APPLIED OPTOELECTRONICS, INC.
Form 10-K/A
December 21, 2015

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K/A

(**Amendment No. 2**)

(Mark One)

x **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the fiscal year ended December 31, 2014

OR

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

For the transition period from _____ to _____

Commission File Number: 001-36083

Applied Optoelectronics, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**76-0533927**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**

13115 Jess Pirtle Blvd.

Sugar Land, TX 77478

(Address of principal executive offices)

(281) 295-1800

(Registrant's telephone number)

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

(Title of each class)	(Name of each exchange on which registered)
Common Stock, Par value $0.001	NASDAQ Global 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 of 1933 Yes o No x

Indicate by check mark if the Registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act Yes o No x

Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the 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 x No o

Indicate by check mark whether the Registrant has submitted electronically and posted on its corporate Website, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes x No o

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of Registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. x

Indicate by check mark whether the Registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer o	Accelerated filer x
Non-accelerated filer o (Do not check if a smaller reporting company)	Smaller reporting company o

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

As of June 30, 2014, the aggregate market value of the voting common stock held by non-affiliates of the Registrant was approximately $332.7 million based upon the closing sales price of the Registrant's common stock as reported on the NASDAQ Global Markets on June 30, 2014 of $23.20 per share. Shares of common stock held by officers, directors and holders of more than ten percent of the outstanding common stock have been excluded from this calculation because such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily a conclusive determination of other purposes.

As of March 2, 2015, the Registrant had 14,887,794 outstanding shares of Common Stock.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant's definitive Proxy Statement for the Registrant's 2014 Annual Meeting of Stockholders are incorporated by reference in Part III of this Annual Report on Form 10-K to the extent stated herein. The Proxy Statement will be filed with the Securities and Exchange Commission pursuant to Regulation 14A not later than 120 days of the Registrant's fiscal year ended December 31, 2014.

EXPLANATORY NOTE

This Amendment No. 2 to Form 10-K (this "Amendment") amends the Annual Report on Form 10-K for the fiscal year ended December 31, 2014, originally filed on March 5, 2015 (the "Original 10-K"), and as amended on May 14, 2015, of Applied Optoelectronics, Inc., a Delaware corporation (the "Company" or "we"). We are filing this Amendment solely to provide correcting revisions to (i) the risk factor titled "If we fail to maintain effective internal control over financial reporting in the future, the accuracy and timing of our financial reporting may be adversely affected" in Item 1A Risk Factors, (ii) Item 9A Controls and Procedures and (iii) Exhibits 31.1 and 31.2. This Amendment does not reflect events occurring after March 5, 2015 or, except as described in this Explanatory Note, otherwise modify or update the disclosures set forth in the Original 10-K, including the financial statements and notes thereto included in the Original 10-K.

Applied Optoelectronics, Inc.

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PART I

Item 1. Business

Forward-Looking Information

This report contains forward-looking statements. These forward-looking statements involve risks and uncertainties, as well as assumptions and current expectations, which could cause the company's actual results to differ materially from those anticipated in such forward-looking statements. These risks and uncertainties include but are not limited to: reduction in the size or quantity of customer orders; change in demand for the company's products due to industry conditions; changes in manufacturing operations; volatility in manufacturing costs; delays in shipments of products; disruptions in the supply chain; change in the rate of design wins or the rate of customer acceptance of new products; the company's reliance on a small number of customers for a substantial portion of its revenues; potential pricing pressure; a decline in demand for our customers products or their rate of deployment of their products; general conditions in the CATV, internet data center or FTTH markets; changes in the world economy (particularly in the United States and China); the negative effects of seasonality; and other risks and uncertainties described more fully in the company's documents filed with or furnished to the Securities and Exchange Commission. More information about these and other risks that may impact the company's business are set forth in the Section titled "Risk Factors". In some cases, you can identify forward-looking statements by terminology such as ''may,'' ''will,'' ''should,'' ''expects,'' ''plans,'' ''anticipates,'' ''believes,'' or ''estimates" or by other similar expressions that convey uncertainty of future events or outcomes You should not rely on forward-looking statements as predictions of future events. All forward-looking statements in this press release are based upon information available to us as of the date hereof, and qualified in their entirety by this cautionary statement. Except as required by law, we assume no obligation to update forward-looking statements for any reason after the date of this report to conform these statements to actual results or to changes in the company's expectations.

BUSINESS

Overview

We are a leading, vertically integrated provider of fiber-optic networking products, primarily for three networking end-markets: internet data center, cable television, or CATV, and fiber-to-the-home, or FTTH. We design and manufacture a range of optical communications products at varying levels of integration, from components, subassemblies and modules to complete turn-key equipment. In designing products for our customers, we begin with the fundamental building blocks of lasers and laser components. From these foundational products, we design and manufacture a wide range of products to meet our customers' needs and specifications, and such products differ from

each other by their end market, intended use and level of integration. We are primarily focused on the higher-performance segments within all three of our target markets, which increasingly demand faster connectivity and innovation.

The three end markets we target are all driven by significant bandwidth demand fueled by the growth of network-connected devices, video traffic, cloud computing and online social networking. To address this increased bandwidth demand, CATV and telecommunications service providers are competing directly against each other by providing bundles of voice, video and data services to their subscribers and investing to enhance the capacity, reliability and capability of their networks. The trend of rising bandwidth consumption also impacts the internet data center market, as reflected in the shift to higher speed server connections. As a result of these trends, fiber-optic networking technology is becoming essential in all three of our target markets, as it is often the only economic way to deliver the desired bandwidth.

The internet data center market is our largest and fastest growing market. Our customers in this market are generally large internet-based (“Web 2.0”) data center operators, to whom we supply optical transceivers that plug into switches and servers within the data center and allow these network devices to send and receive data over fiber optic cables. The majority of the data center optical transceivers that we sell utilize our own lasers and subassemblies (we refer to the transceivers subassemblies as “light engines”), and we believe that our in-house technology and manufacturing capability for these lasers and subassemblies gives us an advantage over many of our competitors who often lack either development or manufacturing capabilities for these advanced optical modules.

The CATV market is our most established market, for which we supply a broad array of products including lasers, transmitters and turn-key equipment. Sales of headend, node and distribution equipment have contributed significantly to our revenue in recent years as a result of our ability to meet the needs of CATV equipment vendors who have continued to outsource both the design and manufacturing of this equipment. While equipment vendors have relied upon third parties to assemble portions of their products, within the past five years certain of our customers have accelerated the outsourcing of both the design and manufacturing of both headend equipment and node equipment to third parties. The shift is due in part to the sophisticated engineering expertise needed to perform this work. We believe that our extensive high-speed optical, mixed-signal semiconductor and mechanical engineering capabilities position us well to benefit from these industry dynamics.

Our vertically integrated manufacturing model provides us several advantages, including rapid product development, fast response times to customer requests and control over product quality and manufacturing costs. We design, manufacture and integrate our own analog and digital lasers using a proprietary Molecular Beam Epitaxy, or MBE, fabrication process, which we believe is unique in our industry. We manufacture the majority of the laser chips and optical components that are used in our products. The lasers we manufacture are proven to be reliable over time and highly tolerant of changes in temperature and humidity, making them well-suited to the CATV and FTTH markets where networking equipment is often installed outdoors.

In 2014, our revenue was $130.4 million and our gross margin was 33.9%. We have grown our annual revenue at a CAGR of 31.7% between 2009 and 2014. In the years ended December 31, 2013 and 2012, we incurred losses of $1.4 million, and $0.9 million, respectively. In the year ended December 31, 2014, we had a net income of $4.3 million, and our accumulated deficit at December 31, 2013 and December 31, 2014 was $83.3 million and $79.0 million, respectively. In 2014, we earned 49.4% of our total revenue from the internet data center market, and 36.3% of our total revenue from the CATV market. In 2014, our key customers in the CATV market included Cisco Systems and Biogenomics Corp., a distributor. In 2014, 2013 and 2012, Cisco Systems accounted for 8.9%, 21.8%, and 33.2%, respectively, of our revenue and Biogenomics Corp. accounted for 6.2%, 8.7% and 11.2%, respectively, of our revenue. In 2014, our key customers in the data center market included Amazon and Microsoft. In 2014, 2013, and 2012, Amazon accounted for 45.8%, 18.2%, and 5.8% of our revenue, respectively, and Microsoft accounted for 3.6%, 6.1%, and 2.6% of our revenue, respectively.

Industry Background

Our three target markets of internet data centers, CATV and FTTH share a common trend of a significant growth in bandwidth consumption and the corresponding need for network infrastructure improvement to support it.

The prevailing themes in our target markets include:

- ***Trends in the Internet Data Center Market.*** To support the substantial increase in bandwidth consumption, internet data center operators are increasing the scale of their internet data centers and accelerating data transmission rates. As a result, there is an ongoing transition from the use of copper cable, typically at speeds up to 1 gigabit, to optical fiber as a transport medium, typically providing speeds from 10 gigabit to 40 gigabit. In recent years, a number of leading Internet companies have begun to adopt more open internet data center architectures, using a mix of systems and components from a variety of vendors, and in some cases designing their own equipment. For these companies, compatibility of new networking equipment with legacy infrastructure is not as important, and as a consequence, these companies are more willing to work with non-traditional equipment vendors, which creates an open and growing opportunity for optical device vendors. Moreover, transmission speeds have continued to increase among the companies who have previously transitioned from copper-based to fiber-based infrastructure, resulting in opportunities for optical device vendors to supply new optical transceivers capable of operating at these higher data

rates.

Trends in the CATV Market. In recent years, CATV service providers have invested extensively to support high speed, two-way communications and we expect that they will continue to do so. In North America, in particular, CATV service providers have expressed interest in emerging new technologies like DOCSIS 3.1, which will enable them to offer higher speed connections to their customers.

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While equipment vendors have historically relied upon third parties only to assemble portions of their products, within the past five years, certain of our customers have accelerated the outsourcing of both the design and manufacturing of both headend equipment and node equipment to third parties. The shift is due in part to the sophisticated engineering expertise needed to perform this work, along with the proliferation of new equipment designs needed to support DOCSIS 3.1.

Trends in the FTTH Market. The FTTH market generally refers to the Passive Optical Networks, or PONs, that telecommunications service providers are deploying. The most commonly deployed PON technology is Gigabit PON, or GPON, which delivers up to 2.5 gigabits per second (Gbps) of data, but due to the splitting of the

· bandwidth among multiple users, the actual bandwidth delivered to an individual subscriber is far less than 2.5 Gbps. One approach that does support true 1 Gbps service to the home is wavelength division multiplexing PON, or WDM-PON, a technology that enables the transmission of multiple wavelengths of data over a single fiber-optic strand.

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We experience certain challenges within our target markets, including continuous pressure to innovate and deliver highly integrated products that perform reliably in harsh, demanding environments and to produce high-quality devices in large volumes.

Our Solutions

By addressing the challenges in our target markets, we provide the following benefits to our customers:

- ***Enable customers to deliver innovative products.*** We leverage our deep expertise in high-speed optical, mixed-signal semiconductor and mechanical engineering, and our proprietary MBE laser fabrication process to deliver technologically advanced products to our customers.

- ***Enhance efficiency and cost effectiveness of our customers' supply chain.*** We design and sell products at the level of integration desired by a customer, from components to turn-key equipment, providing our customers a dependable, cost-effective and simplified supply chain.

- ***Deliver high quality, reliable products in high volume.*** As a vertically integrated supplier, we are able to monitor and maintain quality control throughout the production process, using our internally produced components where possible for our final products. With manufacturing facilities in the U.S., Taiwan and China, we can support high volume production and timely delivery for our customers around the world.

- ***Provide sophisticated design solutions to our customers.*** We believe our in-house expertise in both analog and digital optical engineering enables us to design comprehensive solutions that meet many of the different network architectures and protocols used by our customers.

Our Strengths

Our key competitive strengths include the following:

- ***Proprietary technological expertise and track record of innovation.*** We continue to develop innovative products by leveraging our technological expertise, including our proprietary MBE laser fabrication process.

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Proven system design capabilities. We have deep expertise and proven design capabilities in high-speed optical, mixed-signal semiconductor and mechanical engineering, which we believe position us to take advantage of the continuing shift to outsourced design and manufacturing among CATV equipment vendors.

- ***Highly customized products.*** Most of our products have some level of customization, making it more difficult for our customers to switch rapidly to another supplier. We believe this element of customization contributes to longer product lifecycles and more stable product pricing.

- ***Industry-leading position in the CATV market.*** We have continued to be awarded new design and manufacturing opportunities for CATV components and equipment. We serve a majority of the largest CATV equipment manufacturers in the world and our knowledge of both their requirements and the needs of their customers (the CATV network operators) allows us to access these new opportunities.

- ***Vertically integrated, geographically distributed manufacturing model.*** Our vertically integrated design and manufacturing process encompasses various steps from laser design and fabrication to complete optical system design and assembly. Furthermore, we have geographically distributed our manufacturing by strategically locating our operations in the U.S., China and Taiwan to reduce development time and production costs, to better support our customers and to help protect our intellectual property.

Our Strategy

We seek to be the leading global provider of optical components, modules and equipment for each of our three target markets, CATV, FTTH and internet data centers. Our strategy includes the following key elements:

- ***Continue to penetrate the internet data center market.*** In the internet data center, we primarily target internet data center operators who have adopted an open system architecture—one in which the optical connectivity solutions can be provided by a different vendor than the vendor which provides their servers and switches.

- ***Extend our leadership in CATV networking.*** We intend to maintain our position as the leading producer of optical components used in CATV networks, and to capture an increasing share of the CATV equipment market as the major equipment vendors continue to outsource the design and manufacturing of such products.

- ***Continue to penetrate the FTTH market.*** We believe our WDM-PON technology is a cost-effective solution for delivering 1 Gbps bandwidth to a home. We intend to capture an increasing share of the FTTH market by delivering optical modules enabling 1 Gbps synchronous service to the home through our customers, who are either internet service providers or manufacturers of networking equipment supplying internet service providers.

- ***Continue to invest in our capabilities and infrastructure.*** We intend to continue to invest in new products, new technology and our production infrastructure and facilities to maintain and strengthen our competitive position.

- ***Selectively pursue other opportunities that leverage our existing expertise.*** Our expertise in designing and manufacturing outdoor equipment for the CATV industry positions us well to pursue applications that are also characterized by having varying and demanding environments, including wireless and wireline telecom infrastructure, industrial robotics, aerospace and defense, and oil and gas exploration.

- ***Pursue complementary acquisition and strategic alliance opportunities.*** We evaluate and selectively pursue acquisition opportunities or strategic alliances that we believe will enhance or complement our current product offerings, augment our technology roadmap, or diversify our revenue base.

Technology

We believe that we have technology leadership in four key areas: semiconductor laser manufacturing, electronic technologies that enhance the performance of our lasers, optical hybrid integration and mixed-signal semiconductor design.

Differentiated semiconductor laser manufacturing. We use a MBE fabrication process to make the most critical parts of our lasers, rather than MOCVD, the technique most commonly used in optical chip manufacturing by traditional communications optics vendors. Among the differentiators of MBE relative to MOCVD fabrication are a lower process temperature and the use of solid phase materials rather than gaseous sources to grow wafers and the growth of more highly strained crystals. These factors contribute to longer operating lives of our lasers, improved laser efficiency and threshold current, among other performance attributes that make them well-suited to our target markets. While we believe that these advantages of MBE are important, MBE does have disadvantages including the inability to use certain dopant materials (for example Iron), difficulty in certain types of regrowth, and the necessity to maintain complex ultra-high vacuum equipment. As a result of some of these challenges, production yields, and the performance attributes of laser devices, are highly variable and optimizing these characteristics requires numerous enhancements and modifications to standard MBE equipment and the MBE process. To our knowledge, we are unique in using an MBE process to produce communications lasers in high volume, and believe it would be difficult, and time-consuming, for other vendors to replicate our production technology.

- ***Laser enhancement technology.*** Certain properties of the semiconductor lasers predominantly used in traditional communications devices, such as chirp and wavelength drift, negatively affect their ability to transmit signals over long fiber distances or prevent them from transmitting signals with acceptable fidelity in certain applications. We have developed laser enhancement circuitry that can correct many of these deficiencies. We believe that our technology will become more essential with wider deployment of higher capacity CATV and FTTH systems, which place more stringent demands on laser performance.

Optical hybrid-integration technology. Reducing the size, power consumption and complexity of optical devices is essential for achieving the price and performance targets of our customers. Our ability to integrate multiple optical networking functions into a single device and to co-package multiple devices into smaller form factors helps us meet customer requirements, and we believe can also create new opportunities. For instance, the transmission speed between network elements (switches and servers, for example) within the data center has continued to increase. However, the rate at which this data can be converted from electrical signals to optical signals by laser diodes has not increased at the same pace. Therefore, to achieve data rates of 40 Gbps and above, many customers utilize multiple lower data rate lasers co-packaged together into a single optical module. The technology required to cost-effectively and reliably co-package these lasers and the associated electronic control circuitry is complex. Our extensive experience with the processes and the manufacturing technologies required to produce these devices gives us a competitive advantage.

Similarly, in FTTH networks, installing new fiber-optic cable is expensive and difficult, and in some situations prohibitively so for a network service provider. As a consequence, network operators seek to maximize the utilization of their installed fiber plant. In long-haul and metropolitan networks, the number of service providers who deployed WDM technology as fiber utilization rose. Fiber utilization in access networks is rising, but the use of WDM technology in the access segment has been problematic due to the relatively high cost and power consumption of the requisite optical devices. We have developed proprietary miniaturized optical packaging, electronic control circuitry and testing algorithms to create a hybrid WDM-PON solution that addresses these historical impediments that we believe will make WDM-PON a cost-effective alternative for deployment.

Mixed-signal design. As CATV providers continue to evolve from primarily broadcast-video content providers to a mixture of HD video content together with data-connectivity providers, the networks they utilize to offer these services must evolve as well. Older analog networks are giving way to hybrid networks that incorporate both analog and digital signals. For example, many newer networks are being designed with “digital return-path” capabilities. In this type of network, signals traveling from the headend to the residence are transported as analog signals, whereas signals traveling in the opposite direction (that is, originating at the residence and being transmitted towards the headend) are carried as digital signals. This combination of analog and digital signaling creates unique design challenges. Our engineers have many years of experience in developing equipment, modules and components that are well suited to these sorts of mixed-signal architectures. We believe that having deep experience in both digital and analog signaling allows us to offer superior solutions to our customers, compared with companies who have expertise in only one of these signal types.

Our Products

Our products include an array of optical communications solutions at varying levels of integration. We begin from the fundamental building blocks of lasers and laser components. From these foundational products, we design and manufacture a wide range of products from optical modules to complete turn-key equipment. We design our products to target customers in our identified markets to meet their needs and specifications.

Our components often incorporate one or more of our optical laser chips inside a precision housing that provides mechanical protection as well as standardized electrical contacts. More complex optical components may also include optical filters (for example, for use in WDM) or other optical elements by which optical signals are routed internally within the component. These more advanced components may also include coolers, heaters and sensors that allow the temperature of the laser chip to be measured and controlled. We manufacture the majority of the laser chips and optical components that are used in our own products.

At the next level of integration, our module or sub-assembly products typically contain one or more of our optical components and some additional control circuitry. Examples of modules include our transceiver line primarily used in internet data center markets and FTTH markets.

At the highest level of integration and complexity, our equipment products typically contain one or more optical components, modules and additional electronic control circuitry required to enable these subsystems to operate independently. For example, our CATV transmitter equipment requires utilization of our optical components and assembly onto a circuit board and to an external housing. Examples of equipment include our CATV transmitter and CATV nodes.

Intellectual Property

We rely on a combination of patent, copyright, trademark and trade secret laws, as well as confidentiality and licensing arrangements, to establish and protect our intellectual property. We employ various methods to protect these intellectual property rights, including maintaining a technological infrastructure with significant security measures, limiting disclosure and restricting access to only those individuals with an operational need for such information, and having employees, consultants and suppliers execute confidentiality agreements with us. While we expect our intellectual property to provide competitive advantages, we also find meaningful value from unpatented proprietary process knowledge, know-how and trade secrets.

Patents

As of December 31, 2014, we owned a total of 152 U.S. and foreign issued patents, 66 of which were issued in the U.S. and 86 of which were issued in China and Taiwan. Our issued patents will expire between 2019 and 2029.

Our portfolio of patents and patent applications covers several different technology families including:

- laser structure and design;
- optical signal conditioning and laser control;
- laser fabrication;
- photodiode and optical receiver design and fabrication;
- optical device and module designs;
- optical device packaging equipment and techniques; and
- optical network enhancements.

Trademarks

We have registered the trademarks APPLIED OPTOELECTRONICS, INC., AOI and our logo with the U.S. Patent and Trademark Office on the Principal Register. These marks are also registered in, or have applications for registration pending in, various foreign trademark offices. A U.S. trademark registration is also pending for the mark "AAOI."

Research and Development

To maintain our growth and competitiveness, we engage in an active research and development program to develop new products and enhance existing products. As a result of these efforts, we anticipate releasing various new or enhanced products over the next several years. Our research and development expenses were approximately $16.0 million, $8.5 million, and $7.6 million for the years 2014, 2013 and 2012, respectively.

As of December 31, 2014, we had a total of 196 employees working in the R&D department, including 17 with Ph.D. degrees. We continue to recruit talented engineers to further enhance our research and development capabilities. We have research and development departments in our facilities in Texas, China and Taiwan. Our research and development teams collaborate on joint projects, and by co-locating with our manufacturing operations enable us to achieve an efficient cost structure and improve our time to market.

A key factor in our research and development success is our highly collaborative process for new product development. Particularly in our equipment and module businesses, we often collaborate very closely with our customers from a very early stage in product development. By purposefully fostering this close collaboration, we believe that we can more rapidly develop leading solutions meeting the needs of our customers.

Manufacturing and Operations

We have three manufacturing sites: Sugar Land, Texas, Ningbo, China and Taipei, Taiwan. Our research and development functions are partnered with our manufacturing locations. In our U.S. facility, we manufacture laser chips (utilizing our MBE process), subassemblies and components. The subassemblies are used in the manufacture of components by our other manufacturing facilities or sold to third parties as modules. We manufacture our laser chips only within our U.S. facility, where our laser design team is located. In our Taiwan location, we manufacture optical components, such as our butterfly lasers, which incorporate laser chips, subassemblies and components manufactured within our U.S. facility. In addition, in our Taiwan location, we manufacture transceivers for the internet data center, FTTH, and other markets. In our China facility, we take advantage of lower labor costs and manufacture certain more labor intensive components and optical equipment systems, such as optical subassemblies for the internet data center market, CATV transmitters (at the headend) and CATV outdoor equipment (at the node). Each facility conducts testing on the components, modules or subsystems it manufactures and each facility is certified to ISO 9001:2008.

Our products are sold to our customers worldwide and also supply our internal component needs for the transceivers and equipment we manufacture. With a vertically integrated manufacturing process, we produce many of our own laser chips and other parts required to manufacture our optical components. Through this model, we are able to reduce development time and product costs as well as enhance quality control. We incorporate our own components into our transceivers, subsystems and equipment products wherever possible. In instances where we do not produce components ourselves, we source them from external suppliers and regularly evaluate these relationships in an attempt to reduce risk and lower cost.

We depend on a limited number of suppliers for certain raw materials and components used in our products. We regularly review our vendor relationships in an attempt to mitigate risks and lower costs, especially where we depend on one or two vendors for critical components or raw materials. While maintaining inventories that we believe are sufficient to meet our near-term needs, we strive not to carry significant inventories of raw materials. Accordingly, we maintain ongoing communications with our vendors in order to help prevent any interruptions in supply, and have implemented a supply-chain management program to maintain quality and lower purchase prices through standardized purchasing efficiencies and design requirements.

Customers

Our customers are primarily internet data center operators, CATV and telecommunications equipment manufacturers, and internet service providers. We generally employ a direct sales model in North America and in the rest of the world we use both direct and indirect sales channels. In 2014, 2013, and 2012 we obtained 92.6%, 88.4% and 85.4% of our revenue, respectively, through our direct sales efforts and the remainder of our revenue through our indirect sales channels. Our sales channel partners provide logistical services and day-to-day customer support. Where we sell through an indirect sales channel, we work with the end customer to establish technological specifications for our

products. Our equipment customers typically offer our equipment under their brand-name and our equipment is often customized with unique design or performance criteria by each of these customers. We also from time to time offer design or manufacturing services to customers to assist them in more effectively using our products and realizing time-to-market advantages.

In 2014, our products were used by the three largest CATV OEMs, consisting of Cisco Systems, Inc., Arris Group Inc. (which acquired the Motorola Home Business in 2013) and Aurora Networks, a subsidiary of Pace plc (which acquired Harmonic Inc.'s optical business in 2013 and itself being acquired by Pace plc subsequently). The two customers that contributed most to our revenue in the FTTH market in 2014 were Genexis B.V. and a leading internet service provider. In 2014, our key customers in the internet data center market included Amazon and Microsoft. In 2014, revenue from the internet data center market, CATV market, FTTH market and other markets provided 49.4%, 36.9% and 10.4%, and 3.8% of our revenue, respectively, compared to 24.7%, 60.4%, 5.6%, and 9.3%, respectively, in 2013.

We support our sales efforts by attendance at industry trade shows, technical conferences, advertising in various trade journals and magazines and other promotional efforts. These efforts are aimed at attracting new customers and enhancing our existing customer relationships.

Backlog

We generally make sales pursuant to short-term purchase orders without deposits and subject to rescheduling, revision or cancellation on short notice. We accordingly believe that purchase orders are not an accurate indicator of our future sales and any backlog of purchase orders is not a reliable indicator of our future revenue.

Competition

The optical networking market is intensely competitive. Because of the broad nature of our product offerings, we do not believe that we face a single major competitor across all of our markets. We do, however, experience intense competition in each product area from a number of manufacturers and we anticipate that competition will increase. Our major competitors in one or more of our markets include Avago, Inc., EMCORE Corporation, Finisar Corporation, JDS Uniphase Corporation, Mitsubishi, NeoPhotonics Corporation, Oclaro, Inc. and Sumitomo Electric Industries, Ltd.

Many of our competitors are larger than we are and have significantly greater financial, marketing and other resources. In addition, several of our competitors have large market capitalizations or cash reserves and are much better positioned to acquire other companies to gain new technologies or products that may displace our products. Network equipment providers, who are our customers, and network service providers, who are supplied by our customers, may decide to manufacture the optical subsystems incorporated into their network systems in-house. We also encounter potential customers that, because of existing relationships, are committed to the products offered by these competitors.

We believe the principal competitive factors in our target markets include the following:

- use of internally manufactured components;
- product breadth and functionality;
- timing and pace of new product development;
- breadth of customer base;
- technological expertise;
- reliability of products;
- product pricing; and

· manufacturing efficiency.

We believe that we compete favorably with respect to the above factors based on our MBE processes, our vertically integrated model, the performance and reliability of our product offerings and the compelling value we offer to our customers.

Employees

As of December 31, 2014, we employed 1,447 full-time employees, of which 31 held Ph.D. degrees in a science or engineering field. Of our employees, 234 are located in the U.S., 649 are located in Taiwan, and 564 are located in China. None of our employees are represented by any collective bargaining agreement, but certain employees of our China subsidiary are members of a trade union. We have never suffered any work stoppage and believe that we have satisfactory relations with our employees.

Environmental Matters

Our research and development and manufacturing operations and our products are subject to a variety of federal, state, local and foreign environmental, health and safety laws and regulations, including those governing discharges of pollutants to air and water, the use, storage, handling and disposal of hazardous materials, employee health and safety, and the hazardous material content in our products. Our environmental management systems in our facilities in Ningbo, China and Taipei, Taiwan are both certified to meet the requirements of ISO14001:2004. However, there can be no assurance that violations of applicable laws at any of our facilities will not occur in the future as a result of human error, accident, equipment failure or other causes. We use, store and dispose of hazardous materials in our manufacturing operations and hazardous materials are present in our products. We incur costs to comply with environmental, health and safety requirements, and any failure to comply, or the identification of contamination for which we are found liable, could cause us to incur substantial costs, including cleanup costs, monetary fines, or civil or criminal penalties, and subject us to property damage and personal injury claims, and result in the suspension of production, alteration of our manufacturing processes, redesign of our products, or curtailment of sales and adverse publicity. Liability under environmental, health and safety laws can be joint and several and without regard to fault or negligence. For example, pursuant to environmental laws and regulations, including but not limited to the Comprehensive Environmental Response Compensation and Liability Act, or CERCLA, we may be liable for the full amount of any remediation-related costs at properties we currently own or formerly owned, such as our currently owned Sugar Land, Texas facility, or at properties at which we operated, as well as at properties we will own or operate in the future, and properties to which we have sent hazardous substances, whether or not we caused the contamination.

We expect that our operations and products will be affected by new environmental requirements on an ongoing basis. Environmental, health and safety requirements have become more stringent over time, and changes to existing requirements could restrict our ability to expand our facilities, require us to acquire costly pollution control equipment, or cause us to incur other significant expenses or to modify our manufacturing processes or the hazardous material content of our products. Identification of presently unidentified environmental conditions, more vigorous enforcement by a governmental authority, enactment of more stringent legal requirements or other unanticipated events could give rise to adverse publicity, restrict our operations, affect the design or marketability of our products or otherwise cause us to incur material environmental costs.

We face increasing complexity in our product design and procurement operations as we adjust to new and upcoming requirements relating to the materials composition of our products. Some jurisdictions in which our products are sold have enacted requirements regarding the hazardous material content of certain products. For example, member states of the European Union and China are among a growing number of jurisdictions that have placed restrictions on the use of lead, among other chemicals, in electronic products, which affect the composition and packaging of our products. The passage of such requirements in additional jurisdictions, or the tightening of standards or elimination of certain exemptions in jurisdictions where our products are already subject to such requirements, could cause us to incur significant expenditures to make our products compliant with new requirements, or could limit the markets into which we may sell our products. Other governmental regulations may require us to reengineer our products to use components that are more environmentally compatible, resulting in additional costs to us.

Export Regulations

The Bureau of Industry and Security (BIS) of the U.S. Department of Commerce is responsible for regulating the export of most commercial items that are classified as dual-use goods that may have both commercial and military applications. A limited number of our products are exported by license under the Export Control Classification Number, or ECCN, of 5A991. Export Control Classification requirements are dependent upon an item’s technical characteristics, the destination, the end-use, and the end-user, and other activities of the end-user. Should the ECCN change, then the export of our products to certain countries would be restricted. However, we currently do not export our products to any countries on the restricted list, and therefore a change in the ECCN would not materially impact our business.

Corporate Information

We were incorporated in the State of Texas in 1997. In March 2013, Applied Optoelectronics, Inc., a Texas corporation, converted into a Delaware corporation. Our principal executive offices are located at 13115 Jess Pirtle Blvd., Sugar Land, TX 77478, and our telephone number is (281) 295-1800. Our website address is www.ao-inc.com. Information contained on our website is not incorporated by reference into this Annual Report on Form 10-K.

Available Information

We file electronically with the United States Securities and Exchange Commission, or SEC, our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended. We make available on our website at www.ao-inc.com free of charge, copies of these reports as soon as reasonably practicable after filing these reports with, or furnishing them to, the SEC.

Item 1A. Risk Factors

Investing in our common stock involves a high degree of risk. You should carefully consider the following risk factors and all other information contained in this Annual Report on Form 10-K, including our consolidated financial statements and related notes. If any of the following risks actually occur, we may be unable to conduct our business as currently planned and our financial condition and results of operations could be seriously harmed. In addition, the trading price of our common stock could decline due to the occurrence of any of these risks and you may lose all or part of your investment.

Risks Inherent in Our Business

We are dependent on our key customers for a significant portion of our revenue and the loss of, or a significant reduction in orders from, any of our key customers would adversely impact our revenue and results of operations.

We generate much of our revenue from a limited number of customers. In 2014, 2013 and 2012, our top ten customers represented 87.2%, 76.9% and 77.6% of our revenue, respectively. In 2014, Amazon represented 45.8% of our revenue, Cisco Systems, Inc. represented 8.9% of our revenue and a leading internet service provider represented 6.7% of our total revenue. As a result, the loss of, or a significant reduction in orders from any of our key customers would materially and adversely affect our revenue and results of operations. We typically do not have long-term contracts with our customers and instead rely on recurring purchase orders. If our key customers do not continue to purchase our existing products or fail to purchase additional products from us, our revenue would decline and our results of operations would be adversely affected.

Adverse events affecting our key customers could also negatively affect our ability to retain their business and obtain new purchase orders, which could adversely affect our revenue and results of operations. For example, in recent years, there has been consolidation among various network equipment manufacturers and this trend is expected to continue. We are unable to predict the impact that industry consolidation would have on our existing or potential customers. We may not be able to offset any potential decline in revenue arising from the consolidation of our existing customers with revenue from new customers or additional revenue from the merged company.

If our customers do not qualify our products for use on a timely basis, our results of operations may suffer.

Prior to the sale of new products, our customers typically require us to obtain their approval and qualify our products for use in their applications. Additionally, new customers often audit our manufacturing facilities and perform other evaluations during this process. The qualification process involves product sampling and reliability testing and collaboration with our product management and engineering teams in the design and manufacturing stages. If we are

unable to accurately predict the amount of time required to qualify our products with customers, or are unable to qualify our products with certain customers at all, then our ability to generate revenue could be delayed or our revenue would be lower than expected and we may not be able to recover the costs associated with the qualification process or with our product development efforts, which would have an adverse effect on our results of operations.

In addition, due to rapid technological changes in our markets, a customer may cancel or modify a design project before we have qualified our product or begun volume manufacturing of a qualified product. It is unlikely that we would be able to recover the expenses for cancelled or unutilized custom design projects. Some of these unrecoverable expenses for cancelled or unutilized custom design projects may be significant. It is difficult to predict with any certainty whether our customers will delay or terminate product qualification or the frequency with which customers will cancel or modify their projects, but any such delay, cancellation or modification would have a negative effect on our results of operations.

Our ability to successfully qualify and scale capacity for new technologies and products is important to our ability to grow our business and market presence, and we may invest a significant amount to scale our capacity to meet potential demand from customers for our new technologies and products. If we are unable to qualify and sell any of our new products in volume, on time, or at all, our results of operations may be adversely affected.

Customer demand is difficult to forecast accurately and, as a result, we may be unable to match production with customer demand.

We make planning and spending decisions, including determining the levels of business that we will seek and accept, production schedules, component procurement commitments, personnel needs and other resource requirements, based on our estimates of product demand and customer requirements. Our products are typically purchased pursuant to individual purchase orders. While our customers may provide us with their demand forecasts, they are typically not contractually committed to buy any quantity of products beyond firm purchase orders. Furthermore, many of our customers may increase, decrease, cancel or delay purchase orders already in place without significant penalty. The short-term nature of commitments by our customers and the possibility of unexpected changes in demand for their products reduce our ability to accurately estimate future customer requirements. On occasion, customers may require rapid increases in production, which can strain our resources, cause our manufacturing to be negatively impacted by materials shortages, necessitate more onerous procurement commitments and reduce our gross margin. We may not have sufficient capacity at any given time to meet the volume demands of our customers, or one or more of our suppliers may not have sufficient capacity at any given time to meet our volume demands. If any of our major customers decrease, stop or delay purchasing our products for any reason, we will likely have excess manufacturing capacity or inventory and our business and results of operations would be harmed.

We are subject to the cyclical nature of the markets in which we compete and any future downturn will likely reduce demand for our products and revenue.

In each of our target markets, including the CATV market, our sales depend on the aggregate capital expenditures of service providers as they build out and upgrade their network infrastructure. These markets are highly cyclical and characterized by constant and rapid technological change, price erosion, evolving standards and wide fluctuations in product supply and demand. In the past, these markets have experienced significant downturns, often connected with, or in anticipation of, the maturation of product cycles. These downturns have been characterized by diminished product demand, production overcapacity, high inventory levels and accelerated erosion of average selling prices. Our historical results of operations have been subject to these cyclical fluctuations, and we may experience substantial period-to-period fluctuations in our future results of operations. Any future downturn in any of the markets in which we compete could significantly reduce the demand for our products and therefore may result in a significant reduction in our revenue. Our revenue and results of operations may be materially and adversely affected in the future due to changes in demand from individual customers or cyclical changes in any of the markets utilizing our products. We may not be able to accurately predict these cyclical fluctuations and the impact of these fluctuations may have on our revenue and operating results.

We must continually develop successful new products and enhance existing products, and if we fail to do so or if our release of new or enhanced products is delayed, our business may be harmed.

The markets for our products are characterized by frequent new product introductions, changes in customer requirements and evolving industry standards, all with an underlying pressure to reduce cost and meet stringent reliability and qualification requirements. Our future performance will depend on our successful development, introduction and market acceptance of new and enhanced products that address these challenges. If we are unable to make our new or enhanced products commercially available on a timely basis, we may lose existing and potential customers and our financial results would suffer.

In addition, due to the costs and length of research, development and manufacturing process cycles, we may not recognize revenue from new products until long after such expenditures, if at all, and our margins may decrease if our costs are higher than expected, adversely affecting our financial condition and results of operation.

Although the length of our product development cycle varies widely by product and customer, it may take 18 months or longer before we receive our first order. As a result, we may incur significant expenses long before customers accept and purchase our products.

Product development delays may result from numerous factors, including:

- modification of product specifications and customer requirements;
- unanticipated engineering complexities;
- difficulties in reallocating engineering resources and overcoming resource limitations; and
- rapidly changing technology or competitive product requirements.

The introduction of new products by us or our competitors could result in a slowdown in demand for our existing products and could result in a write-down in the value of our inventory. We have in the past experienced a slowdown in demand for existing products and delays in new product development, and such delays will likely occur in the future. To the extent we experience product development delays for any reason or we fail to qualify our products and obtain their approval for use, which we refer to as a design win, our competitive position would be adversely affected and our ability to grow our revenue would be impaired.

Furthermore, our ability to enter a market with new products in a timely manner can be critical to our success because it is difficult to displace an existing supplier for a particular type of product once a customer has chosen a supplier, even if a later-to-market product provides better performance or cost efficiency.

The development of new, technologically advanced products is a complex and uncertain process requiring frequent innovation, highly-skilled engineering and development personnel and significant capital, as well as the accurate anticipation of technological and market trends. We cannot assure you that we will be able to identify, develop, manufacture, market or support new or enhanced products successfully or on a timely basis. Further, we cannot assure you that our new products will gain market acceptance or that we will be able to respond effectively to product introductions by competitors, technological changes or emerging industry standards. We also may not be able to develop the underlying core technologies necessary to create new products and enhancements, license these technologies from third parties, or remain competitive in our markets.

If the CATV market does not continue to develop as we expect, or if there is any downturn in this market, our business would be adversely affected.