2,591
Total contract assets	$ 85,244	$ 142,991

Contract Liabilities

Contract liabilities are mainly comprised of deferred revenue related to technology solutions arrangements, multi-period licensing, and other offerings for which the Company is paid in advance while the promised good or service is transferred to the customer at a future date or over time. Deferred revenue also includes amounts received related to professional services to be performed in the future. Deferred revenue arises when cash payments are received, including amounts which are refundable, in advance of performance obligations being completed.

Allowance for Credit Losses

The allowance for credit losses, which includes the allowance for accounts receivable and unbilled contracts receivable, represents the Company’s best estimate of lifetime expected credit losses inherent in those financial assets. The Company’s lifetime expected credit losses are determined using relevant information about past events (including historical experience), current conditions, and reasonable and supportable forecasts that affect collectability. The Company monitors its credit exposure through ongoing credit evaluations of its customers’ financial condition and limits the amount of credit extended when deemed necessary. In addition, the Company performs routine credit management activities such as timely account reconciliations, dispute resolution, and payment confirmations. The Company may employ collection agencies and legal counsel to pursue recovery of defaulted receivables.

The Company’s long-term unbilled contracts receivable is derived from fixed-fee or minimum-guarantee Semiconductor IP or Product licensing arrangements, primarily with large well-capitalized companies. It is generally considered to be of high credit quality due to past collection history and the nature of the customers.

The following table presents the activity in the allowance for credit losses for the years ended December 31, 2021, 2020 and 2019 (in thousands):

	Years Ended December 31,					
	2021		2020		2019	
	Accounts Receivable	Unbilled Contracts Receivable	Accounts Receivable	Unbilled Contracts Receivable	Accounts Receivable	Unbilled Contracts Receivable
Beginning balance	$ 7,336	$ 2,231	$ 566	$ —	$ 779	$ —
Provision for credit losses	2,243	(1,088)	7,418 (1)	2,231 (1)	(74)	—
Recoveries	(2,336)	—	—	—	—	—
Charged-off/other adjustments	(4,141) (2)	(414)	(648)	—	(139)	—
Balance at end of period	$ 3,102	$ 729	$ 7,336	$ 2,231	$ 566	$ —

(1) The increase in provision for credit losses in 2020 was based on assessment of current conditions including the COVID-19 pandemic and anticipation of delayed or delinquent payments on existing accounts receivable as a result of the declining financial health and liquidity positions of certain of the Company’s customers, as well as U.S. restrictions on trade with certain Chinese customers, and certain late payments and collection related issues.

(2) The charge-off of accounts receivable in 2021 was primarily related to a customer whose account had been substantially reserved for credit losses in 2020 due to its deteriorating financial condition and delinquent payment history.

Additional Disclosures

The following table presents additional revenue and contract disclosures (in thousands):

	Years Ended December 31,		
	2021	2020	2019
Revenue recognized in the period from:			
Amounts included in deferred revenue at the beginning of the period	$ 28,338	$ 720	$ 3,130
Amounts included in deferred revenue acquired from the Mergers	$ —	$ 20,271	$ —
Performance obligations satisfied in previous periods (true ups, licensee reporting adjustments and settlements) (1)	$ 42,657	$ 296,031 (2)	$ 2,935

(1) True ups represent the differences between the Company's quarterly estimates of per-unit royalty revenue and actual production/sales-based royalties reported by licensees in the following period. Licensee reporting adjustments represent corrections or revisions to previously reported per-unit royalties by licensees, generally resulting from the Company's inquiries or compliance audits. Settlements represent resolutions of litigation during the period for past royalties owed pursuant to expired or terminated IP license agreements.

(2) Includes past royalty revenue from Comcast Corporation ("Comcast"). On November 9, 2020, the Company entered into a patent license agreement (the "Agreement") with Comcast and the Company resolved all of the outstanding litigation with Comcast. The Agreement is effective as of the expiration of Comcast's prior agreement in 2016 and its term continues into 2031. In connection with the Agreement, the Company recorded revenue from past royalties in the fourth quarter of 2020 and expects to record revenue from the prospective license into 2031.

Remaining revenue under contracts with performance obligations represents the aggregate amount of the transaction price allocated to the performance obligations that are unsatisfied (or partially unsatisfied) under certain of the Company's fixed fee arrangements and engineering services contracts. The Company's remaining revenue under contracts with performance obligations was as follows (in thousands):

	December 31,	
	2021	2020
Revenue from contracts with performance obligations expected to be satisfied in:		
2021	—	152,008
2022	176,646	102,764
2023	153,746	91,636
2024	122,488	77,989
2025	110,703	76,028
2026	10,735	429
Thereafter	4,441	—
Total	$ 578,759	$ 500,854

NOTE 5 – COMPOSITION OF CERTAIN FINANCIAL STATEMENT CAPTIONS

Other current assets consisted of the following (in thousands):

	December 31,	
	2021	2020
Prepaid income taxes	$ 6,103	$ 4,654
Prepaid expenses	18,616	20,393
Inventory	5,101	9,819
Other	6,639	5,897
	$ 36,459	$ 40,763

Property and equipment, net consisted of the following (in thousands):

	December 31,	
	2021	2020
Equipment, furniture and other	$ 81,076	$ 61,573
Building and improvements	18,331	18,309
Land	5,300	5,300
Leasehold improvements	25,535	25,776
	130,242	110,958
Less: Accumulated depreciation and amortization	(69,268)	(47,751)
	$ 60,974	$ 63,207

Other long-term assets consisted of the following (in thousands):

	December 31,	
	2021	2020
Long-term deferred tax assets	$ 3,758	$ 7,042
Non-current income tax receivable	118,085	122,993
Other assets	26,122	23,235
	$ 147,965	$ 153,270

Accrued liabilities consisted of the following (in thousands):

	December 31,	
	2021	2020
Employee compensation and benefits	$ 42,075	$ 55,449
Third-party royalties	4,428	5,906
Accrued expenses	30,899	24,809
Accrued severance	1,921	5,332
Current portion of operating lease liabilities	16,467	17,893
Other	7,725	19,646
	$ 103,515	$ 129,035

Other long-term liabilities consisted of the following (in thousands):

	December 31,	
	2021	2020
Long-term income tax payable	$ 91,614	$ 94,397
Other	7,228	4,556
	$ 98,842	$ 98,953

Accumulated other comprehensive income (loss) consisted of the following (in thousands):

	December 31,	
	2021	2020
Unrealized loss on available-for-sale debt securities, net of tax	$ (122)	$ (81)
Foreign currency translation adjustment, net of tax	(630)	1,345
	$ (752)	$ 1,264

NOTE 6 – FINANCIAL INSTRUMENTS

The Company has investments in debt securities which include corporate bonds and notes, treasury and agency notes and bills, commercial paper, certificates of deposit, and in equity securities consisting of money market funds. The Company classifies its debt securities as available-for-sale ("AFS"), which are accounted for at fair value with credit related losses recognized as a provision for credit losses in its Consolidated Statements of Operations and all non-credit related unrealized gains and losses recognized in accumulated other comprehensive income or loss on the Consolidated Balance Sheets. Under ASU 2016-01 (Topic 321), equity securities are measured at fair value with unrealized gains and losses recognized in other income and expense, net, in the Consolidated Statements of Operations.

The following is a summary of marketable securities at December 31, 2021 and December 31, 2020 (in thousands):

	December 31, 2021				
	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Allowance for Credit Losses	Estimated Fair Values
Marketable securities					
Corporate bonds and notes	$ 40,466	$ —	$ (53)	$ —	$ 40,413
Commercial paper	49,609	—	(18)	—	49,591
Total debt securities	90,075	—	(71)	—	90,004
Money market funds	12,372	—	—	—	12,372
Total equity securities	12,372	—	—	—	12,372
Total marketable securities	$ 102,447	$ —	$ (71)	$ —	$ 102,376
Reported in:					
Cash and cash equivalents					$ 41,842
Available-for-sale debt securities					60,534
Total marketable securities					$ 102,376

	December 31, 2020				
	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Allowance for Credit Losses	Estimated Fair Values
Marketable securities					
Corporate bonds and notes	$ 69,973	$ 29	$ (42)	$ —	$ 69,960
Commercial paper	15,991	—	(4)	—	15,987
Treasury and agency notes and bills	32,299	—	—	—	32,299
Total debt securities	118,263	29	(46)	—	118,246
Money market funds	3,849	—	—	—	3,849
Total equity securities	3,849	—	—	—	3,849
Total marketable securities	$ 122,112	$ 29	$ (46)	$ —	$ 122,095
Reported in:					
Cash and cash equivalents					$ 35,148
Available-for-sale debt securities					86,947
Total marketable securities					$ 122,095

At December 31, 2021 and December 31, 2020, the Company had $261.7 million and $257.1 million, respectively, in cash, cash equivalents and short-term investments. A significant portion of these amounts was held in marketable securities, as shown above. The remaining balance of $159.3 million and $135.0 million at December 31, 2021 and December 31, 2020, respectively, was cash held in operating accounts not included in the tables above.

Debt Securities

The gross realized gains and losses on sales of marketable debt securities were not significant during the years ended December 31, 2021, 2020 and 2019.

Unrealized losses on AFS debt securities were $0.1 million and $0.1 million, net of tax, as of December 31, 2021 and December 31, 2020, respectively. The Company evaluated whether the decline in fair value has resulted from credit losses or other factors and concluded these amounts were related to temporary fluctuations in value of AFS securities and were due primarily to changes in interest rates and market conditions of the underlying securities. In addition, the contractual terms of those investments do not permit the issuer to settle the securities at a price less than the amortized cost bases of the investments. The Company does not intend to sell the debt securities and it is more-likely-than-not that it will not be required to sell the investments before recovery of their amortized cost bases. The Company did not recognize a provision for credit loss expense related to its AFS debt securities for the years ended December 31, 2021 and 2020, respectively. No impairment charges were recorded on the AFS debt securities for the year ended December 31, 2019.

The following table summarizes the fair value and gross unrealized losses related to individual debt securities at December 31, 2021 and 2020, which have been in a continuous unrealized loss position, aggregated by investment category and length of time (in thousands):

December 31, 2021	**Less Than 12 Months**		**12 Months or More**		**Total**		**Fair Value**	
	Fair Value	**Gross Unrealized Losses**	**Fair Value**	**Gross Unrealized Losses**	**Fair Value**	**Gross Unrealized Losses**	**Cash and Cash Equivalents**	**AFS Debt Securities**
Corporate bonds and notes	$ 29,807	$ (45)	$ 10,382	$ (8)	$ 40,189	$ (53)	$ —	$ 40,189
Commercial paper	48,091	(18)	—	—	48,091	(18)	29,470	18,621
Total	$ 77,898	$ (63)	$ 10,382	$ (8)	$ 88,280	$ (71)	$ 29,470	$ 58,810

December 31, 2020	**Less Than 12 Months**		**12 Months or More**		**Total**	
	Fair Value	**Gross Unrealized Losses**	**Fair Value**	**Gross Unrealized Losses**	**Fair Value**	**Gross Unrealized Losses**
Corporate bonds and notes	$ 53,137	$ (42)	$ —	$ —	$ 53,137	$ (42)
Commercial paper	12,988	(4)	—	—	12,988	(4)
Total	$ 66,125	$ (46)	$ —	$ —	$ 66,125	$ (46)

The estimated fair value of marketable debt securities by contractual maturity at December 31, 2021 is shown below (in thousands). Actual maturities may differ from contractual maturities because issuers may have the right to call or prepay obligations without call or prepayment penalties.

	Estimated Fair Value
Due in one year or less	$ 85,856
Due in one to two years	4,148
Due in two to three years	—
Total	$ 90,004

Non-marketable Equity Securities

Upon merging with TiVo on June 1, 2020, the Company assumed certain investments in non-marketable equity securities. As of December 31, 2021 and December 31, 2020, other long-term assets included equity securities accounted for under the equity method with a carrying amount of $4.8 million and $4.2 million, respectively, and equity securities without a readily determinable fair value with a carrying amount of $0.1 million and $0.1 million, respectively. No impairments or adjustments to the carrying amount of the Company's equity securities without a readily determinable fair value were recognized in the years ended December 31, 2021 and 2020, respectively.

NOTE 7 – FAIR VALUE

The Company follows the authoritative guidance for fair value measurement and the fair value option for financial assets and financial liabilities. The Company carries its financial instruments at fair value with the exception of its long-term debt. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability, or an exit price, in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. The established fair value hierarchy requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. There are three levels of inputs that may be used to measure fair value:

Level 1 Quoted prices in active markets for identical assets.

Level 2 Observable market-based inputs or unobservable inputs that are corroborated by market data.

Level 3 Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets. Level 3 assets and liabilities include financial instruments whose value is determined using pricing models, discounted cash flow methodologies, or similar techniques, as well as instruments for which the determination of fair value requires significant management judgment or estimation.

When applying fair value principles in the valuation of assets, the Company is required to maximize the use of quoted market prices and minimize the use of unobservable inputs. The Company calculates the fair value of its Level 1 and Level 2 instruments based on the exchange traded price of similar or identical instruments, where available, or based on other observable inputs. There were no significant transfers into or out of Level 1 or Level 2 that occurred between December 31, 2020 and December 31, 2021.

The following sets forth the fair value, and classification within the hierarchy, of the Company's assets required to be measured at fair value on a recurring basis as of December 31, 2021 (in thousands):

	Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets				
Marketable securities				
Money market funds - equity securities (1)	$ 12,372	$ 10,372	$ 2,000	$ —
Corporate bonds and notes - debt securities (2)	40,413	—	40,413	—
Commercial paper - debt securities (3)	49,591	—	49,591	—
Total Assets	$ 102,376	$ 10,372	$ 92,004	$ —

(1) Reported as cash and cash equivalents in the Consolidated Balance Sheet.
(2) Reported as AFS debt securities in the Consolidated Balance Sheet.
(3) Reported as cash and cash equivalents if purchased with an original maturity of three months or less at the date of purchase; otherwise reported as AFS debt securities in the Consolidated Balance Sheet.

The following sets forth the fair value, and classification within the hierarchy, of the Company's assets required to be measured at fair value on a recurring basis as of December 31, 2020 (in thousands):

	Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets				
Marketable securities				
Money market funds - equity securities (1)	$ 3,849	$ 3,849	$ —	$ —
Corporate bonds and notes - debt securities (2)	69,960	—	69,960	—
Treasury and agency notes and bills - debt securities (3)	32,299	—	32,299	—
Commercial paper - debt securities (3)	15,987	—	15,987	—
Total Assets	$ 122,095	$ 3,849	$ 118,246	$ —

(1) Reported as cash and cash equivalents in the Consolidated Balance Sheet.
(2) Reported as AFS debt securities in the Consolidated Balance Sheet.
(3) Reported as cash and cash equivalents if purchased with an original maturity of three months or less at the date of purchase; otherwise reported as AFS debt securities in the Consolidated Balance Sheet.

Financial Instruments Not Recorded at Fair Value

The Company's long-term debt is carried at amortized cost and is measured at fair value on a quarterly basis for disclosure purposes. The carrying amounts and estimated fair values are as follows (in thousands):

	December 31, 2021		December 31, 2020	
	Carrying Amount	Estimated Fair Value	Carrying Amount	Estimated Fair Value
2020 Term B Loan Facility (1)	$ —	$ —	$ 839,302	$ 842,579
Refinanced Term B Loans (1)	765,487	764,530	—	—
2021 Convertible Notes	—	—	48	48
Total long-term debt, net	$ 765,487	$ 764,530	$ 839,350	$ 842,627

(1) Carrying amounts of long-term debt are net of unamortized debt discount and issuance costs of $24.3 million and $34.4 million as of December 31, 2021 and 2020, respectively. See "Note 11 – *Debt*" for additional information.

If reported at fair value in the Consolidated Balance Sheets, the Company's debt would be classified within Level 2 of the fair value hierarchy. The fair value of the debt was estimated based on the quoted market prices for the same or similar issues.

Non-Recurring Fair Value Measurements

The following table represents the activity in intangible assets that are measured at fair value on a non-recurring basis (in thousands):

	Patent Assets
Balance at December 31, 2020	$ —
Assets additions	—
Assets sold	—
Assets received (1)	8,787
Balance at December 31, 2021	$ 8,787

(1) This amount represents the value of the patents that were acquired by the Company during the third quarter of 2021. The fair value of these assets was measured using both the market approach – estimating the value of the acquired assets by way of comparison with other comparable transactions, and the cost approach – estimating the value of the acquired assets based on the cost it would take for the Company to create a comparable set of assets through its own research and development ("R&D") and patent prosecution efforts.

For purchase accounting related fair value measurements, see "Note 9 – Business Combinations."

NOTE 8 - LEASES

Under Topic 842, a contract is a lease, or contains a lease, if the contract conveys the right to control the use of identified property, plant, or equipment (an identified asset) for a period of time in exchange for consideration. To determine whether a contract conveys the right to control the use of an identified asset for a period of time, an entity shall assess whether, throughout the period of use, the entity has both of the following: (a) the right to obtain substantially all of the economic benefits from use of the identified asset; and (b) the right to direct the use of the identified asset.

The Company leases office and research facilities, data centers and office equipment under operating leases which expire through 2029. The Company's leases have remaining lease terms of one year to eight years, some of which may include options to extend the leases for five years or longer, and some of which may include options to terminate the leases within the next 6 years or less. Leases with an initial term of 12 months or less are not recorded on the balance sheets; expense for these leases is recognized on a straight-line basis over the lease term. Variable lease payments are expensed as incurred and are not included within the lease liability and right-of-use assets calculation. As a practical expedient, the Company elected, for all data centers, office and facility leases, not to separate nonlease components (e.g., common-area maintenance costs) from lease components (e.g., fixed payments including rent) and instead to account for each separate lease component and its associated non-lease components as a single lease component. As most of the leases do not provide an implicit rate, the Company generally, for purposes of discounting lease payments, uses its incremental borrowing rate based on the estimated rate of interest for collateralized borrowing over a similar term of the lease payments at commencement date.

The Company subleases certain real estate to third parties. The sublease portfolio consists of operating leases for previously exited office space. Certain subleases include variable payments for operating costs. The subleases are generally co-terminus with the head lease, or shorter. Subleases do not include any residual value guarantees or restrictions or covenants imposed by the leases. Income from subleases is recognized as a reduction to selling, general and administrative expenses.

The components of operating lease costs were as follows (in thousands):

	Years Ended December 31,		
	2021	**2020**	**2019**
Fixed lease cost (1)	$ 22,489	$ 17,407	$ 6,876
Variable lease cost	5,455	3,648	1,095
Less: sublease income	(9,723)	(5,423)	—
Total operating lease cost	$ 18,221	$ 15,632	$ 7,971

(1) Includes short-term leases costs, which were immaterial.

Other information related to leases was as follows (in thousands, except lease term and discount rate):

	Years Ended December 31,		
	2021	**2020**	**2019**
Cash paid for amounts included in the measurement of lease liabilities:			
Operating cash flows from operating leases	$ 22,845	$ 16,770	$ 6,183
ROU assets obtained in exchange for new lease liabilities:			
Operating leases	$ 6,131	$ 5,775	$ 5,612

	December 31, 2021	**December 31, 2020**
Weighted-average remaining lease term (years):		
Operating leases	4.4	5.1
Weighted-average discount rate:		
Operating leases	5.0%	5.2%

Future minimum lease payments and related lease liabilities as of December 31, 2021 were as follows (in thousands):

	Operating Lease Payments (1)	Sublease Income	Net Operating Lease Payments
2022	$ 19,723	$ (7,486)	$ 12,237
2023	18,635	(7,618)	11,017
2024	16,979	(7,610)	9,369
2025	15,091	(7,386)	7,705
2026	6,296	(935)	5,361
Thereafter	2,976	—	2,976
Total lease payments	79,700	(31,035)	48,665
Less: imputed interest	(8,575)	—	(8,575)
Present value of lease liabilities:	$ 71,125	$ (31,035)	$ 40,090
Less: current obligations under leases (accrued liabilities)	16,467		
Noncurrent operating lease liabilities	$ 54,658		

(1) Future minimum lease payments exclude short-term leases as well as payments to landlords for variable common area maintenance, insurance and real estate taxes.

NOTE 9 – BUSINESS COMBINATIONS

TiVo

Effective June 1, 2020, Xperi and TiVo completed the previously announced merger of equals transaction (the "Merger") contemplated by the Agreement and Plan of Merger and Reorganization, dated as of December 18, 2019, as amended on January 31, 2020, (the "Merger Agreement"), by and among Xperi, TiVo, XRAY-TWOLF HoldCo Corporation ("Xperi Holding"), XRAY Merger Sub Corporation ("Xperi Merger Sub") and TWOLF Merger Sub Corporation ("TiVo Merger Sub"). Immediately prior to the consummation of the Merger, Xperi Holding changed its name to "Xperi Holding Corporation" (the "Company"). Pursuant to the Merger Agreement, (i) Xperi Merger Sub was merged with and into Xperi, with Xperi surviving the merger as a subsidiary of Xperi Holding Corporation (the "Xperi Merger") and (ii) TiVo Merger Sub was merged with and into TiVo, with TiVo surviving the merger as a subsidiary of Xperi Holding Corporation (the "TiVo Merger" and together with the Xperi Merger, the "Mergers"). Immediately following the consummation of the Mergers, each of Xperi and TiVo became wholly-owned subsidiaries of the Company.

Upon completion of the Xperi Merger, each share of common stock, par value $0.001 per share, of Xperi (the "Xperi Common Stock") (excluding any shares of Xperi Common Stock that were held in treasury immediately prior to the effective time of the Xperi Merger, which were automatically canceled and retired for no consideration) was converted into the right to receive one fully paid and non-assessable share of common stock, par value $0.001 per share, of the Company ("Company Common Stock"). Upon completion of the TiVo Merger, (i) each share of common stock, par value $0.001 per share, of TiVo (the "TiVo Common Stock") (excluding any shares of TiVo Common Stock that were held in treasury immediately prior to the effective time of the TiVo Merger, which were automatically canceled and retired for no consideration) was converted into the right to receive 0.455 fully paid and non-assessable shares of common stock of the Company (the "Exchange Ratio"), in addition to cash in lieu of any fractional shares of the Company Common Stock.

As provided in the Merger Agreement, at the effective time of the Mergers, (i) all options, restricted shares, restricted stock unit awards and other equity awards relating to shares of Xperi Common Stock outstanding immediately prior to the effective time of the Mergers were generally automatically converted into options, restricted shares, restricted stock unit awards and other equity awards, respectively, relating to shares of Company Common Stock after giving effect to appropriate adjustments to reflect the Mergers and otherwise generally on the same terms and conditions as applied under the applicable plans and award agreements immediately prior to the effective time of the Mergers, and (ii) all options, restricted shares, restricted stock unit awards and other equity awards relating to shares of TiVo Common Stock that were outstanding immediately prior to the effective time of the Mergers (including Exchange Ratio) were generally automatically converted into options, restricted stock unit awards, restricted shares and other equity awards, respectively, relating to shares of Company Common Stock after giving effect to appropriate adjustments to reflect the Mergers and otherwise generally on the same terms and conditions as applied under the applicable plans and award agreements immediately prior to the effective time of the Mergers.

Following the Mergers, Xperi Common Stock and TiVo Common Stock were delisted from the Nasdaq Global Select Market ("Nasdaq") and deregistered under the Securities Exchange Act of 1934, as amended. Since June 2, 2020, the shares of the Company's common stock have been listed for trading on Nasdaq under the ticker symbol "XPER."

The Mergers created a leading consumer and entertainment product/solutions and IP licensing company. The Company's IP business includes one of the industry's largest and most successful IP portfolios licensed to a diverse base of customers. On the product side, the Company offers a seamless end-to-end entertainment experience from creation to consumption; with greater scale, technology depth and breadth, and a platform relevant to one of the biggest challenges consumers of entertainment face today – how to quickly and easily find, watch and enjoy entertainment.

Merger Consideration

The merger consideration of $828.3 million was calculated as follows (amounts in thousands except exchange ratio and share price):

TiVo common shares outstanding as of June 1, 2020		128,132		
TiVo exchange ratio		0.455		
Xperi Holding Corporation common stock issued in exchange		58,300		
Xperi Common Stock closing share price on June 1, 2020	$	14.00		
			$	816,201
Fair value of replaced TiVo equity awards relating to pre-acquisition vesting of the equity award holders' requisite service periods				12,133
Total merger consideration			$	828,334

Purchase Price Allocation

Based on an evaluation of the provisions of ASC 805, "Business Combinations," Xperi was determined to be the accounting acquirer in the Mergers. The Company has applied the acquisition method of accounting that requires, among other things, that identifiable assets acquired and liabilities assumed generally be recognized on the balance sheet at fair value as of the acquisition date. In determining the fair value, the Company utilized various forms of the income, cost and market approaches depending on the asset or liability being fair valued. The estimation of fair value required significant judgment related to future net cash flows (including revenue, operating expenses, and working capital), discount rates reflecting the risk inherent in each cash flow stream, competitive trends, market comparables, and other factors. Inputs were generally determined by taking into account historical data (supplemented by current and anticipated market conditions) and growth rates.

The following table sets forth the purchase price allocation reflective of measurement period adjustments ($ in thousands):

	Estimated Useful Life (years)		Preliminary Fair Value (1)	Measurement Period Adjustments (2)	Final Fair Value
Cash and cash equivalents			$ 117,424	$ —	$ 117,424
Accounts receivable			105,778		105,778
Unbilled contracts receivable			69,058		69,058
Other current assets			21,690	233	21,923
Long-term unbilled contracts receivable			129		129
Property and equipment			41,307		41,307
Operating lease right-of-use assets			71,444		71,444
Identifiable intangible assets:					
Patents	10	457,400			
Customer contracts and related relationships	4-9	358,200			
Developed technology	5	34,800			
Content database	9	6,200			
Trademarks and tradenames	N/A	21,400			
Total identifiable intangible assets			878,000		878,000
Goodwill			461,129	116	461,245
Other long-term assets			43,700	(141)	43,559
Accounts payable			(13,258)		(13,258)
Accrued legal fees			(5,619)		(5,619)
Accrued liabilities			(79,071)	(530)	(79,601)
Current portion of deferred revenue			(29,291)		(29,291)
Current portion of long-term debt			(734,609)		(734,609)
Deferred revenue, less current portion			(24,319)		(24,319)
Long-term deferred tax liabilities			(27,949)	421	(27,528)
Long-term debt			(48)		(48)
Noncurrent operating lease liabilities			(59,291)		(59,291)
Other long-term liabilities			(7,870)	(99)	(7,969)
Total purchase price			$ 828,334	$ —	$ 828,334

(1) As previously reported in the Company's Quarterly Report on Form 10-Q for the period ended June 30, 2020.

(2) All adjustments were recorded during the 12-month period following the Merger date. These measurement period adjustments primarily related to current indirect taxes payable, current and non-current income taxes receivable and payable, and deferred taxes as additional information was received and tax returns were finalized. All measurement period adjustments were offset against goodwill.

The following is a description of the methods used to determine the fair values of significant assets and liabilities.

Identifiable Intangible Assets

Identifiable intangible assets primarily consist of patents, developed technology, customer relationships, trademarks and tradenames, and content database. In determining the fair value, the Company utilized various forms of the income, cost and market approaches depending on the asset or liability being fair valued. The estimation of fair value required significant judgment related to cash flow forecasts, discount rates reflecting the risk inherent in each cash flow stream, competitive trends, market comparables and other factors. Inputs were generally determined using historical data supplemented by current and anticipated market conditions, and growth rates. Customer contracts and relationships relating to the IP business segment were valued using a "with and without" method. Significant assumptions used in this discounted cash flow analysis are the revenue growth rate, cost of sales, and the discount rate. Patents and other customer contracts and relationships relating to the Product business segment were valued using an excess earnings method. Significant assumptions used in the discounted cash flow analysis for (i) other customer contracts and relationships were the revenue growth rate, EBITDA margins, and the discount rate and (ii) patents were the revenue growth rate, EBITDA margins, and the discount rate. Trademark and tradename, developed technology, and content database intangible assets were valued using a relief-from-royalty method. The significant assumptions used in the discounted cash flow analysis for (i) trademarks and tradenames were the royalty rates, revenue growth rates, and discount rate, and (ii) developed technology and content database were the royalty rates.

Long-term Debt

On the Merger date, TiVo had outstanding debt under the 2019 Term Loan Facility Agreement ("TiVo 2019 Term Loan"), pursuant to which TiVo was required to pay a 3.0% prepayment premium if the loan was prepaid on or prior to November 22, 2020. Under the 2019 Term Loan Facility Agreement, the Mergers triggered certain change of control conditions that constitute an event of default, thus requiring the debt to be paid immediately following the consummation of the Mergers. In connection with the consummation of the Mergers, the Company, on June 1, 2020, paid the full amount of the outstanding loan balance, including the 3.0% prepayment penalty. See "Note 11 – *Debt*" for additional information.

Fair value of the TiVo 2019 Term Loan was measured based on the par value of principal outstanding plus prepayment premium, which is equal to the amount that was paid by Xperi immediately following the consummation of the Mergers. The fair value of the TiVo 2019 Term Loan would be classified in Level 2 of the fair value hierarchy.

Goodwill

The excess of the consideration transferred over the fair value of assets acquired and liabilities assumed was recognized as goodwill. The goodwill is generated from operational synergies and cost savings the Company expects to achieve from the combined operations, as well as the expected benefits from future technologies that do not meet the definition of an identifiable intangible asset and TiVo's knowledgeable and experienced workforce. Of the total goodwill acquired, $14.1 million is expected to be deductible for tax purposes; the remainder of the goodwill is not expected to be deductible for tax purposes.

Transaction and Severance Costs

In connection with the Mergers, the Company incurred significant expenses such as transaction-related costs (e.g. bankers fees, legal fees, consultant fees, etc.), lease impairment charges due to facilities consolidation, severance and retention costs (including stock-based compensation expense resulting from the contractually-required acceleration of equity instruments for departing executives). Total transaction related costs and lease impairment charges were $29.4 million and $2.4 million, respectively, in 2020. No significant transaction related costs and lease impairment charges were incurred in 2021. In addition, post-merger severance and retention costs (including related stock-based compensation expense) amounted to $6.4 million and $14.3 million in 2021 and 2020, respectively.

TiVo Results of Operations

TiVo's results of operations and cash flows have been included in the Company's consolidated financial statements for periods subsequent to June 1, 2020, and TiVo's assets and liabilities were recorded at their estimated fair values in the Company's Consolidated Balance Sheets as of June 1, 2020. For the year ended December 31, 2020, TiVo contributed $593.6 million of revenue and $263.8 million of operating income, respectively, to the operating results of the Company.

Supplemental Pro Forma Information

The following unaudited pro forma financial information assumes the companies were combined as of January 1, 2019. The unaudited pro forma financial information as presented below is for informational purposes only and is based on estimates and assumptions that have been made solely for purposes of developing such pro forma information. This is not necessarily indicative of the results of operations that would have been achieved if the Mergers had taken place on January 1, 2019, nor is it necessarily indicative of future results. Consequently, actual results could differ materially from the unaudited pro forma financial information presented below. The following table presents the pro forma operating results as if TiVo had been included in the Company's Consolidated Statements of Operations as of January 1, 2019 (unaudited, in thousands):

	Years Ended December 31,	
	2020	2019
Revenue	$ 1,142,603	$ 941,005
Net income (loss) attributable to Xperi Holding Corporation	$ 9,775	$ (562,153)

The unaudited supplemental pro forma information above includes the estimated impact of purchase accounting and other material, nonrecurring adjustments directly attributable to the Mergers. These pro forma adjustments primarily include the following (in thousands):

	Years Ended December 31, 2020	2019
Estimated increase (decrease) to earnings due to revenue adjustments resulting from purchase accounting	$ (4,823)	$ (7,191)
Estimated increase (decrease) to earnings to adjust for transaction and other related costs, including facilities impairment charges, incurred in connection with the Mergers	$ 34,569	$ (24,651)
Estimated increase (decrease) to earnings to adjust for severance and retention costs, including related stock-based compensation expense, incurred in connection with the Mergers	$ 15,865	$ (16,511)
Estimated increase (decrease) to earnings to reflect payoff of historical debt and issuance of new debt financing in connection with the Mergers	$ 23,121	$ (18,098)
Estimated decrease to earnings due to pro forma adjustments for income taxes (1)(2)	$ (13,605)	$ (21,519)

(1) For the year ended December 31, 2020, the pro forma tax adjustments primarily reflect the assumption that the combined company placed a valuation allowance on its federal and state deferred tax assets prior to 2020 and the applicability of Base Erosion and Anti-Abuse Tax (“BEAT”) to Xperi tax expense for the period prior to the Mergers.

(2) For the year ended December 31, 2019, the pro forma tax adjustments primarily reflect the assumption that the combined company placed a valuation allowance on its federal and state deferred tax assets prior to 2019 and the applicability of BEAT to Xperi’s tax expense.

The unaudited supplemental pro forma information above does not include any cost saving synergies from operating efficiencies.

MobiTV

On May 31, 2021, the Company completed its acquisition of certain assets and assumption of certain liabilities of MobiTV, Inc. (“MobiTV”, and the acquisition, the “MobiTV Acquisition”), a provider of application-based Pay-TV video delivery solutions. The acquisition expands the Company’s IPTV Managed Service capabilities, which is expected to grow the addressable market for the Company’s IPTV products and further secure TiVo’s position as a leading provider of Pay-TV solutions. The net purchase price for the MobiTV Acquisition was $17.4 million in cash.

Purchase Price Allocation

The MobiTV Acquisition has been accounted for as a business combination, using the acquisition method. The following table presents the allocation of the purchase price to the identifiable assets acquired and liabilities assumed based on the fair values at the acquisition date, with any excess of the purchase price over the estimated fair value of the identifiable net assets acquired recorded to goodwill, all of which is expected to be deductible for tax purposes. The following table sets forth the final purchase price allocation with no measure period adjustments identified ($ in thousands):

	Estimated Useful Life (years)		Final Fair Value
Other current assets			$ 390
Property and equipment			9,223
Operating lease right-of-use assets			1,186
Identifiable intangible assets:			
Patents	10	5,000	
Technology	6	3,260	
Total identifiable intangible assets			8,260
Goodwill			4,059
Other long-term assets			115
Accrued liabilities			(5,288)
Noncurrent operating lease liabilities			(545)
Total purchase price			$ 17,400

The results of operations and cash flows relating to the business acquired pursuant to the MobiTV Acquisition have been included in the Company's consolidated financial statements for periods subsequent to May 31, 2021, and the related assets and liabilities were recorded at their estimated fair values in the Company's Consolidated Balance Sheet as of May 31, 2021. For the year ended December 31, 2021, the acquired MobiTV business contributed $7.4 million in revenue and $4.4 million of operating loss to the operating results of the Company. The operations acquired in the MobiTV Acquisition are included in the Company's Product segment.

Supplemental Pro Forma Information

The following unaudited pro forma financial information assumes the MobiTV Acquisition was completed as of January 1, 2020. The unaudited pro forma financial information as presented below is for informational purposes only and is based on estimates and assumptions that have been made solely for purposes of developing such pro forma information. This is not necessarily indicative of the results of operations that would have been achieved if the MobiTV Acquisition had taken place on January 1, 2020, nor is it necessarily indicative of future results. Consequently, actual results could differ materially from the unaudited pro forma financial information presented below. The following table presents the pro forma operating results as if the acquired operations of MobiTV had been included in the Company's Consolidated Statements of Operations as of January 1, 2020 (unaudited, in thousands):

	Years Ended December 31,	
	2021	2020
Revenue	$ 881,556	$ 899,181
Net income (loss) attributable to Xperi Holding Corporation	$ (71,169)	$ 105,793

The unaudited supplemental pro forma information above includes the following pro forma adjustments: removal of certain elements of the historical MobiTV business that were not acquired, elimination of inter-company transactions between MobiTV and TiVo, adjustments for transaction related costs, and adjustments to reflect the impact of purchase accounting adjustments. The unaudited supplemental pro forma information above does not include any cost saving synergies from operating efficiencies.

NOTE 10 – GOODWILL AND IDENTIFIED INTANGIBLE ASSETS

Goodwill

The changes to the carrying value of goodwill from January 1, 2020 through December 31, 2021 are reflected below (in thousands):

December 31, 2019	$ 385,784
Goodwill acquired through the Mergers (1)	$ 461,129
Measurement period adjustment (2)	116
December 31, 2020	847,029
Goodwill acquired through a business acquisition (3)	4,059
December 31, 2021 (4)	$ 851,088

1) In connection with the TiVo Merger, the Company recorded $461.1 million of goodwill, representing the preliminary fair value as of the effective date of the Mergers. See "Note 9 – Business Combinations" for additional details.
(2) Representing measurement period adjustments primarily related to current indirect taxes payable, current and non-current income taxes receivable and payable, and deferred taxes as additional information was received and tax returns were finalized. See "Note 9 – Business Combinations" for additional details.
(3) Related to the MobiTV Acquisition completed in May 2021. For more information regarding the transaction, see "Note 9 – Business Combinations."
(4) Of this amount, approximately $527.8 million is allocated to the Company's Product reporting segment and approximately $323.3 million is allocated to its IP Licensing reporting segment.

Goodwill at each reporting unit is evaluated for potential impairment annually, as of the beginning of the fourth quarter, and whenever events or changes in circumstances indicate the carrying amount of goodwill may not be recoverable. The process of evaluating goodwill for potential impairment is subjective and requires significant estimates, assumptions and judgments particularly related to the identification of reporting units, the assignment of assets and liabilities to reporting units and estimating the fair value of each reporting unit.

As part of its annual goodwill impairment test, the Company elected to proceed with a quantitative goodwill impairment test as of October 1, 2021 using the financial information as of September 30, 2021. Based on the quantitative assessment, the Company concluded that the fair value of the reporting units exceeded the carrying amount for both the Product and IP Licensing reporting units and no goodwill impairment charges were recognized. In addition, there have been no significant events or circumstances affecting the valuation of goodwill subsequent to the annual impairment test through December 31, 2021.

During the first quarter of 2020, the COVID-19 pandemic rapidly spread globally and has created unprecedented disruptions in economic activity and financial markets. Due to resulting changes in macroeconomic conditions, industry outlook, and a meaningful decline in the Company’s share price, indicators of potential goodwill impairment were identified. The Company proceeded with a quantitative interim goodwill impairment test as of March 31, 2020. Based on the quantitative assessment, the Company concluded that the fair value of the reporting units exceeded the carrying amount for both Product Licensing and Semiconductor and IP Licensing. As a result, no goodwill impairment charges were recognized in the three months ended March 31, 2020.

During the fourth quarter of 2020, the COVID-19 pandemic continued to have a significant and negative impact on business and economic activities in the U.S. and around the world. The resulting global economic downturn had negatively impacted, and was expected to continue to negatively impact, the Company’s consolidated financial results for the remainder of 2020 and into 2021. Due to continued reduction in demand in certain markets and industries, including the automotive market, as well as declines in the Company’s share price, management concluded there were indicators of potential goodwill impairment. The Company proceeded with a quantitative annual goodwill impairment test as of October 1, 2020 using the financial information as of September 30, 2020. Based on the quantitative assessment, the Company concluded that the fair value of the reporting units exceeded the carrying amount for both the Product and IP Licensing reporting units. As a result, no goodwill impairment charges were recognized.

When performing the quantitative goodwill impairment test, the Company first determines the fair value of a reporting unit using weighted results derived from an income approach and market approaches. The fair value using an income approach is estimated through the discounted cash flow method based on assumptions about future conditions such as revenue growth rates associated with certain revenue streams, forecasted R&D expenses, discount rates, and other assumptions. Market approaches used by management include the market comparable method, which estimates the fair value based on revenue multiples from comparable companies in similar lines of business, and the market transaction method, which estimates the fair value of the reporting unit by utilizing comparable transactions and transaction multiples.

The Company also assessed impairment of indefinite-lived and long-lived assets other than goodwill by performing a qualitative assessment. No impairment of indefinite-lived and long-lived assets other than goodwill was indicated as the Company concluded that it was more likely than not that the fair value of indefinite-lived and long-lived assets other than goodwill exceeded their respective carrying amounts.

Identified Intangible Assets

Identified intangible assets consisted of the following (in thousands):

		December 31, 2021			December 31, 2020		
	Average Life (Years)	Gross Assets	Accumulated Amortization	Net	Gross Assets	Accumulated Amortization	Net
Finite-lived intangible assets							
Acquired patents / core technology (1) (3)	3-10	$ 672,872	$ (224,508)	$ 448,364	$ 659,085	$ (167,916)	$ 491,169
Existing technology / content database (2)	5-10	251,445	(206,934)	44,511	248,110	(169,326)	78,784
Customer contracts and related relationships	3-9	649,926	(360,543)	289,383	650,171	(256,199)	393,972
Trademarks/trade name	4-10	40,083	(25,825)	14,258	40,083	(21,029)	19,054
Non-competition agreements	1	2,231	(2,231)	—	2,231	(2,231)	—
Total finite-lived intangible assets		1,616,557	(820,041)	796,516	1,599,680	(616,701)	982,979
Indefinite-lived intangible assets							
TiVo Tradename/trademarks	N/A	21,400	—	21,400	21,400	—	21,400
Total intangible assets		$1,637,957	$ (820,041)	$ 817,916	$1,621,080	$ (616,701)	$1,004,379

(1) In May 2021, patents were acquired through the MobiTV Acquisition with a purchase price value equal to $5.0 million. See "Note 9 – Business Combinations."
(2) In May 2021, existing technology was acquired through the MobiTV Acquisition with a purchase price value equal to $3.3 million. See "Note 9 – Business Combinations."
(3) In September 2021, patents were acquired by the Company with a fair value measured at $8.8 million. See "Note 7 – Fair Value" for additional information.

As of December 31, 2021, the estimated future amortization expense of total finite-lived intangible assets was as follows (in thousands):

2022	$	156,032
2023		145,061
2024		106,148
2025		81,717
2026		78,697
Thereafter		228,861
	$	796,516

NOTE 11 – DEBT

The outstanding amounts of debt were as follows (in thousands):

	December 31, 2021		December 31, 2020	
2020 Term B Loan Facility	$	—	$	873,750
Refinanced Term B Loans		789,750		—
2021 Convertible Notes		—		48
Unamortized debt discount and issuance costs		(24,263)		(34,448)
		765,487		839,350
Less: current portion, net of debt discount and issuance costs		(36,095)		(43,689)
Total long-term debt, net of current portion	$	729,392	$	795,661

2020 Term B Loan Facility

On June 1, 2020, in connection with the consummation of the Mergers with TiVo, the Company entered into a Credit Agreement (the "2020 Credit Agreement") by and among the Company, the lenders party thereto and Bank of America, N.A., as administrative agent and collateral agent. The 2020 Credit Agreement provided for a five-year senior secured term loan B facility in an aggregate principal amount of $1,050 million (the "2020 Term B Loan Facility"). The interest rate applicable to loans outstanding under the 2020 Term B Loan Facility was equal to, at the Company's option, either (i) a base rate plus a margin of 3.00% per annum or (ii) LIBOR plus a margin of 4.00% per annum. Commencing on September 30, 2020, the 2020 Term B Loan Facility was amortized in equal quarterly installments equal to (i) with respect to repayments occurring on or prior to June 1, 2023, 1.25% of the original principal amount of the 2020 Term B Loan Facility and (ii) with respect to repayments occurring after June 1, 2023 and prior to June 1, 2025, 1.875% of the original principal amount of the 2020 Term B Loan Facility, with the balance payable on the maturity date of the 2020 Term B Loan Facility (in each case subject to adjustment for prepayments). The 2020 Term B Loan Facility was scheduled to mature on June 1, 2025. Upon the closing of the 2020 Credit Agreement, the Company borrowed $1,050 million under the 2020 Term B Loan Facility. Net proceeds were used on June 1, 2020, together with cash and cash equivalents, to refinance the existing indebtedness of the combined Company (the "Debt Financing"), including paydown of the TiVo 2019 Term Loan of $734.6 million. See "Note 9 – Business Combinations" for additional information relating to the Mergers. Additionally, debt discount and issuance costs of approximately $39.7 million were incurred and capitalized in connection with the 2020 Term B Loan Facility in June 2020. The Company commenced repaying quarterly installments under the 2020 Term B Loan Facility in the third quarter of 2020, and also elected to make a voluntary principal payment of $150.0 million on December 31, 2020.

Refinanced Term B Loans

On June 8, 2021, the Company and the loan parties entered into Amendment No. 1 to the 2020 Credit Agreement (the "Amendment"). In connection with the Amendment, the Company made a voluntary prepayment of $50.6 million of the term loan outstanding under the 2020 Credit Agreement using cash on hand. The Amendment provided for, among other things, (i) a replacement of the outstanding term loans with a new tranche of term loans (the "Refinanced Term B Loans") in an aggregate principal amount of $810.0 million, (ii) a reduction of the interest rate margin applicable to such loans to (x) in the case of base rate loans, 2.50% per annum and (y) in the case of Eurodollar loans, LIBOR plus a margin of 3.50% per annum, (iii) a prepayment premium of 1.00% in connection with any repricing transaction with respect to the Refinanced Term B Loans within six months of the closing date of the Amendment, (iv) an extension of the maturity to June 8, 2028, and (v) certain additional amendments, including amendments to provide the Company with additional flexibility under the covenant governing restricted payments. The Company commenced repaying quarterly installments under the Refinanced Term B Loans in the third quarter of 2021.

The obligations under the 2020 Credit Agreement, inclusive of any changes by the Amendment, continue to be guaranteed by Xperi, TiVo and certain other of the Company's wholly-owned material domestic subsidiaries (collectively, the "Guarantors") and continue to be secured by a lien on substantially all of the assets of the Company and the Guarantors.

The 2020 Credit Agreement, as amended, contains customary events of default, upon the occurrence of which, after any applicable cure period, the lenders will have the ability to accelerate all outstanding loans thereunder. The 2020 Credit Agreement, as amended, also contains customary representations and warranties and affirmative and negative covenants that, among other things and subject to certain exceptions, restrict the ability of the Company and its subsidiaries to create or incur certain liens, incur or guarantee additional indebtedness, merge or consolidate with other companies, transfer or sell assets and make restricted payments. The 2020 Credit Agreement, as amended, requires the Company to maintain a total net leverage ratio of no greater than 3.00x in order access an annual basket from which to make restricted payments (such as dividend payments and share repurchases). The Company was in compliance with all requirements as of December 31, 2021. The 2020 Credit Agreement, as amended, also requires the Company to make additional cash payments on an annual basis beginning in March 2023 based on certain leverage ratios and excess cash flow generated for the immediately preceding fiscal year.

Certain lenders of the 2020 Term B Loan Facility participated in the Amendment and the changes in terms were not considered substantial. Accordingly, the Company accounted for the refinancing event for these lenders as a debt modification under ASC 470-50, "Debt — Modifications and Extinguishments." Under its policy, the Company elected to continue to defer the unamortized debt discount and issuance costs for these continuing lenders related to the partial pay-down of the debt. Certain lenders of the 2020 Term B Loan Facility did not participate in the Amendment. Accordingly, the Company accounted for the refinancing event for these lenders as a debt extinguishment. As a result, the Company recorded an $8.0 million loss on debt extinguishment in the year ended December 31, 2021, related to the write-off of unamortized debt discount and issuance costs for the portions of the 2020 Term B Loan Facility considered to be extinguished.

In connection with its entry into the Amendment, the Company incurred $6.8 million in debt financing costs, of which $4.2 million were capitalized in accordance with ASC 835-30 "Debt Issuance Costs" and, together with a portion of the unamortized debt discount and issuance costs from the 2020 Term B Loan Facility, are being amortized into interest expense over the term of the Amendment. Under ASC 470-50, the remaining $2.6 million, primarily related to third-party fees, were recorded as selling, general and administrative expense in the year ended December 31, 2021.

2018 Amended Term B Loan

On December 1, 2016, in connection with the consummation of the acquisition of DTS, the Company entered into a Credit Agreement (the "2016 Credit Agreement") by and among the Company, Royal Bank of Canada, as administrative agent and collateral agent, and the lenders party thereto. The Credit Agreement provided for a $600.0 million seven-year term B loan facility (the "Term B Loan Facility") which would mature on November 30, 2023.

On January 23, 2018, the Company and the loan parties entered into an amendment to the Credit Agreement (the 2018 "Amendment"). In connection with the 2018 Amendment, the Company made a voluntary prepayment of $100.0 million of the term loan outstanding under the Credit Agreement using cash on hand. The 2018 Amendment provided for, among other things, a replacement of the outstanding initial term loan with the new tranche term B-1 loan in a principal amount of $494.0 million. On June 1, 2020, the entire remaining balance of $344.0 million was paid off by using the proceeds from the 2020 Term B Loan Facility as part of the TiVo Merger transaction. As a result of the refinancing transaction, the Company recorded a loss on early extinguishment of debt of $8.3 million, which consisted of unamortized debt discount and issuance costs, in its Consolidated Statements of Operations for the year ended December 31, 2020.

2019 Term Loan Facility

In connection with the Mergers, the Company paid off all outstanding balance under the TiVo 2019 Term Loan. The 2019 Term Loan Facility Agreement was entered into on November 22, 2019 between TiVo, as borrower, and the lenders party thereto and HPS Investment Partners, LLC as administrative agent and collateral agent. Under the 2019 Term Loan, TiVo borrowed $715.0 million, which was scheduled to mature on November 22, 2024.
Under the 2019 Term Loan Facility Agreement, TiVo was required to pay a 3.0% prepayment premium if the loan was prepaid on or prior to November 22, 2020. Further under the same Loan Facility Agreement, the Mergers triggered certain change of control conditions that constitute an event of default, thus requiring the debt to be repaid immediately following the consummation of the Mergers. Using the proceeds from the aforementioned 2020 Term B Loan Facility, the Company, on June 1, 2020, made a full repayment of the 2019 Term Loan along with the prepayment penalty for a total payoff amount of $734.6 million.

2021 Convertible Notes

Upon consummation of the TiVo Merger on June 1, 2020, the Company assumed $48.0 thousand of Convertible Senior Notes that were issued by TiVo Solutions Inc. in September 2014 and matured October 1, 2021 (the “2021 Convertible Notes”). The 2021 Convertible Notes bore interest at an annual rate of 2.0%, payable semi-annually in arrears on April 1 and October 1 of each year. On September 24, 2021, the entire balance of $48.0 thousand was paid off.

Interest Expense and Expected Principal Payments

At December 31, 2021, $789.8 million in total debt was outstanding. There were also $24.3 million of unamortized debt discount and issuance costs recorded as a reduction from the carrying amount of the debt. Interest rate on the Refinanced Term B Loans, including the amortization of debt discount and issuance costs was 4.2% and interest is payable monthly. Interest expense was $39.0 million, $37.9 million and $23.4 million for the years ended December 31, 2021, 2020 and 2019, respectively. Amortized debt discount and issuance costs, which were included in interest expense, amounted to $6.4 million, $6.3 million and $2.5 million for the years ended December 31, 2021, 2020 and 2019, respectively.

As of December 31, 2021, future minimum principal payments for long-term debt, including the current portion, are summarized as follows (in thousands):

2022	$ 40,500
2023	40,500
2024	40,500
2025	40,500
2026	40,500
Thereafter	587,250
Total	$ 789,750

NOTE 12 – NET INCOME (LOSS) PER SHARE

The following table sets forth the computation of basic and diluted shares (in thousands):

	Years Ended December 31,		
	2021	**2020**	**2019**
Denominator:			
Weighted average common shares outstanding	104,735	82,840	49,120
Total common shares-basic	104,735	82,840	49,120
Effect of dilutive securities:			
Options	—	1	—
Restricted stock awards and units	—	1,015	—
Total common shares-diluted	104,735	83,856	49,120

Basic net income (loss) per share is computed using the weighted average number of shares of common stock outstanding during the period, excluding any unvested restricted stock awards that are subject to repurchase. Diluted net income (loss) per share is computed using the treasury stock method to calculate the weighted average number of shares of common stock and, if dilutive, potential common shares outstanding during the period. Potentially dilutive common shares include unvested restricted stock awards and units and incremental common shares issuable upon the exercise of stock options, less shares repurchased from assumed proceeds. The assumed proceeds calculation includes actual proceeds to be received from the employee upon exercise and the average unrecognized stock compensation cost during the period.

For the year ended December 31, 2021, there was no difference in the weighted average number of common shares used for the calculation of basic and diluted loss per share as the effect of all potentially dilutive shares outstanding was anti-dilutive. A total of 5.3 million shares subject to stock options and restricted stock awards and units were excluded for the year ended December 31, 2021 from the computation of diluted net loss per share because including them would have been anti-dilutive.

For the year ended December 31, 2020, 2.1 million shares subject to stock options and restricted stock awards and units were excluded from the computation of diluted net income per share as they were anti-dilutive.

For the year ended December 31, 2019, there was no difference in the weighted average number of common shares used for the calculation of basic and diluted loss per share as the effect of all potentially dilutive shares outstanding was anti-dilutive. A total of 1.3 million shares subject to stock options and restricted stock awards and units were excluded for the year ended December 31, 2019 from the computation of diluted net loss per share because including them would have been anti-dilutive.

NOTE 13 – STOCKHOLDERS' EQUITY

As described in Note 9, Xperi and TiVo completed the Mergers on June 1, 2020 to form Xperi Holding Corporation. Upon completion of the Mergers, each share of common stock of Xperi was converted into the right to receive one fully paid and non-assessable share of Company Common Stock. Further upon completion of the Mergers, each share of TiVo Common Stock was converted into the right to receive 0.455 fully paid and non-assessable shares of the Company Common Stock (the "Exchange Ratio"), in addition to cash in lieu of any fractional shares of the Company Common Stock. Following the Mergers, Xperi Common Stock and TiVo Common Stock were delisted from Nasdaq. Since June 2, 2020, the shares of Company Common Stock have been listed for trading on Nasdaq under ticker symbol "XPER."

Equity Incentive Plans

Prior to the Merger Date, the Company had implemented and granted equity awards under the Xperi Corporation Seventh Amended and Restated 2003 Equity Incentive Plan. As of the effective date of the Mergers, no future grants will be made under the plan.

The 2020 EIP

In connection with the Mergers and immediately prior to June 1, 2020, the Company adopted the Xperi Holding Corporation 2020 Equity Incentive Plan (the "2020 EIP").

Under the 2020 EIP, the Company may grant equity-based awards to employees, non-employee directors, and consultants for services rendered to the Company (or any parent or subsidiary) in the form of stock options, stock awards, restricted stock awards, restricted stock units, stock appreciation rights, dividend equivalents and performance awards (or any combination thereof). A total of 8,000,000 shares have been reserved for issuance under the 2020 EIP provided that each share issued pursuant to "full value" awards (i.e., stock awards, restricted stock awards, restricted stock units, performance awards and dividend equivalents) are counted against shares available for issuance under the 2020 EIP on a 1.5 to 1 ratio.

The 2020 EIP provides for option grants designed as either incentive stock options or nonstatutory options. Options generally are granted with an exercise price not less than the value of the common stock on the grant date and have a term of ten years from the date of grant and vest over a four-year period. The vesting criteria for restricted stock awards and restricted stock units is generally the passage of time or meeting certain performance-based objectives, and continued employment through the vesting period generally over four years for time-based awards.

Assumed Plans

On June 1, 2020, the Company assumed all then-outstanding stock options, awards, and shares available and reserved for issuance under all legacy Equity Incentive Plans of TiVo (collectively, the "Assumed Plans"). Stock options assumed from the Assumed Plans generally have vesting periods of four years and a contractual term of seven years. Awards of restricted stock and restricted stock units assumed from the Assumed Plans are generally subject to a four year vesting period. The number of shares subject to stock options and restricted stock unit awards outstanding under these plans are included in the tables below. Shares reserved under the Assumed Plans will be available for future grants.

As of December 31, 2021, there were 4.4 million shares reserved for future grants under both the 2020 EIP and the Assumed Plans.

A summary of the stock option activity is presented below (in thousands, except per share amounts):

	Options Outstanding			
	Number of Shares Subject to Options	Weighted Average Exercise Price Per Share	Weighted Average Remaining Contractual Life (in years)	Aggregate Intrinsic Value
Balance at December 31, 2018	678	$ 26.39		
Options granted	—	$ —		
Options exercised	(42)	$ 16.66		
Options canceled / forfeited / expired	(31)	$ 33.61		
Balance at December 31, 2019	605	$ 26.68		
Options granted	—	$ —		
Options assumed	175	$ 50.96		
Options exercised	(7)	$ 13.47		
Options canceled / forfeited / expired	(136)	$ 44.59		
Balance at December 31, 2020	637	$ 29.59		
Options granted	—	$ —		
Options exercised	(39)	$ 20.03		
Options canceled / forfeited / expired	(151)	$ 44.99		
Balance at December 31, 2021	447	$ 25.22	2.51	$ 89
Vested and expected to vest at December 31, 2021	447		2.51	$ 89
Exercisable at December 31, 2021	447		2.51	$ 89

The following table summarizes information about stock options outstanding and exercisable under all of the Company's plans at December 31, 2021:

	Options Outstanding			Options Exercisable	
Range of Exercise Prices per Share	Number Outstanding (in thousands)	Weighted Average Remaining Contractual Life (in years)	Weighted Average Exercise Price per Share	Number Exercisable (in thousands)	Weighted Average Exercise Price per Share
$14.25 - $19.24	107	1.71	$ 18.25	107	$ 18.25
$19.34 - $20.43	129	1.65	$ 19.88	129	$ 19.88
$22.19 - $22.52	91	5.12	$ 22.41	91	$ 22.41
$22.71 - $51.52	97	2.62	$ 35.70	97	$ 35.70
$54.69 - $54.69	23	0.16	$ 54.69	23	$ 54.69
$14.25 - $54.69	447	2.51	$ 25.22	447	$ 25.22

Restricted Stock Awards and Units

Information with respect to outstanding restricted stock awards and units (including both time-based vesting and performance-based vesting) as of December 31, 2021 is as follows (in thousands, except per share amounts):

	Restricted Stock and Restricted Stock Units			
	Number of Shares Subject to Time-based Vesting	**Number of Shares Subject to Performance-based Vesting**	**Total Number of Shares**	**Weighted Average Grant Date Fair Value Per Share**
Balance at December 31, 2018	2,149	757	2,906	$ 29.10
Awards and units granted	1,266	4	1,270	$ 22.79
Awards and units vested / earned	(865)	(118)	(983)	$ 30.62
Awards and units canceled / forfeited	(179)	(89)	(268)	$ 27.53
Balance at December 31, 2019	2,371	554	2,925	$ 25.99
Awards and units granted	3,331	994	4,325	$ 14.64
Awards and units assumed	2,185	253	2,438	$ 13.99
Awards converted	11	(11)	—	$ 22.45
Awards and units vested / earned	(1,676)	(487)	(2,163)	$ 21.12
Awards and units canceled / forfeited	(560)	(242)	(802)	$ 19.96
Balance at December 31, 2020	5,662	1,061	6,723	$ 16.63
Awards and units granted	3,959	650	4,609	$ 22.77
Awards and units vested / earned	(1,916)	(87)	(2,003)	$ 17.79
Awards and units canceled / forfeited	(890)	(99)	(989)	$ 17.75
Balance at December 31, 2021	6,815	1,525	8,340	19.61

Performance Awards and Units

Performance awards and units may be granted to employees or consultants based upon, among other things, the contributions, responsibilities and other compensation of the particular employee or consultant. The value and the vesting of such performance awards and units are generally linked to one or more performance goals or certain market conditions determined by the Company, in each case on a specified date or dates or over any period or periods determined by the Company, and may range from zero to 200 percent of the grant. For performance awards subject to a market vesting condition, the fair value per award is fixed at the grant date and the amount of compensation expense is not adjusted during the performance period regardless of changes in the level of achievement of the market condition.

Employee Stock Purchase Plans

Prior to the Mergers, the Company had implemented the Xperi Corporation 2003 Employee Stock Purchase Plan and the International Employee Stock Purchase Plan, both of which were terminated immediately prior to the effective time of the Mergers.

In connection with the Mergers and immediately prior to June 1, 2020, the Company adopted the Xperi Holding Corporation 2020 Employee Stock Purchase Plan (the “2020 ESPP”). The 2020 ESPP is implemented through consecutive overlapping 24-month offering periods, each of which is comprised of four six-month purchase periods. The first offering period commenced on September 1, 2020 and will end on August 31, 2022. Each subsequent offering period under the 2020 ESPP will be twenty-four (24) months long and will commence on each September 1 and March 1 during the term of the plan. Participants may contribute up to 100% of their base earnings and commissions through payroll deductions, and the accumulated deductions will be applied to the purchase of shares on each semi-annual purchase date. The purchase price per share will equal 85% of the fair market value per share on the start date of the offering period or, if lower, 85% of the fair market value per share on the semi-annual purchase date.

An eligible employee’s right to buy the Company’s common stock under the 2020 ESPP may not accrue at a rate in excess of $25,000 of the fair market value of such shares per calendar year for each calendar year of an offering period. If the fair market value per share of the Company’s common stock on any purchase date during an offering period is less than the fair market value per share on the start date of the 24-month offering period, then that offering period will automatically terminate and a new 24-month offering period will begin on the next business day. All participants in the terminated offering will be transferred to the new offering period.

As of December 31, 2021, there were 0.8 million shares reserved for grant under the Company's 2020 ESPP.

Dividends

Stockholders of the Company's common stock are entitled to receive dividends when declared by the Company's Board of Directors. For the years ended December 31, 2021, 2020 and 2019, dividends declared were $0.20, $0.50, and $0.80 per common share, respectively.

The capacity to pay dividends in the future depends on many factors, including the Company's financial condition, results of operations, capital requirements, capital structure, industry practice and other business conditions that the Board of Directors considers relevant.

Stock Repurchase Programs

Following the termination of Xperi's prior stock repurchase program after the closing of the Mergers, on June 12, 2020 the Board of Directors (the "Board") of the Company authorized a new stock repurchase program providing for the repurchase of up to $150.0 million of the Company's Common Stock dependent on market conditions, share prices and other factors. On April 22, 2021, the Board authorized an additional $100.0 million of purchases under the existing stock repurchase plan.

As of December 31, 2021, the Company has repurchased a total of approximately 9.0 million shares of common stock, since inception of the plan, at an average price of $17.29 per share for a total cost of $155.0 million. As of December 31, 2020, the Company had repurchased a total of approximately 4.9 million shares of common stock, since inception of the plan, at an average price of $14.25 per share for a total cost of $70.1 million. The shares repurchased are recorded as treasury stock and are accounted for under the cost method. No expiration date has been specified for this plan. As of December 31, 2021, the total remaining amount available for repurchase was $95.0 million. The Company plans to continue to execute authorized repurchases from time to time under the plan.

In connection with the Mergers, all shares repurchased by the Company as of June 1, 2020 and recorded as treasury stock were canceled and retired. The Company accounts for stock repurchases using the cost method and records retirement of treasury stock as a reduction of the cumulative treasury stock paid-in capital balance. Once the cumulative balance is reduced to zero, any remaining difference resulting from the retirement of treasury stock is recorded as a reduction of retained earnings.

The Company issues restricted stock and restricted stock units (collectively, "restricted awards") as part of the equity incentive plans described above. For the majority of restricted awards, shares are withheld to satisfy required withholding taxes at the vesting date. Shares withheld to satisfy required withholding taxes in connection with the vesting of restricted awards are treated as common stock repurchases in the consolidated financial statements because they reduce the number of shares that would have been issued on vesting. However, these withheld shares are not included in common stock repurchases under the Company's authorized share repurchase plan. During the years ended December 31, 2021, 2020 and 2019, the Company withheld 0.8 million, 0.7 million and 0.2 million shares of common stock to satisfy $15.9 million, $10.5 million and $4.5 million of required withholding taxes, respectively.

NOTE 14 – STOCK-BASED COMPENSATION EXPENSE

The effect of recording stock-based compensation expense for the years ended December 31, 2021, 2020 and 2019 is as follows (in thousands):

	Years Ended December 31,		
	2021	**2020**	**2019**
Cost of revenue, excluding depreciation and amortization of intangible assets	$ 1,972	$ 781	$ —
Research, development and other related costs	19,833	13,592	14,643
Selling, general and administrative	36,377	24,762	16,911
Total stock-based compensation expense	58,182	39,135	31,554
Tax effect on stock-based compensation expense	(233)	(2,116)	(5,051)
Net effect on net income (loss)	$ 57,949	$ 37,019	$ 26,503

Stock-based compensation expense categorized by various equity components for the years ended December 31, 2021, 2020 and 2019 is summarized in the table below (in thousands):

	Years Ended December 31,		
	2021	2020	2019
Restricted stock awards and units	$ 52,164	$ 36,451	$ 29,031
Employee stock purchase plan	5,952	2,613	2,304
Employee stock options	66	71	219
Total stock-based compensation expense	$ 58,182	$ 39,135	$ 31,554

The total fair value of restricted stock awards and units vested during the years ended December 31, 2021, 2020 and 2019 was $35.6 million, $45.7 million and $30.1 million, respectively.

The total intrinsic value of options exercised during the years ended December 31, 2021, 2020 and 2019 was $0.1 million, $0.1 million and $0.2 million, respectively. The intrinsic value is calculated as the difference between the market value on the date of exercise and the exercise price of the shares.

As of December 31, 2021, the unrecognized stock-based compensation balance after estimated forfeitures consisted of none related to unvested stock options, and $104.3 million related to restricted stock awards and units, including performance-based awards and units, to be recognized over an estimated weighted average amortization period of 2.5 years.

As of December 31, 2020, the unrecognized stock-based compensation balance after estimated forfeitures consisted of $0.1 million related to unvested stock options, to be recognized over an estimated weighted average amortization period of 0.8 years, and $73.5 million related to restricted stock awards and units, including performance-based awards and units, to be recognized over an estimated weighted average amortization period of 2.7 years.

The Company uses the Black-Scholes option pricing model to determine the estimated fair value of options and ESPP shares. The fair value of each option grant is determined on the date of grant and the expense is recorded on a straight-line basis. The assumptions used in the model include expected life, volatility, risk-free interest rate, and dividend yield. The Company's determinations of these assumptions are outlined below.

Expected life – The expected life assumption is based on analysis of the Company's historical employee exercise patterns. The expected life of options granted under the ESPP represents the offering period of two years.

Volatility – Volatility is calculated using the historical volatility of the Company's common stock for a term consistent with the expected life. Historical volatility of the Company's common stock is also utilized for the ESPP.

Risk-free interest rate – The risk-free interest rate assumption is based on the U.S. Treasury rate for issues with remaining terms similar to the expected life of the options.

Dividend yield – Expected dividend yield is calculated based on cash dividends declared by the Board for the previous four quarters and dividing that result by the average closing price of the Company's common stock for the quarter. Cash dividends are not paid on options, restricted stock units or unvested restricted stock awards.

In addition, the Company estimates forfeiture rates. Forfeitures are estimated at the time of grant and revised in subsequent periods if actual forfeitures differ from those estimates. Historical data is used to estimate pre-vesting option forfeitures and record stock-based compensation expense only for those awards that are expected to vest.

There were no stock options granted during the years ended December 31, 2021, 2020 and 2019.

The following assumptions were used to value the ESPP shares:

	Years Ended December 31,		
	2021	2020	2019
Expected life (years)	2.0	2.0	2.0
Risk-free interest rate	0.1 - 0.2%	0.1 - 1.4%	1.7 - 2.5%
Dividend yield	0.9 - 1.2%	1.4 - 4.0%	3.5 - 5.4%
Expected volatility	52.0 - 52.0%	45.8 - 57.5%	51.7 - 53.4%

For the years ended December 31, 2021, 2020 and 2019, an aggregate of 1,238,000, 355,000 and 386,000 common shares, respectively, were purchased pursuant to the ESPP.
The Company uses a Monte Carlo simulation to determine the grant date fair value of performance stock units subject to market conditions, or market-based PSUs. The following assumptions were used to value the performance stock units subject to market conditions granted in the years ended December 31, 2021 and 2020:

	Years Ended December 31,	
	March 2021	July 2020
Expected life (in years)	3.0	3.0
Risk-free interest rate	0.3%	0.2%
Dividend yield	1.0%	1.4%
Expected volatility	47.9%	51.3%

There were no market-based PSUs granted during the year ended December 31, 2019.

NOTE 15 – INCOME TAXES

The components of total income (loss) before taxes from continuing operations are as follows (in thousands):

	Years Ended December 31,		
	2021	2020	2019
U.S.	$ 6,054	$ 140,428	$ (53,346)
Foreign	(36,589)	(4,519)	(29,711)
Total income (loss) before taxes from continuing operations	$ (30,535)	$ 135,909	$ (83,057)

The provision for (benefit from) income taxes consisted of the following (in thousands):

	Years Ended December 31,		
	2021	2020	2019
Current:			
U.S. federal	$ (2,742)	$ 15,175	$ 68,772
Foreign	27,202	1,523	(42,147)
State and local	4,911	10,124	94
Total current	29,371	26,822	26,719
Deferred:			
U.S. federal	783	(28,154)	(41,826)
Foreign	2,700	(1,132)	(4,145)
State and local	(4,476)	(5,423)	228
Total deferred	(993)	(34,709)	(45,743)
Provision for (benefit from) income taxes	$ 28,378	$ (7,887)	$ (19,024)

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amount of assets and liabilities for financial reporting purposes and the amounts for income tax purposes.

Significant components of the Company's deferred tax assets and liabilities are as follows (in thousands):

	December 31, 2021	December 31, 2020*
Deferred tax assets		
Net operating losses	$ 119,038	$ 166,730
Research tax credits	87,596	82,378
Foreign tax credits	73,629	82,863
Expenses not currently deductible	39,985	46,216
Fixed and intangible assets	14,464	7,206
Deferred revenue	18,749	20,110
Capitalized research expenses	85,201	61,296
Lease liability	15,771	17,995
Gross deferred tax assets	454,433	484,794
Valuation allowance	(294,857)	(289,226)
Net deferred tax assets	159,576	195,568
Deferred tax liabilities		
Revenue recognition	(6,290)	(7,733)
Operating leases	(15,110)	(17,535)
Acquired intangible assets	(149,033)	(184,364)
Other	(5,232)	(3,004)
Net deferred tax liabilities	$ (16,089)	$ (17,068)

*The Company identified a misclassification totaling $21.6 million in the above tabular disclosure of the deferred taxes between net operating losses, foreign tax credits and expenses not currently deductible within the previously issued Form 10-K for the year ended December 31, 2020. The Company assessed the materiality of this misclassification and concluded it was not material to its previously issued financial statements; however, the Company elected to revise the previously reported amounts in the deferred taxes disclosure included in this filing.

At December 31, 2021 and 2020, the Company had a valuation allowance of $294.9 million and $289.2 million, respectively, related to federal, state, and foreign deferred tax assets that the Company believes will not be realizable on a more-likely-than-not basis. The $5.6 million increase from the prior year is primarily comprised of a $7.1 million increase from the establishment of a valuation allowance for a foreign subsidiary.

The need for a valuation allowance requires an assessment of both positive and negative evidence when determining whether it is more-likely-than-not that deferred tax assets are recoverable. Such assessment is required on a jurisdiction-by-jurisdiction basis. In making such assessment, significant weight is given to evidence that can be objectively verified. After considering both positive and negative evidence to assess the recoverability of the Company's net deferred tax assets, the Company determined that it was not more-likely-than-not that it would realize its federal, certain state and certain foreign deferred tax assets given the substantial amount of tax attributes that will remain unutilized to offset reversing deferred tax liabilities as of December 31, 2021. The Company intends to continue maintaining a full valuation allowance on its federal deferred tax assets until there is sufficient evidence to support the reversal of all or some portion of these allowances. However, given the Company's current earnings and anticipated future earnings, the Company believes that there is a reasonable possibility that within the next 12 months, sufficient positive evidence may become available to allow the Company to reach a conclusion that a significant portion of the federal valuation allowance will no longer be needed. Release of the valuation allowance would result in the recognition of certain federal deferred tax assets and a decrease to income tax expense for the period the release is recorded. However, the exact timing and amount of the valuation allowance release are subject to change on the basis of the level of profitability that the Company is able to actually achieve.

As of December 31, 2021, the Company had federal net operating loss carryforwards of approximately $277.2 million and state net operating loss carryforwards of approximately $1,079.7 million (post-apportioned). All of the federal net operating loss carryforwards are carried over from TiVo. The state net operating loss carryforwards are carried over from acquired entities, including TiVo in 2020, DTS in 2016, Ziptronix in 2015, and Siimpel Corporation in 2010. The federal net operating loss carryforwards, if not utilized, will begin to expire on various dates beginning in 2027 and will continue to expire through 2035. The state net operating loss carryforwards, if not utilized, will begin to expire on various dates beginning in 2022 and will continue to expire through 2041.

In addition, the Company has research tax credit carryforwards of approximately $83.2 million for federal purposes. The federal research tax credit will start to expire in 2022 and will continue to expire through 2041. The Company also has research tax credit carryforwards of approximately $86.7 million for state purposes and $0.7 million for foreign purposes, which do not expire. The Company has $121.4 million of foreign tax credit carryforwards which will begin to expire in 2022 and will continue to expire through 2031. Under the provisions of the Internal Revenue Code, substantial ownership changes may limit the amount of net operating loss and tax credit carryforwards that can be utilized annually in the future to offset taxable income.

A reconciliation of the statutory U.S. federal income tax rate to the Company's effective tax rate is as follows:

	Years Ended December 31,		
	2021	2020	2019
U.S. federal statutory rate	$ (6,412)	$ 28,541	$ (17,442)
State, net of federal benefit	(763)	(1,530)	281
Stock-based compensation expense	417	2,471	2,807
Executive compensation limitation	3,176	2,132	411
Research tax credit	(2,035)	(1,576)	(2,038)
Foreign withholding tax	12,009	9,391	10,328
Transaction costs	1,595	8,216	974
Foreign tax rate differential	15,070	921	1,907
Foreign tax credit	1,643	(2,647)	(7,795)
Change in valuation allowance	(9,101)	(47,649)	(8,238)
U.S. tax reform	3,028	(1,845)	(2,970)
Unrecognized tax benefits	5,563	3,049	2,994
Change in estimates	(2,647)	(1,355)	(1,300)
Foreign exchange and interest	6,956	(7,438)	—
Others	(121)	1,432	1,057
Total	$ 28,378	$ (7,887)	$ (19,024)

At December 31, 2021, the Company asserts that it will not permanently reinvest its foreign earnings outside the U.S. The Company anticipates that the cash from its foreign earnings may be used domestically to fund operations, settle a portion of the outstanding debt obligation, or used for other business needs. The accumulated undistributed earnings generated by its foreign subsidiaries was approximately $53.5 million. Substantially all of these earnings will not be taxable upon repatriation to the United States since under the Tax Cuts and Jobs Act they will be treated as previously taxed income from the one-time transition tax, Global Intangible Low-Taxed Income or dividends-received deduction. The withholding taxes related to the distributable cash of the Company's foreign subsidiaries are not expected to be material.

During the fourth quarter of 2019, the Company filed a refund claim for foreign taxes previously withheld from licensees in South Korea based on court rulings in South Korea and other business factors. These previously withheld foreign taxes were claimed as a foreign tax credit in the U.S. As a result of the 2019 refund claim and planned refund claims for 2020 and 2021, the Company recorded a total of $118.1 million and $123.0 million as a noncurrent income tax receivable at December 31, 2021 and 2020, respectively, $63.1 million and $62.3 million as a noncurrent income tax payable at December 31, 2021 and 2020, respectively, and $40.6 million and $36.7 million as a reduction in deferred tax assets at December 31, 2021 and 2020, respectively. Although the refund claim is subject to judicial review, the Company anticipates it will receive refunds in the amount recorded in the receivable.

As of December 31, 2021, unrecognized tax benefits were $240.4 million, of which $98.9 million would affect the effective tax rate if recognized. As of December 31, 2020, unrecognized tax benefits were $233.2 million, of which $100.4 million would affect the effective tax rate if recognized. The Company believes that its unrecognized tax benefits as of December 31, 2021 will decrease by approximately $5.2 million within the next twelve months due to expiring statutes of limitation.

The reconciliation of the Company's unrecognized tax benefits for the years ended December 31, 2021, 2020 and 2019 is as follows (in thousands):

	Years Ended December 31,		
	2021	2020	2019
Total unrecognized tax benefits at January 1	$ 233,156	$ 87,294	$ 33,552
Increases due to the Mergers	—	103,443	—
Increases for tax positions related to the current year	8,149	46,978	54,823
Increases for tax positions related to prior years	6,440	2,541	178
Decreases for tax positions related to prior years	(7,333)	(7,100)	(1,259)
Total unrecognized tax benefits at December 31	$ 240,412	$ 233,156	$ 87,294

It is the Company's policy to classify accrued interest and penalties related to unrecognized tax benefits in the provision for income taxes. For the year ended December 31, 2021, the Company recognized $0.3 million, and for the years ended December 31, 2020 and 2019, the Company recognized an insignificant amount of interest and penalties related to unrecognized tax benefits. Accrued interest and penalties were $2.8 million and $2.5 million as of December 31, 2021 and 2020, respectively.

At December 31, 2021, the Company's 2017 through 2021 tax years are generally open and subject to potential examination in one or more jurisdictions. Earlier tax years for the Company and its subsidiaries are also open in certain jurisdictions which are currently subject to examination. In addition, in the U.S., any net operating losses or credits that were generated in prior years but not yet fully utilized in a year that is closed under the statute of limitations may also be subject to examination. The Company has submitted a withholding tax refund claim with the South Korean authorities and the final outcome is not anticipated to be settled within the next twelve months.

NOTE 16 – COMMITMENTS AND CONTINGENCIES

Purchase and Other Contractual Obligations

In the ordinary course of business, the Company enters into contractual agreements with third parties that include non-cancelable payment obligations, for which it is liable in future periods. These arrangements primarily include unconditional purchase obligations to service providers. Total future unconditional purchase obligations as of December 31, 2021 were as follows (in thousands):

2022	$ 33,442
2023	26,278
2024	12,868
2025	8,522
2026	8,080
Thereafter	33,548
Total	$ 122,738

Inventory Purchase Commitment

The Company uses contract manufacturers to provide manufacturing services for its products. During the normal course of business, in order to manage manufacturing lead times and help ensure adequate supply, the Company enters into agreements with its contract manufacturers that either allow them to procure inventory based on criteria as defined by the Company or that establish the parameters defining the Company's requirements. A significant portion of the Company's purchase commitments arising from these agreements consist of firm, non-cancelable and unconditional purchase commitments. In certain instances, these agreements allow the Company the option to cancel, reschedule or adjust the Company's requirements based on its business needs prior to firm orders being placed. As of December 31, 2021, the Company had total purchase commitments for inventory of $15.4 million, of which $4.4 million was accrued in the Consolidated Balance Sheets.

Indemnifications

In the normal course of business, the Company provides indemnifications of varying scopes and amounts to certain of its licensees, customers, and business partners against claims made by third parties arising from the use of the Company's products, intellectual property, services or technologies. The Company cannot reasonably estimate the possible range of losses that may be incurred pursuant to its indemnification obligations, if any. Variables affecting any such assessment include, but are not limited to: the nature of the claim asserted; the relative merits of the claim; the financial ability of the party suing the indemnified party to engage in protracted litigation; the number of parties seeking indemnification; the nature and amount of damages claimed by the party suing the indemnified party; and the willingness of such party to engage in settlement negotiations. To date, no such claims have been filed against the Company and no liability has been recorded in the Company's financial statements.

As permitted under Delaware law, the Company has agreements whereby it indemnifies its officers and directors for certain events or occurrences while the officer or director is, or was, serving at the Company's request in such capacity. The maximum potential amount of future payments the Company could be required to make under these indemnification agreements is unlimited; however, the Company believes, given the absence of any such payments in the Company's history, and the estimated low probability of such payments in the future, that the estimated fair value of these indemnification agreements is immaterial. In addition, the Company has directors' and officers' liability insurance coverage that is intended to reduce its financial exposure and may enable the Company to recover any payments under the indemnification agreements, should they occur.

Contingencies

At each reporting period, the Company evaluates whether or not a potential loss amount or a potential range of losses is probable and reasonably estimable under the provisions of the authoritative guidance that addresses accounting for contingencies. The Company is currently unable to predict the final outcome of lawsuits to which it is a party and therefore cannot determine the likelihood of loss nor estimate a range of possible losses. An adverse decision in any of these proceedings could significantly harm the Company's business and consolidated financial position, results of operations or cash flows.

The Company and its subsidiaries are involved in litigation matters and claims in the normal course of business. In the past, the Company and its subsidiaries have litigated to enforce their respective patents and other intellectual property rights, to enforce the terms of license agreements, to protect trade secrets, to determine the validity and scope of the proprietary rights of others and to defend itself or its customers against claims of infringement or invalidity. The Company expects it or its subsidiaries will be involved in similar legal proceedings in the future, including proceedings regarding infringement of its patents, and proceedings to ensure proper and full payment of royalties by licensees under the terms of its license agreements.

The existing and any future legal actions may harm the Company's business. For example, legal actions could cause an existing licensee or strategic partner to cease making royalty or other payments to the Company, or to challenge the validity and enforceability of patents owned by the Company's subsidiaries or the scope of license agreements with the Company's subsidiaries, or could significantly damage the Company's relationship with such licensee or strategic partner and, as a result, prevent the adoption of the Company's other technologies by such licensee or strategic partner. Litigation could also severely disrupt or shut down the business operations of licensees or strategic partners of the Company's subsidiaries, which in turn would significantly harm ongoing relations with them and cause the Company to lose royalty revenue.

The costs associated with legal proceedings are typically high, relatively unpredictable, and not completely within the Company's control. These costs may be materially higher than expected, which could adversely affect the Company's operating results and lead to volatility in the price of its common stock. Whether or not determined in the Company's favor or ultimately settled, litigation diverts managerial, technical, legal, and financial resources from the Company's business operations. Furthermore, an adverse decision in any of these legal actions could result in a loss of the Company's proprietary rights, subject the Company to significant liabilities, require the Company to seek licenses from others, limit the value of the Company's licensed technology or otherwise negatively impact the Company's stock price or its business and consolidated financial results.

NOTE 17 – SEGMENT AND GEOGRAPHIC INFORMATION

The Company reports its financial results within two reportable segments for financial reporting purposes: (1) Product and (2) Intellectual Property ("IP") Licensing. There are certain corporate overhead costs that are not allocated to these reportable segments because these operating amounts are not considered in evaluating the operating performance of the Company's business segments.

Reportable segments are identified based on the Company's organizational structure and information reviewed by the Company's chief operating decision maker ("CODM") to evaluate performance and allocate resources. The Company's Chief Executive Officer is also the CODM as defined by the authoritative guidance on segment reporting.

The IP Licensing segment consists primarily of licensing the Company's innovations to leading companies in the broader entertainment industry, and those developing new technologies that will help drive this industry forward. Licensing arrangements include access to one or more of the Company's foundational patent portfolios and may also include access to some of its industry-leading technologies and proven know-how.

In its Product segment, the Company derives the majority of its revenue from licensing its technology to customers primarily through Technology License arrangements and Technology Solutions arrangements. For Technology License arrangements, the customer obtains rights to the technology delivered at the commencement of the agreement. For Technology Solutions arrangements, the customer receives access to a platform, media or data that includes frequent updates, where access to such updates is critical to the functionality of the technology.

The Company does not identify or allocate assets by reportable segment, nor does the CODM evaluate reportable segments using discrete asset information. Reportable segments do not record inter-segment revenue and accordingly there are none to report. The Company does not allocate other income and expense to reportable segments. Although the CODM uses operating income to evaluate reportable segments, operating costs included in one segment may benefit other segments.

The following table sets forth the Company's segment revenue, operating expenses and operating income (loss) for the years ended December 31, 2021, 2020 and 2019 (in thousands):

	Years Ended December 31,		
	2021	2020 (2)	2019
Revenue:			
IP Licensing segment	$ 391,212	$ 515,919	$ 81,943
Product segment	486,484	376,101	198,124
Total revenue	877,696	892,020	280,067
Operating expenses:			
IP Licensing segment	142,790	113,363	44,542
Product segment	449,350	351,913	186,562
Unallocated operating expenses (1)	271,744	249,117	117,671
Total operating expenses	863,884	714,393	348,775
Operating income (loss):			
IP Licensing segment	248,422	402,556	37,401
Product segment	37,134	24,188	11,562
Unallocated operating expenses (1)	(271,744)	(249,117)	(117,671)
Total operating income (loss)	$ 13,812	$ 177,627	$ (68,708)

(1) Unallocated operating expenses consist primarily of selling, marketing, general and administrative expenses, such as administration, human resources, finance, information technology, corporate development and procurement. These expenses are not allocated because these amounts are not considered in evaluating the operating performance of the Company's business segments.

(2) Includes seven months of financial results of TiVo following the Mergers.

Amortization and depreciation are included in segment operating income as shown below (in thousands):

	Years Ended December 31,		
	2021	2020	2019
Amortization and depreciation:			
IP Licensing segment	$ 99,060	$ 59,881	$ 13,264
Product segment	122,483	111,129	93,403
Unallocated	5,659	3,734	—
Total amortization and depreciation	$ 227,202	$ 174,744	$ 106,667

A significant portion of the Company's revenue is derived from licensees headquartered outside of the U.S., and it is expected that this revenue will continue to account for a significant portion of total revenue in future periods. The table below lists the geographic revenue for the periods indicated (in thousands):

	Years Ended December 31,								
	2021			2020			2019		
U.S.	$	545,849	62%	$	548,857	62%	$	74,469	26%
Japan		89,170	10		114,195	13		85,833	31
South Korea		69,798	8		110,782	12		74,790	27
Europe and Middle East		64,350	7		38,830	4		19,638	7
Other		108,529	13		79,356	9		25,337	9
	$	877,696	100%	$	892,020	100%	$	280,067	100%

For the years ended December 31, 2021, 2020 and 2019, zero, one, and two customers, respectively, each accounted for 10% or more of total revenue.
As of December 31, 2021 and 2020, property and equipment, net, by geographic area are presented below (in thousands):

	December 31,			
	2021		2020	
U.S.	$	54,804	$	54,818
Europe		3,697		4,842
Asia and other		2,473		3,547
Total	$	60,974	$	63,207

NOTE 18 – BENEFIT PLAN

The Company maintains a 401(k) retirement savings plan that allows voluntary contributions by all eligible U.S. employees upon their hire date. Eligible employees may elect to contribute up to the maximum amount allowed under Internal Revenue Service regulations. The Company can make discretionary contributions under the 401(k) plan. During the years ended December 31, 2021, 2020 and 2019, the Company contributed approximately $4.2 million, $4.2 million, and $3.0 million, respectively, to the 401(k) plan.

NOTE 19 – SUBSEQUENT EVENTS

Declaration of a Cash Dividend

On February 3, 2022, the Board declared a cash dividend of $0.05 per share of common stock, payable on March 30, 2022, for the stockholders of record at the close of business on March 16, 2022.

Schedule II. Valuation and Qualifying Accounts for the Years Ended December 31, 2021, 2020 and 2019
(in thousands):

	Balance at Beginning of Year	Charged (Credited) to Expenses	Charged (Credited) to Other Accounts	Balance at End of Year
Deferred income tax asset:				
Valuation allowance				
2019	$ 41,942	$ (4,699)	$ —	$ 37,243
2020	$ 37,243	$ (49,507)	$ 301,490	$ 289,226
2021	$ 289,226	$ 5,631	$ —	$ 294,857

EXHIBIT INDEX

Exhibit Number	Exhibit Description
2.1*	Agreement and Plan of Merger and Reorganization, dated December 18, 2019, by and among the Registrant, TiVo Corporation, XRAY Merger Sub Corporation, TWOLF Merger Sub Corporation and XRAY-TWOLF HoldCo Corporation (filed as Exhibit 2.1 to the Registrant's Current Report on Form 8-K, filed December 24, 2019, and incorporated herein by reference)
3.1	Certificate of Incorporation of the Company (filed as Exhibit 3.1 to Xperi Holding's Current Report on Form S-4 filed with the SEC on February 18, 2020, and incorporated herein by reference)
3.2	Amended and Restated Certificate of Incorporation of the Company (filed as Exhibit 3.1 to the Company's Current Report on Form 8-K filed with the SEC on June 1, 2020, and incorporated herein by reference)
3.3	Bylaws of the Company (filed as Exhibit 3.3 to Xperi Holding's Current Report on Form S-4 filed with the SEC on February 18, 2020, and incorporated herein by reference)
3.4	Amended and Restated Bylaws of the Company, dated May 29, 2020 (filed as Exhibit 3.2 to the Company's Current Report on Form 8-K filed with the SEC on June 1, 2020, and incorporated herein by reference)
4.1	Description of the Company's capital stock registered under section 12 of the Securities Exchange Act of 1934.
10.1+	Employment and Severance Agreement, dated April 28, 2017, by and between the Registrant and Jon Kirchner (filed as Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q, filed August 2, 2017, and incorporated herein by reference)
10.2+	Non-Employee Director Compensation Policy (filed as Exhibit 10.3 to the Registrant's Quarterly Report on Form 10-Q, filed August 2, 2017, and incorporated herein by reference)
10.3	Supplement to Commitment Letter and Fee Letter, dated January 3, 2020, by and among the Registrant, TiVo Corporation, Bank of America, N.A., Royal Bank of Canada, and Barclays Bank PLC (filed as Exhibit 10.1 to the Registrant's Current Report on Form 8-K, filed January 7, 2020, and incorporated herein by reference)
10.4	Credit Agreement, dated as of June 1, 2020, among the Company, the lenders party thereto and Bank of America, N.A., as administrative agent and collateral agent (incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed with the SEC on June 1, 2020 (File No. 001-39304))
10.5	Guaranty, dated as of June 1, 2020, among Xperi, TiVo, the other subsidiary guarantors party thereto and Bank of America, N.A., as administrative agent (incorporated by reference to Exhibit 10.2 of the Company's Current Report on Form 8-K filed with the SEC on June 1, 2020 (File No. 001-39304))
10.6	Security Agreement, dated as of June 1, 2020, among the Company, the other pledgors party thereto and Bank of America, N.A., as collateral agent (incorporated by reference to Exhibit 10.3 of the Company's Current Report on Form 8-K filed with the SEC on June 1, 2020 (File No. 001-39304))
10.7+	Xperi Holding Corporation 2020 Equity Incentive Plan (incorporated by reference to Exhibit 4.10 of the Company's Registration Statement on Form S-8 filed with the SEC on June 1, 2020 (File No. 333-238846))
10.8+	Xperi Holding Corporation 2020 Employee Stock Purchase Plan (incorporated by reference to Exhibit 4.11 of the Company's Registration Statement on Form S-8 filed with the SEC on June 1, 2020 (File No. 333-238846))
10.9	Form of Indemnification Agreement for Company Directors, Officers, and Key Employees (incorporated by reference to Exhibit 10.4 of the Company's Current Report on Form 8-K filed with the SEC on June 1, 2020 (File No. 001-39304))
10.10+	Form of Restricted Stock Unit Award Grant Notice and Restricted Stock Unit Award Agreement for the Xperi Holding Corporation 2020 Equity Incentive Plan (incorporated by reference to Exhibit 10.12 of the Company's Current Report on Form 8-K filed with the SEC on June 1, 2020 (File No. 001-39304))
10.11+	Form of Stock Option Grant Notice and Stock Option Agreement for the Xperi Holding Corporation 2020 Equity Incentive Plan (incorporated by reference to Exhibit 10.13 of the Company's Current Report on Form 8-K filed with the SEC on June 1, 2020 (File No. 001-39304))
10.12+	TiVo Corporation 2008 Equity Incentive Plan (f/k/a the "Rovi Corporation 2008 Equity Incentive Plan") (incorporated by reference to Annex A to the Definitive Proxy Statement on Schedule 14A of TiVo Corporation, filed March 15, 2019 (File No. 001-37870))
10.13+	TiVo Inc. Amended and Restated 2008 Equity Incentive Award Plan (now named the "TiVo Corporation Titan Equity Incentive Award Plan") (incorporated by reference to Exhibit 4.7 to Registration Statement on Form S-8 of TiVo Corporation, filed September 9, 2016 (File No. 333-213578))

10.14+	Xperi Corporation Seventh Amended and Restated 2003 Equity Incentive Plan and Amendment No. 1 (incorporated by reference to Appendices A and B to Additional Definitive Proxy Soliciting Materials on Schedule 14A of Xperi Corporation, filed April 18, 2018 (File No. 001-37956))
10.15+	DTS, Inc. 2014 New Employee Incentive Plan (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K of DTS, Inc., filed August 20, 2014 (File No. 000-50335))
10.16+	Amendment No. 1 to the DTS, Inc. 2014 New Employee Incentive Plan (incorporated by reference to Exhibit 99.3 to Registration Statement on Form S-8 of DTS, Inc., filed August 10, 2015 (File No. 333-206283))
10.17+	Amendment No. 2 to the DTS, Inc. 2014 New Employee Incentive Plan (incorporated by reference to Exhibit 99.3 to Registration Statement on Form S-8 of DTS, Inc., filed November 9, 2015 (File No. 333-207899))
10.18+	DTS, Inc. 2012 Equity Incentive Plan and Amendment No. 1 (incorporated by reference to Appendix A to Definitive Proxy Statement on Schedule 14A of DTS, Inc., filed April 14, 2015 (File No. 000-50335))
10.19+	SRS Labs, Inc. 2006 Stock Incentive Plan, as amended and restated on August 9, 2012 (incorporated by reference to Exhibit 4.4 to Registration Statement on Form S-8 of DTS, Inc., filed August 13, 2012 (File No. 333-183289))
10.20+	DTS, Inc. 2003 Equity Incentive Plan, as amended on May 9, 2005, May 15, 2008, February 19, 2009, February 15, 2010, June 3, 2010 and October 8, 2010 (incorporated by reference to Exhibit 10.1 to Form 10-Q of DTS, Inc., filed November 8, 2010 (File No. 000-50335))
10.21	Form of Severance Agreement, dated September 29, 2020, between the Company and each of Robert Andersen, Geir Skaaden, Paul Davis, Matthew Milne, and Michael Hawkey (incorporated by reference to Exhibit 10.1 to Form 10-Q of Xperi Holding Corporation, filed November 9, 2020)
10.22	Form of Change in Control Severance Agreement, dated as of September 29, 2020, between the Company and each of Robert Andersen, Geir Skaaden, Paul Davis, Matthew Milne, and Michael Hawkey (incorporated by reference to Exhibit 10.2 to Form 10-Q of Xperi Holding Corporation, filed November 9, 2020)
10.23	Amendment to Employment and Severance Agreement between Xperi Corporation and Jon Kirchner dated April 28, 2017, effective as of September 29, 2020 (incorporated by reference to Exhibit 10.3 to Form 10-Q of Xperi Holding Corporation, filed November 9, 2020)
10.24	Amendment No. 1 to Credit Agreement, dated as of June 8, 2021, among the Company, the subsidiaries of the Company party thereto, Bank of America, N.A., as administrative agent and collateral agent, and the lenders party thereto ((incorporated by reference to Exhibit 10.1 of the Company's Current Report on Form 8-K filed with the SEC on June 10, 2021 (File No. 001-39304))
21.1	List of subsidiaries
23.1	Consent of PricewaterhouseCoopers LLP, Independent Registered Public Accounting Firm
24.1	Power of Attorney (see signature page to this Annual Report on Form 10-K)
31.1	Certification of the Chief Executive Officer pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934
31.2	Certification of the Chief Financial Officer pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934
32.1	Certification of the Chief Executive Officer and Chief Financial Officer pursuant to Rule 13a-14(b) of the Securities Exchange Act of 1934 and 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002
101.INS	Inline XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (formatted as inline XBRL and contained in Exhibit 101)

+	Indicates a management contract or compensatory plan or arrangement.
*	The exhibits and schedules to this agreement have been omitted in reliance on Item 601(b)(2) of Regulation S-K promulgated by the SEC, and a copy thereof will be furnished supplementally to the SEC upon its request. Readers are cautioned that the representations and warranties set forth in this agreement are qualified by those schedules, and should not be relied upon as accurate or complete without reference to those schedules

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Dated: February 24, 2022

Xperi Holding Corporation

By: /s/ Jon Kirchner
Jon Kirchner
Chief Executive Officer and President

POWER OF ATTORNEY

Each person whose individual signature appears below hereby authorizes and appoints Jon Kirchner and Robert Andersen, and each of them, with full power of substitution and resubstitution and full power to act without the other, as his true and lawful attorney-in-fact and agent to act in his name, place and stead and to execute in the name and on behalf of each person, individually and in each capacity stated below, and to file any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing, ratifying and confirming all that said attorneys-in-fact and agents or any of them or their or his substitute or substitutes may lawfully do or cause to be done by virtue thereof.

Pursuant to the requirements of the Exchange Act, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Jon Kirchner **Jon Kirchner**	Chief Executive Officer, President and Director (Principal Executive Officer)	February 24, 2022
/s/ Robert Andersen **Robert Andersen**	Chief Financial Officer (Principal Financial and Accounting Officer)	February 24, 2022
/s/ Dave Habiger **Dave Habiger**	Chairman of the Board of Directors	February 24, 2022
/s/ Darcy Antonellis **Darcy Antonellis**	Director	February 24, 2022
/s/ Laura Durr **Laura Durr**	Director	February 24, 2022
/s/ Daniel Moloney **Daniel Moloney**	Director	February 24, 2022
/s/ Tonia O'Connor **Tonia O'Connor**	Director	February 24, 2022
/s/ Raghavendra Rau **Raghavendra Rau**	Director	February 24, 2022
/s/ Christopher A. Seams **Christopher A. Seams**	Director	February 24, 2022

Exhibit 4.1

DESCRIPTION OF CAPITAL STOCK

The following description of the material terms of the common stock and preferred stock of Xperi Holding Corporation (the "Company") is not complete and is qualified in its entirety by reference to the Company's certificate of incorporation and bylaws, which are attached as Exhibits 3.2 and 3.4, respectively, to this Annual Report on Form 10-K of which this exhibit is a part and are incorporated herein by reference.

Authorized Capital Stock

The total number of shares of capital stock which the Company shall have authority to issue is 365,000,000 shares. This authorized capital stock consists of 350,000,000 shares of common stock and 15,000,000 shares of preferred stock, each having a par value of $0.001 per share.

There were 103,276,142 shares of common stock outstanding as of February 7, 2022.

Common Stock

Each holder of a share of common stock of the Company will be entitled to one vote for each share, and the common stock will have the exclusive right to vote for the election of directors and for all other purposes (subject to the express terms of the preferred stock). Stockholders of the Company will have no preemptive rights and no rights to convert their common stock into any other securities. There will also be no redemption or sinking fund provisions applicable to the common stock.

Stockholders of the Company will be entitled to receive dividends as may be declared from time to time by the Company's board out of funds legally available therefor. The stockholders are entitled to share pro rata, upon any liquidation or dissolution of the Company, in all remaining assets available for distribution to stockholders after payment or providing for the Company's liabilities and the liquidation preference of any outstanding preferred stock. The rights, preferences and privileges of the stockholders are subject to and may be adversely affected by the rights of holders of any series of preferred stock that the Company may designate and issue at the effective time and in the future.

The shares of common stock will be subject to certain transfer restrictions intended to preserve tax attributes of the Company pursuant to Section 382 of the Internal Revenue Code of 1986, as amended (the "Code"). Such restrictions will apply to future transfers made by 4.91% stockholders, transferees who are 4.91% stockholders, transferees who are related to a 4.91% stockholder, transferees acting in coordination with a 4.91% stockholder, or transfers that would result in a stockholder becoming a 4.91% stockholder in order to avoid potential limitation on such tax attributes pursuant to Section 382 of the Code. Such restrictions will expire on the earlier of (i) the repeal of Section 382 or any successor statute if the board of directors determines that such restrictions are no longer necessary or desirable for the preservation of certain tax benefits, (ii) the beginning of a taxable year to which the board of directors determines that no tax benefits may be carried forward, (iii) the date that is three years and one day following the close of the merger or (iv) such other date as the board of directors shall fix in accordance with the Company's certificate of incorporation.

The common stock is listed on the Nasdaq Global Select Market under the symbol "XPER."

Additional Classes or Series of Preferred Stock

The Company's certificate of incorporation will permit the Company's board, without further action by the stockholders, to issue up to 15,000,000 shares of preferred stock in one or more series of preferred stock with such designations, powers, preferences, special rights, qualifications, limitations and restrictions as the board may determine from time to time. Accordingly, without action by the stockholders, the board may designate and authorize the issuance of additional classes or series of preferred stock having voting rights, dividend rights, conversion rights, redemption provisions (including sinking fund provisions) and rights in liquidation, dissolution or winding up that are superior to those of common stock.

Certificate of Incorporation and Bylaw Provisions; Takeover Statutes

A number of provisions in the Company's certificate of incorporation, bylaws and the General Corporation Law of the State of Delaware (the "DGCL") may make it more difficult to acquire control of the Company or remove its management.

Structure of Board

The Company's board will be elected annually. The Company's bylaws provides that each director of the Company will hold office for a term expiring at the next succeeding annual meeting of stockholders and until such director's successor is duly elected and qualified. The Company's board, in accordance with the bylaws, shall consist of not less than six (6) and not more than nine (9) directors as fixed from time to time by resolution of a majority of the total number of directors on the board. The board currently consists of eight (8) directors. Furthermore, subject to the rights of holders of any class or series of preferred stock to elect directors, any vacancies on the board caused by death, removal or resignation of any director or any other cause, and any newly created directorships resulting from an increase in the authorized number of directors, will be permitted to be filled only by a majority vote of the directors then in office, even if less than a quorum, or by a sole remaining director, and shall not be filled by stockholders. This provision could prevent a stockholder from obtaining majority representation on the Company's board by allowing the board to enlarge the board and fill the new directorships with the board's own nominees.

Nominating and Corporate Governance Committee of the Board

Under the terms of the merger agreement between Xperi Corporation and TiVo (the "Merger Agreement") and the Company's bylaws, the Company's board of directors established a nominating and corporate governance committee whose principal duties are to assist the board of directors by identifying individuals qualified to become members of the board of directors consistent with criteria approved by the board of directors, to recommend to the board of directors for its approval the slate of nominees to be proposed by the board of directors to the stockholders for election to the board of directors, to develop and recommend to the board of directors the governance principles applicable to the corporation, as well as such other duties and responsibilities delegated to it by the board of directors and specified for it under applicable law and the rules and requirements of Nasdaq.

Pursuant to the terms of the Merger Agreement, for a period of two years from June 1, 2020, the Nominating and Governance Committee shall consist of four members, two of whom shall be designated by the board of directors of Xperi Corporation and two of whom shall be designated by the board of Directors of TiVo.

Removal of Directors

In accordance with the DGCL and subject to the rights of the holders of any class or series of preferred stock, the entire board or any individual director may be removed at any time, with or without cause, only by the affirmative vote of the holders of a majority of the voting power of all of the shares of capital stock of the Company then entitled to vote generally in the election of directors, voting as a single class.

Advance Notice of Proposals and Nominations

The Company bylaws provide that stockholders must give timely written notice to bring business before an annual meeting of stockholders or to nominate candidates for election as directors at an annual meeting of stockholders. Generally, to be timely, a stockholder's notice will be required to be delivered to the principal executive offices of the Company not later than the 90th day nor earlier than the 120th day prior to the one (1)-year anniversary of the preceding year's annual meeting; provided, however, that if the date of the annual meeting is more than thirty (30) days before or more than sixty (60) days after such anniversary date, notice by the stockholder to be timely must be so delivered, or mailed and received, not later than the 90th day prior to such annual meeting or, if later, the tenth day following the day on which public disclosure of the date of such annual meeting was first made. The Company's bylaws also specify the form and content of a stockholder's notice. These provisions may prevent stockholders from bringing matters before an annual meeting of stockholders or from nominating candidates for election as directors at an annual meeting of stockholders.

Limits on Special Meetings

The Company's bylaws and certificate of incorporation provide that special meetings of stockholders may be called at any time by the board of directors, or by a majority of the members of the board of directors, or by a committee of the board of directors which has been duly designated by the board of directors and whose powers and authority, as provided in a resolution of the board of directors or in these bylaws, include the power to call such meetings, but such special meetings may not be called by any other person or persons.

Amendment of the Company's Bylaws

The Company's board will be authorized to amend, alter, change, adopt and repeal the Company's bylaws by a majority vote. Company stockholders also will have the power to amend, alter, change, adopt and repeal the Company's bylaws by the affirmative vote of the holders of not less than 66 2/3% of the shares then entitled to vote at an election of directors, voting as a single class.

Preferred Stock

Please see "Additional Classes or Series of Preferred Stock" above. The Company's ability to issue an indeterminate number of shares of the authorized shares of preferred stock with such rights, privileges and preferences as the Company's board may fix may have the effect of delaying or preventing a takeover or other change of control of the Company.

Takeover Statutes

Section 203 of the DGCL generally prohibits "business combinations," including mergers, sales and leases of assets, issuances of securities and similar transactions by a corporation or a subsidiary with an interested stockholder who beneficially owns 15% or more of a corporation's voting stock, within three (3) years after the person or entity becomes an interested stockholder, unless: (i) the board of directors of the target corporation has approved, before the acquisition time, either the business combination or the transaction that resulted in the person becoming an interested stockholder, (ii) upon consummation of the transaction that resulted in the person becoming an interested stockholder, the person owns at least 85% of the corporation's voting stock (excluding shares owned by directors who are officers and shares owned by employee stock plans in which participants do not have the right to determine confidentially whether shares will be tendered in a tender or exchange offer) or (iii) after the person or entity becomes an interested stockholder, the business combination is approved by the board of directors and authorized at a meeting of stockholders by the affirmative vote of at least 66 2/3% of the outstanding voting stock not owned by the interested stockholder.

The Company does not expect to opt out of the protections of Section 203 of the DGCL. As a result, the statute will apply to the Company.

Exclusive Forum

The Company's certificate of incorporation provides that unless the Company consents in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware shall be the sole and exclusive forum for (i) any derivative action or proceeding brought on behalf of the Company, (ii) any action asserting a claim of breach of a duty (including any fiduciary duty) owed by any current or former director, officer, stockholder, employee or agent of the Company to the Company or Company stockholders, (iii) any action asserting a claim against the Company or any current or former director, officer, stockholder, employee or agent of the Company arising out of or relating to any provision of the DGCL, the Company's certificate of incorporation or bylaws (each, as in effect from time to time), or (iv) any action asserting a claim against the Company or any current or former director, officer, stockholder, employee or agent of the Company governed by the internal affairs doctrine of the State of Delaware. The Company's certificate of incorporation also provides that unless the Company consents in writing to the selection of an alternative forum, the federal district courts of the United States of America shall, to the fullest extent permitted by law, be the sole and exclusive forum for the resolution of any complaint asserting a cause of action arising under the Securities Act. The exclusive forum provision does not apply to claims brought under the Exchange Act.

Exhibit 21.1

SUBSIDIARIES OF THE REGISTRANT

STATE OR OTHER JURISDICTION NAME OF INCORPORATION

DLLNI LIMITED	England and Wales
DTS Licensing Limited	Ireland
DTS, Inc.	Delaware
DTS International Services GmbH	Germany
FotoNation Limited	Ireland
FotoNation SRL	Romania
iBiquity Digital Corporation	Delaware
Invensas Bonding Technologies Inc.	Delaware
Invensas LLC	Delaware
Tessera Technologies LLC	Delaware
Tessera LLC	Delaware
Perceive Corporation	Delaware
Xperi Corporation	Delaware
TiVo LLC	Delaware
Rovi LLC	Delaware
Rovi Guides, Inc.	Delaware
Rovi Products LLC	Delaware
Rovi Solutions LLC	Delaware
TiVo Poland Sp. z o. o.	Poland
TiVo Platform Technologies LLC	Delaware
TiVo Product HoldCo LLC	Delaware
TiVo Solutions Inc.	Delaware
TiVo Tech Private Limited	India
Veveo, Inc.	Delaware

The names of other subsidiaries are omitted. Such subsidiaries would not, if considered in the aggregate as a single subsidiary, constitute a significant subsidiary within the meaning of Item 601(b)(21)(ii) of Regulation S-K.

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statement on Form S-8 (No. 333-238846) of Xperi Holding Corporation of our report dated February 24, 2022 relating to the financial statements and financial statement schedule and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

San Jose, California

February 24, 2022

Exhibit 31.1

Certification of the Chief Executive Officer
Pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934

I, Jon Kirchner, certify that:

1. I have reviewed this annual report on Form 10-K of Xperi Holding Corporation;

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

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

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

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

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

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

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

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

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

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

February 24, 2022	/s/ Jon Kirchner
	Jon Kirchner
	Chief Executive Officer and President

Certification of the Chief Financial Officer
Pursuant to Rule 13a-14(a) of the Securities Exchange Act of 1934

I, Robert Andersen, certify that:

1. I have reviewed this annual report on Form 10-K of Xperi Holding Corporation;

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

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

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

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

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

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

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

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

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

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

Date: February 24, 2022

/s/ Robert Andersen

Robert Andersen
Chief Financial Officer

Exhibit 32.1

CERTIFICATION PURSUANT TO
RULE 13a-14(b) OF THE SECURITIES EXCHANGE ACT OF 1934
AND 18 U.S.C. SECTION 1350

In connection with the Annual Report of Xperi Holding Corporation, a Delaware corporation (the “Company”), on Form 10-K for the year ended December 31, 2021 as filed with the Securities and Exchange Commission (the “Report”), I, Jon Kirchner, Chief Executive Officer and President, certify, pursuant to Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

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

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

/s/ Jon Kirchner

Jon Kirchner
Chief Executive Officer and President
February 24, 2022

CERTIFICATION PURSUANT TO
RULE 13a-14(b) OF THE SECURITIES EXCHANGE ACT OF 1934
AND 18 U.S.C. SECTION 1350

In connection with the Annual Report of Xperi Holding Corporation, a Delaware corporation (the “Company”), on Form 10-K for the year ended December 31, 2021 as filed with the Securities and Exchange Commission (the “Report”), I, Robert Andersen, Chief Financial Officer of the Company, certify, pursuant to Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

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

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

/s/ Robert Andersen

Robert Andersen
Chief Financial Officer
February 24, 2022

A signed original of this written statement required by Rule 13a-14(b) of the Securities Exchange Act of 1934, as amended, and 18 U.S.C. § 1350 has been provided to the Registrant and will be retained by the Registrant and furnished to the Securities and Exchange Commission or its staff upon request.